



**US Army Corps  
of Engineers**  
Little Rock District

**DRAFT ENVIRONMENTAL ASSESSMENT**

**Master Plan Revision  
Millwood Lake**

September 2021

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## **FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

**NAME OF PROPOSED ACTION:** Millwood Lake Master Plan Revision

### **PURPOSE AND NEED FOR THE PROPOSED ACTION**

The revised Master Plan updates Design Memorandum No. 5-B, Updated Master Plan for Development and Management of Millwood Lake approved in 1964. The Master Plan is the strategic land use document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource project. It is a vital tool for the efficient and cost-effective stewardship and sustainability of project resources for the benefit of present and future generations.

With the proposed Master Plan revision, the U.S. Army Corps of Engineers, Little Rock District, has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (EA) dated **Month Day Year**, for the Millwood Lake Master Plan Revision, addresses the comprehensive management and development of all recreational, natural, and cultural resources, opportunities, and feasibility in the Millwood Lake area, located in the Gulf Coastal Ecoregion in southwest Arkansas in Howard, Hempstead, Little River, and Sevier counties. The final recommendation is contained in the report of the Chief of Engineers, dated xxx, 2022.

The Final EA, incorporated herein by reference, evaluated various alternatives that would evaluate existing conditions and potential impacts of land classifications considered in the listed alternatives. The recommended plan is the implementation of Alternative 2, as follows:

The Preferred Alternative (Alternative 2)—This alternative, which is now the Selected Alternative, is the Moderate Conservation alternative. Under this alternative, the land classifications would be revised to reflect current management practices and responses to agency and public comments received during the scoping phase. Changes included reclassifying undeveloped High Density land classifications (i.e. future/closed Corps parks) to Low Density and other land classifications; reclassifying some Wildlife Management lands to Environmentally Sensitive and Vegetative Management lands.

Alternative 2 proposes 1,018.5 acres in High Density recreation, representing a 365.8 acre decrease from the No Action Alternative. Low Density lands total 243.6 acres, representing an increase of 243.6 acres from the No Action Alternative. The majority of the decrease in High Density acreage would be due to reclassification to Low Density (increased from 0 to 243.6 acres). Environmentally Sensitive lands increased by 840.2 acres from the No Action Alternative, while Wildlife Management lands decreased by 661.3 acres. A portion of that converted to Vegetative Management lands (133.2 acres). With these changes, 82% of the shoreline would be protected from development.

In addition to a “no action” plan, one additional alternative was evaluated. The components of these alternatives are described in Section 3.1 of the EA.

For all alternatives the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are enumerated below.

**ANTICIPATED ENVIRONMENTAL IMPACTS:** Consideration of the effects disclosed in the EA, and a finding that they are not significant, are necessary to prepare a FONSI. This determination of no significance is required by 40 CFR 1508.13. Additionally, 40 CFR 1508.27 defines significance as it relates to consideration of environmental effects of a direct, indirect or cumulative nature.

Criteria that must be considered in making this finding are addressed below, in terms of both context and intensity. The significance of both short term and long term effects must be viewed in several contexts: society as a whole (human, national); the affected region; the affected interests; and the locality. The context for this determination is primarily local. The context for this action is not highly significant geographically, nor is it controversial in any significant way. Consideration of intensity refers to the magnitude and intensity of impact, where impacts may be both beneficial and adverse. Within this context, the magnitude and intensity of impacts resulting from this decision are not significant. The determination for each impact topic is listed below.

**1. The degree to which the action results in both beneficial and adverse effects. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.** The EA indicates that there will be beneficial effects from implementation of the Selected Alternative to terrestrial and aquatic resources. The Selected Alternative would also allow for the continued potential development in the Low Density land classification, yielding a balanced approach in utilization of lake resources.

**2. The degree to which the action affects public health or safety.** No adverse effects to public health or safety will result from the Selected Alternative. Possible adverse environmental effects may occur from implementation of the No Action Alternative due to potential increased development in the unallocated lands, possibly resulting in more people and watercraft on the lake. Possible adverse economic and socioeconomic effects could potentially occur from implementation of Alternative 1, the Maximum Conservation Alternative.

**3. The degree to which the action affects unique characteristics of the potentially affected area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.** The Selected Alternative does not threaten any known historic properties. Coordination with Federal, State, and local agencies and Federally Recognized Tribes will be required to avoid, minimize or mitigate potential unforeseen impacts. Park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas will not be impacted by implementation of the Selected Alternative.

**4. The degree to which effects on the quality of the human environment are likely to be highly controversial.** The project will benefit the public through a balance of terrestrial and aquatic resource preservation with recreation provision. Therefore, the Little Rock District; Corps of Engineers does not regard this activity as controversial.

**5. The degree to which the possible effects on the human environment is highly uncertain or involves unique or unknown risks.** The uncertainty of the impacts of this action is low since land reclassification around the lake shoreline results in a projection of known and regulated activities as a result of the implementation of the Selected Alternative.

**6. The degree to which the action may establish a precedent for future actions with significant impacts.** Because the Selected Alternative involves updating the existing Millwood Lake Master Plan, which provides checks and balances on future lakeshore activities, the action should not establish a precedent for significant future impacts.

**7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** There are no other known individual actions associated with this project, therefore there are no cumulatively significant impacts identified with this action.

**8. The degree to which the action may adversely affect items listed or eligible for listing in the National Register of Historic Places, or other significant scientific, cultural or historic resources.** The Selected Alternative does not impact any known historic properties or other significant scientific, cultural, or historical resources. Coordination with Federal, State, and local agencies and Federally Recognized Tribes will be required to avoid, minimize or mitigate potential unforeseen impacts.

**9. The degree to which the action may adversely affect an endangered or threatened species or its critical habitat.** The Selected Alternative should not adversely affect any Threatened & Endangered species, as areas where potential use by T&E species and species habitat are primarily classified as Environmentally Sensitive lands. The listed T & E species in the area include the Piping Plover, Red Knot, Eastern Black Rail, which are shoreline wading birds, but have not been documented in the Millwood Lake area. Other species are Ouachita Rock Pocketbook and Rabbitsfoot, which are mussel species inhabiting riverine areas above and below Millwood Lake.

**10. Whether the action threatens a violation of Federal, state or local law or requirements imposed for the protection of the environment.** No such violations will occur. All applicable Federal, state or local laws and regulations will be complied with during the implementation of the action.

**CONCLUSIONS:** The impacts identified in the prepared EA have been thoroughly discussed and assessed. No impacts identified in the EA would cause any significant adverse effects to the human environment. Therefore, due to the analysis presented in the EA and comments received from a 45-day public review period that began on October 21, 2021 and ended on December 6, 2021, it is my decision that the preparation of an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA) is unwarranted and a “Finding of No Significant Impact” (FONSI) is appropriate. The signing of this document indicates the Corps final decision of the proposed action as it relates to NEPA. The EA and FONSI will be held on file in the Environmental Branch, Planning and Environmental Division of the Little Rock District, Corps of Engineers for future reference. Consultation with regulatory agencies will be

ongoing to ensure compliance with all federal, state, regional, and local regulations and guidelines.

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Date

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Eric M. Noe, PMP  
Colonel, EN  
Commanding

**MILLWOOD LAKE  
MASTER PLAN REVISION  
ENVIRONMENTAL ASSESSMENT**

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## 1. INTRODUCTION

The Master Plan is the strategic land use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water resource project. The Master Plan guides the efficient and cost-effective management, development, and use of project lands. It is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

The Master Plan guides and articulates Corps' responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the project's lands, waters, and associated resources. The Master Plan is a dynamic operational document projecting what could and should happen over the life of the project and is intended to be flexible, to respond to changing conditions. The Master Plan deals in concepts, not in details, of design or administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the Master Plan into operational actions.

Master Plans are required to be developed and kept current for Civil Works projects operated and maintained by the Corps and they include all land (fee, easements, or other interests) originally acquired for the projects and any subsequent land (fee, easements, or other interests) acquired to support the operations and authorized missions of the project.

The Master Plan is not intended to address the specifics of regional water quality, shoreline management, or water level management; these areas are covered in a project's shoreline management plan or water management plan. However, specific issues identified through the Master Plan revision process can still be communicated and coordinated with the appropriate internal Corps resource (i.e., Operations for shoreline management) or external resource agency (i.e., Arkansas Department of Environmental Quality) responsible for that specific area.

The revised Master Plan updates Design Memorandum No. 5-B, Master Plan for Millwood Reservoir (USACE, 1964).

With the proposed Master Plan update, an Environmental Assessment (EA) is completed to evaluate existing conditions and potential impacts of proposed alternatives. The EA is prepared pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR, 1500–1517), and the Corps implementing regulation, Policy and Procedures for Implementing NEPA, Engineer Regulation (ER) 200-2-2 (1988).

## 2. PURPOSE AND NEED FOR ACTION

### 2.1 Purpose and Need

The purpose of the proposed action to revise the Millwood Lake Master Plan, is to set a vision for the next 15 to 25 years, and to reflect changing needs for operation of the project's lands, waters, and associated resources.

The need for the proposed action is based on the age of the current plan and the changed conditions around the lake and in lake use. The Master Plan for Millwood Lake was last approved in 1964; and was followed by 4 supplements, over the last 56 years. During that time, public use patterns have remained similar, but trends, facility and service demands have shifted in the past 56 years due to the need for alternative experiences in recreation and tourism. Millwood Lake incurs recreation pressure for both private shoreline and public recreation use, resulting in management concerns regarding the overall sustainability of the lake. Reallocation of public use related services at project facilities, will need to be assessed. Over the last five decades, management changes and improvements have occurred to meet evolving public use.

### 2.2 Project History

Millwood Lake is a multiple purpose water resource development project, initially authorized for four purposes: flood control, water supply, fish and wildlife, and recreation. The project is located in the southwest region of Arkansas in the Gulf Coastal Plains. The lake is partially located in Sevier, Little River, Hempstead and Howard counties (Figure 2-1). The total area contained in the Millwood project, including both land and water surface, consists of 37,617 acres. When the lake is at the top of the conservation pool (elevation 259.2 feet above mean sea level), the water area is 27,125 surface acres with 340 miles of shoreline, within the lands owned in fee. The flood pool acreage totals 94,037, with a shoreline mileage of 589. The shoreline is flat and marshy at most areas of the lake but rises sharply out of the water along the east side, near the dam, and at White Cliffs, on the east side of the Little River in the upper reaches of the lake.

Construction of Millwood Dam was initiated in August 1961. The dam was completed in August of 1966, and the conservation pool was filled on 19 September 1966. The lake was declared operational for public use in 1966 under the authority of the Flood Control Act approved 28 June 1938 (Public Law No. 761, 75th Congress, 3rd Session) as modified by the Flood Control Act approved 18 August 1941 (Public Law No. 228, 77th Congress, 1st Session) which included the authorization of the project for flood control and fish and wildlife. Table 2-1 provides pertinent construction and operations data for this lake. There are 11 public use areas around Millwood Lake that are managed by the Corps of Engineers and four leased areas, including Jack's Isle, Millwood State Park, Patterson Shoals, and Yarbrough Landing. Descriptions of these areas are located in Chapter 2 of the Master Plan.

Figure 2-1 Millwood Lake and Surrounding Area

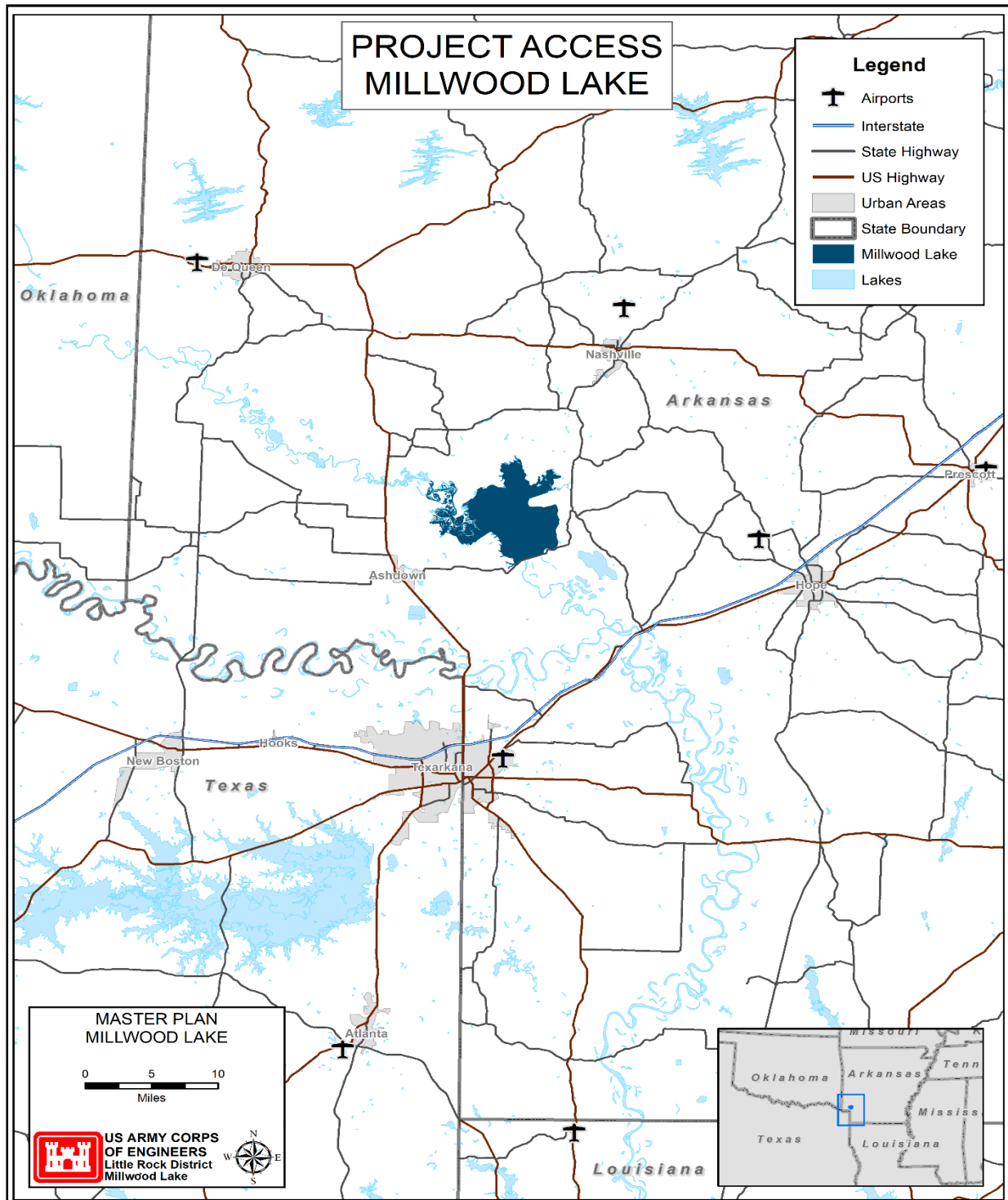


Table 2-1 Pertinent Data of Millwood Dam and Lake

<b>PERTINENT DATA OF THE DAM AND LAKE</b>	
<u>General Information</u>	
Purpose, Stream, State	FC, WS, F&W Little River Arkansas (1)
Drainage area, square miles	4,114
Average annual rainfall over the drainage area, inches, approximately	52
<u>Dam</u>	
Length in feet	17,554
Top of dam elevation, feet above mean sea level	301
<u>Lake</u>	
Nominal bottom of power drawdown Elevation, feet above mean sea level	252
Area, acres	1
Nominal top of conservation pool Elevation, feet above mean sea level	259.2
Area, acres	2
Length of shoreline, miles	340
Nominal top of flood-control pool Elevation, feet above mean sea level	287
Area, acres	9
Length of shoreline, miles	589
<u>Five-Year frequency pool</u>	
Elevation, feet above mean sea level (flood pool)	287
Elevation, feet above mean sea level (drawdown)	252
(1) FC – flood control, WS-water supply, F&W-Fish and Wildlife	

### 3. ALTERNATIVES

Alternatives evaluated in this EA are depicted in Table 3-1 through 3-4, and in Figure 3-1. The alternatives include: Alternative 1 (Maximum Conservation); Preferred Alternative 2 (Moderate Conservation); Alternative 3 (No Action); and Alternative 4 (Minimum Conservation). For a more detailed map analysis of the Preferred Alternative, refer to Appendix D of the Millwood Master Plan, which contains topographic maps depicting land classification and flowage easement areas around the shoreline. A complete set of maps for each alternative is located in an appendix C to this document.

In this EA development, the different alternatives are compared to the No Action Alternative in order to evaluate potential positive and negative effects on the natural and human environment based on the various shoreline acreage classifications determined by each action alternative. All evaluated alternatives are being provided for public review after completion of the draft EA. Public comments would be collected during the public comment period and considered in the development of the final EA and the final updated Master Plan. Based on public comments received, the final EA would compare all action alternatives to the Preferred Action or to a modified alternative that is developed, based on public preferences. The Final EA would present the selected alternative and provide the basis for the agency decision under NEPA.

Table 3-1 Change in Land Classification by Alternative

<b><u>Alternative 1 (Maximum Conservation)</u></b>	<b><u>Acres</u></b>	<b><u>%of Land</u></b>	<b><u>+/- Acres</u></b>	<b><u>% +/- Change</u></b>
Total Land and Water	37,631.3			
Total Water	28,298.6			
Restricted Water	76.3			
Open Recreation Water	28,222.2			
Total Land	9,332.8			
High Density Recreation	1,018.5	11%	-365.8	-4%
Low Density Recreation	186.6	2%	186.6	2%
Environmentally Sensitive Area	7,366.0	79%	5,308.1	57%
Project Operations	339.3	4%	-39.2	0%
			-	
Wildlife Management	289.0	3%	5,072.3	-54%
Vegetative Management	133.2	1%	133.2	1%
Mitigation	0	0.0%	0	0.0%

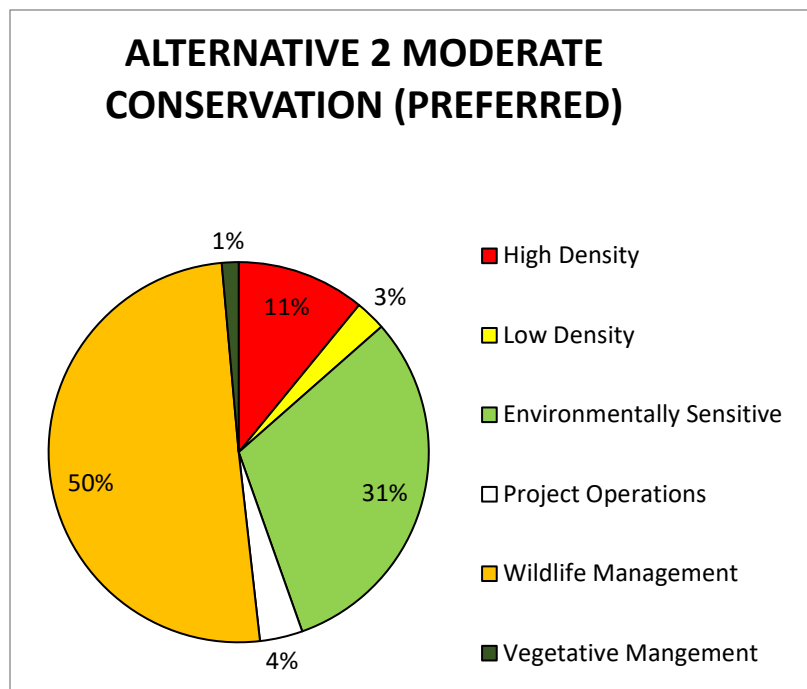
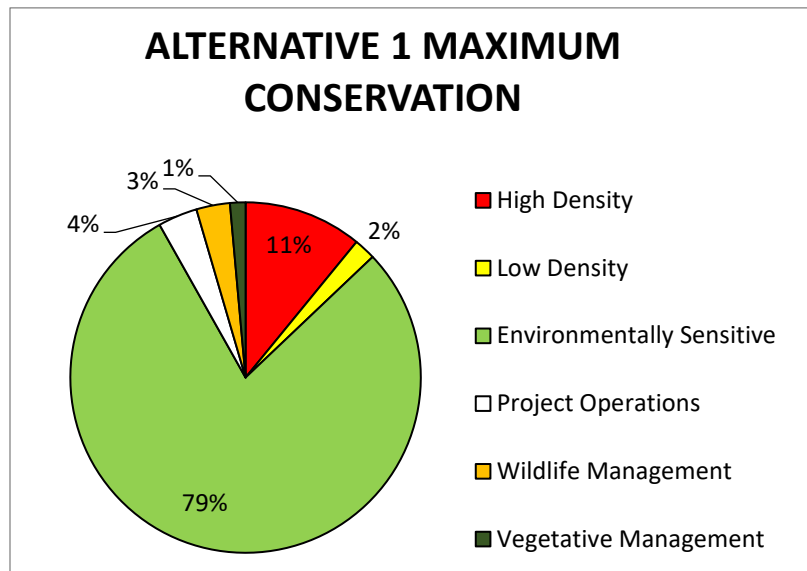
<b><u>Alternative 2 (Preferred - Moderate Conservation)</u></b>	<b><u>Acres</u></b>	<b><u>%of Land</u></b>	<b><u>+/- Acres</u></b>	<b><u>% +/- Change</u></b>
Total Land and Water	37,631.3			
Total Water	28,298.6			
Restricted Water	76.3			
Open Recreation Water	28,222.2			
Land	9,332.8			
High Density	1,018.5	11%	-365.8	-4%
Low Density	243.6	3%	243.6	3%
Environmentally Sensitive	2,898.1	31%	840.2	9%
Project Operations	339.3	4%	-39.2.0	0%
Wildlife Management	4,700.0	50%	-661.3	-7%
Vegetative Management	133.2	1%	133.2	1%

<b><u>Alternative 3 (No Action)</u></b>	<b><u>Acres</u></b>	<b><u>% of Land</u></b>
Total land and Water	37,631.3	
Total Water	28,298.6	
Restricted Water	76.3	
Open Recreation Water	28,222.2	
Land	9,332.8	
High Density Recreation	1,384.3	15%
Low Density Recreation	0.0	0%
Environmentally Sensitive	2,058.0	22%
Project Operations	378.5	4%
Wildlife Management	5,361.3	57%
Vegetative Management	0.0	0%
No Allocation	150.6	2%
Mitigation	0.0	0%

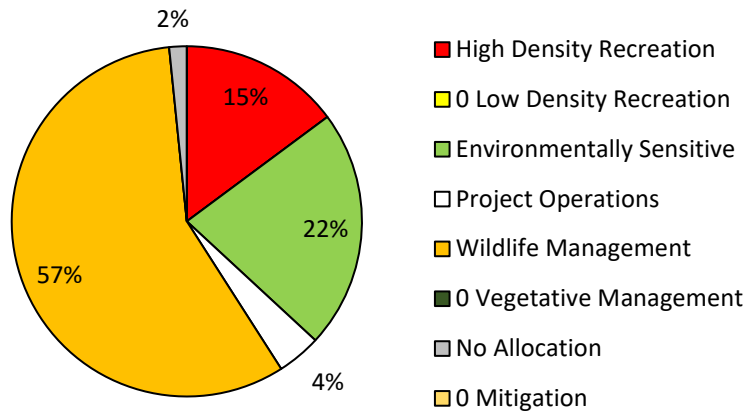


<b><u>Alternative 4 (Minimum Conservation)</u></b>	<b><u>Acres</u></b>	<b><u>%of Land</u></b>	<b><u>+/- Acres</u></b>	<b><u>% +/- Change</u></b>
Total Land and Water	37,631.3			
Total Water	28,298.6			
Restricted Water	76.3			
Open Recreation Water	28,222.2			
Land	9,332.8			
High Density	1,054.0	11%	-330.4	-4%
Low Density	663.5	7%	663.5	7%
Environmentally Sensitive	2,729.0	29%	671.1	7%
Project Operations	339.3	4%	-39.2	0%
Wildlife Management	4,413.7	47%	-947.6	-10%
Vegetative Management	133.2	1%	133.2	1%

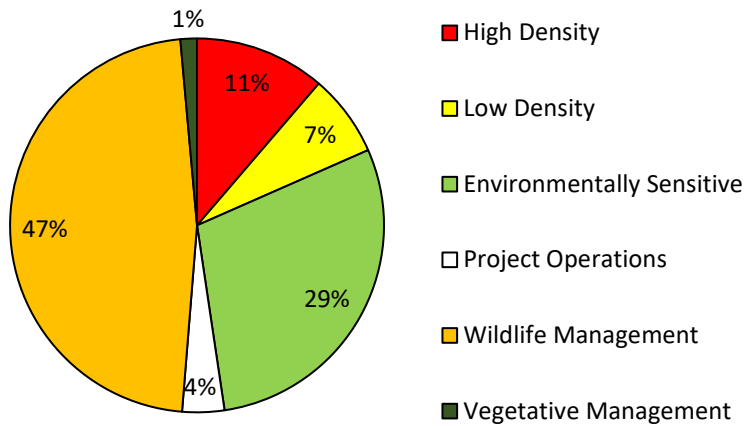
Figure 3-1 Percentage of Land Classifications for Each Alternative.



### ALTERNATIVE 3 NO ACTION (1974 PLAN)



### ALTERNATIVE 4 MINIMUM CONSERVATION



#### 3.1 Maximum Conservation (Alternative 1)

Alternative 1, compared to the No Action, would reduce High Density Recreation lands from 1384.3 acres to 1018.5 acres (15% of total land area to 11%), classify 7366 acres (79%) as Environmentally Sensitive Areas, reduce Project Operations acreage from 378.5 to 339.3, and reduce Wildlife Management lands from 5361.3 acres to 289 acres, a reduction of 54%. Vegetative Management lands were changed from 0% in the No Action alternative to 133.2 acres (1%). Existing permitted shoreline uses would be grandfathered, but there would be no new shoreline use permits issued.

This alternative would create more protected lands than all other alternatives, as evidenced by the 7,366 acres (79% of total shoreline) reclassified as Environmentally Sensitive lands.

Table 3-2 Land Classification Changes from No Action to Alternative 1

<u>No Action</u>	<u>Converted to</u>	<u>Preferred</u>	<u>Acres</u>	<u>% from No Action</u>
No Allocation	Converted to	Low Density Recreation	12.3	8.2%
		Environmentally Sensitive	132.2	87.8%
		High Density Recreation	2.5	1.6%
		Wildlife Management	0.0	0.0%
		Vegetative Management	0.0	0.0%
		Project Operations	3.6	2.4%
WILDLIFE MANAGEMENT	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	5,358.2	99.9%
		High Density Recreation	3.1	0.1%
		Wildlife Management	0.0	0.0%
		Vegetative Management	0.0	0.0%
		Project Operations	0.0	0.0%
ENVIRONMENTALLY SENSITIVE	Converted to	Low Density Recreation	71.8	3.5%
		Environmentally Sensitive	1,398.2	67.9%
		High Density Recreation	259.2	12.6%
		Wildlife Management	181.5	8.8%
		Vegetative Management	130.9	6.4%
		Project Operations	16.3	0.8%
HIGH DENSITY RECREATION	Converted to	Low Density Recreation	102.5	7.4%
		Environmentally Sensitive	443.2	32.0%
		High Density Recreation	680.4	49.2%
		Wildlife Management	107.5	7.8%
		Vegetative Management	2.4	0.2%
		Project Operations	48.3	3.5%
PROJECT OPERATIONS	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	34.1	9.0%
		High Density Recreation	73.4	19.4%
		Wildlife Management	0.00	0.0%
		Vegetative Management	0.0	0.0%
		Project Operations	271.1	71.6%
		Total=	9,332.7	

### 3.2 Moderate Conservation- (Alternative 2, Preferred)

Under Alternative 2, the land classifications would be revised to reflect current management practices and responses to agency and public comments received during the scoping phase. Changes included reclassifying undeveloped High Density land classifications (i.e., future/closed Corps parks) to other land classifications; reclassifying undeveloped Low Density land to Wildlife Management, Project Operations, or Environmentally Sensitive Area; and reclassifying lands that contained active shoreline use permits to Low Density.

Alternative 2 proposes 1,018.5 acres in High Density recreation, representing a 365.8 acre decrease from the No Action Alternative. Low Density lands total 243.6 acres, representing an increase of 243.6 acres from the No Action Alternative. Environmentally Sensitive lands are increased by 840.2 acres, to 2,898.1 acres, and Wildlife Management is reduced by 661.3 acres to 4,700 acres. There is a gain of 133.7 acres in the Vegetative Management lands classification, primarily due to allocating 150.6 acres of unallocated land in the No Action Alternative to this and Environmentally Sensitive lands. Table 3-2 provides a comparison of alternatives in relation to Alternative 2.

Table 3-3 Land Classification Changes from No Action to Alternative 2

<u>No Action</u>	<u>Converted to</u>	<u>Preferred</u>	<u>Acres</u>	<u>% from No Action</u>
No Allocation	Converted to	Low Density Recreation	12.3	8.2%
		Environmentally Sensitive	92.0	61.1%
		High Density Recreation	2.5	1.6%
		Wildlife Management	40.2	26.7%
		Vegetative Management	0.0	0.0%
		Project Operations	3.6	2.4%
WILDLIFE MANAGEMENT	Converted to	Low Density Recreation	57.0	1.1%
		Environmentally Sensitive	1,110.0	20.7%
		High Density Recreation	3.1	0.1%
		Wildlife Management	4,191.2	78.2%
		Vegetative Management	0.0	0.0%
		Project Operations	0.0	0.0%
ENVIRONMENTALLY SENSITIVE	Converted to	Low Density Recreation	71.8	3.5%
		Environmentally Sensitive	1,398.2	67.9%
		High Density Recreation	259.2	12.6%
		Wildlife Management	181.5	8.8%
		Vegetative Management	130.9	6.4%
		Project Operations	16.3	0.8%
HIGH DENSITY RECREATION	Converted to	Low Density Recreation	102.5	7.4%
		Environmentally Sensitive	263.8	19.1%
		High Density Recreation	680.4	49.2%
		Wildlife Management	287.0	20.7%
		Vegetative Management	2.4	0.2%
		Project Operations	48.3	3.5%
PROJECT OPERATIONS	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	34.1	9.0%
		High Density Recreation	73.4	19.4%
		Wildlife Management	0.01	0.0%
		Vegetative Management	0.0	0.0%
		Project Operations	271.1	71.6%
		Total=	9,332.7	

### 3.3 No Action (Alternative 3)

The No Action Alternative land classification, which is based on the 1964 master plan, does not accurately reflect the land use activities or resource management of the lake. In addition, this alternative does not address resource management laws, policies, and regulations that were implemented after the 1964 Millwood Lake Master Plan.

Operation and management of Millwood Lake would continue as outlined in the current Master Plan Update, which designates 1,384.3 acres as High Density recreation and 0 acres as Low Density Recreation. There are 2,058 acres classified as Environmentally Sensitive areas, 378.5 acres as Project Operations, 5,361.3 acres as Wildlife Management, 0 acres in the Vegetative Management land classification, and 150.6 acres that currently have no allocation.

High Density recreation refers to lands developed for intensive recreational activities for the visiting public including day use areas and/or campgrounds. These could include areas for concessions (marinas, commercial concessions, etc.), and quasi-public development.

Low Density recreation lands have minimal development or infrastructure that supports a passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, resorts, etc.).

Environmentally Sensitive areas include those lands where scientific, ecological, cultural or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act or applicable State statutes. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use facilities is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These restoration areas are typically distinct parcels located within another, and perhaps larger, land classification area.

The Project Operations category includes those lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

Wildlife Management lands are designated for stewardship of fish and wildlife resources. Vegetative management lands are designated for stewardship of forest, prairie, and other native vegetative cover.

### 3.4 Minimum Conservation (Alternative 4)

Alternative 4 would classify more lands that contained roads, utility lines, and shoreline use permits to a Low Density land classification. Many future Corps parks would be reclassified from High Density to predominantly Low Density land classification.

This alternative would allow additional Low Density development above the amount proposed under Alternative 2, mostly due to conversion of Wildlife Management acres to Low Density classification. High Density lands would be increased by 36 acres as compared to Alternative 2, resulting in 1,054 acres being classified as High Density. Low Density lands would be increased by 390 acres, which increases that acreage to 663.5 acres. The increase in Low Density as compared to Alternative 2 would primarily come from a reduction in land classified as Environmentally Sensitive (decreased by 169 acres to 2,729 acres), and as Wildlife Management (decreased by 286 to 4,414 acres).



Table 3-4 Land Classification Changes from No Action to Alternative 4

<u>No Action</u>	<u>Converted to</u>	<u>Preferred</u>	<u>Acres</u>	<u>% from No Action</u>
No Allocation	Converted to	Low Density Recreation	41.7	27.7%
		Environmentally Sensitive	68.2	45.3%
		High Density Recreation	2.5	1.6%
		Wildlife Management	34.7	23.0%
		Vegetative Management	0.0	0.0%
		Project Operations	3.6	2.4%
WILDLIFE MANAGEMENT	Converted to	Low Density Recreation	157.0	2.9%
		Environmentally Sensitive	1,110.0	20.7%
		High Density Recreation	38.5	0.7%
		Wildlife Management	4,055.8	75.6%
		Vegetative Management	0.0	0.0%
		Project Operations	0.0	0.0%
ENVIRONMENTALLY SENSITIVE	Converted to	Low Density Recreation	142.0	6.9%
		Environmentally Sensitive	1,328.0	64.5%
		High Density Recreation	259.2	12.6%
		Wildlife Management	181.5	8.8%
		Vegetative Management	130.9	6.4%
		Project Operations	16.3	0.8%
HIGH DENSITY RECREATION	Converted to	Low Density Recreation	322.9	23.3%
		Environmentally Sensitive	188.7	13.6%
		High Density Recreation	680.4	49.2%
		Wildlife Management	141.7	10.2%
		Vegetative Management	2.4	0.2%
		Project Operations	48.3	3.5%
PROJECT OPERATIONS	Converted to	Low Density Recreation	0.01	0.0%
		Environmentally Sensitive	34.1	9.0%
		High Density Recreation	73.4	19.4%
		Wildlife Management	0.00	0.0%
		Vegetative Management	0.0	0.0%
		Project Operations	271.1	71.6%
		Total=	9,332.7	

Table 3-5 Comparison of Alternatives and Change Compared to Alternative 3

Land Classification	Alternative 1 – Maximum Conservation		Alternative 2 – Moderate Conservation		Alternative 3 – No Action		Alternative 4 – Minimum Conservation	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
High Density	1,018.5	11	1,018.5	11	1,384.3	15	1,054	11
Low Density	186.6	2	243.6	3	0	0	663.5	7
Environmentally Sensitive	7,366	79	2,898.1	31	2,058	22	2,729	29
Project Operations	339.3	4	339.3	4	378.5	4	339.3	4
Wildlife Management	289	3	4,700	50	5,361.3	57	4,413.7	28
Not Allocated	0	0	0	0	150.6	2	0	
<i>Change compared to Alternative 3</i>			<i>Decrease</i>	<i>Increase</i>			<i>No Change</i>	

## 4. AFFECTED ENVIRONMENT

### 4.1 Project Setting

Millwood Lake is a reservoir created by Millwood Dam at the junction of the Saline and Little River (NM 16 on Little River), which is located approximately nine miles east of Ashdown, Arkansas. The Little River, a tributary of the Red River, has a total length of 217 miles, with 130 miles in southeastern Oklahoma and 87 miles in southwestern Arkansas. The drainage basin of the river totals 4204 square miles, with 2204 square miles in Oklahoma and 2036 square miles in Arkansas. The lake is located in southwest Arkansas, primarily in Sevier County, but is bordered by Little River, Hempstead and Howard counties (Figure 2-1). A more detailed description of the project location and area is provided in the following sub-sections.

### 4.2 Climate

Climate within the Millwood Lake watershed is temperate, with summer extremes lasting for longer periods throughout southwest Arkansas, and winter temperatures are typically mild. Extremes may vary from lows around 22°F in the winter months to highs above 100°F during the summer. Extreme temperatures may occur for short periods of time, at any location within the watershed. Heavy rainfall events are common. Average annual rainfall over the watershed varies from 50 to 52 inches. Monthly rainfall varies from 3.5 inches in the summer months to 4 to 5 inches in the winter and spring. Snowfall each year averages less than an inch during the winter.

Climate change is an area of concern due to the potential for effects on many aspects of the environment, especially those related to water resources. The U.S. Global Change Research Program (USGCRP) summarized information regarding climate change and its potential effects in regional assessments (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>). In the Midwest, which extends from Minnesota to Missouri, extreme events such as heat waves, droughts and heavy rainfall events are projected to occur more frequently. Should these events become significant enough to impact the operation of Millwood Lake, the Master Plan and associated documents (i.e., Operations Management Plan and Shoreline Management Plan) would

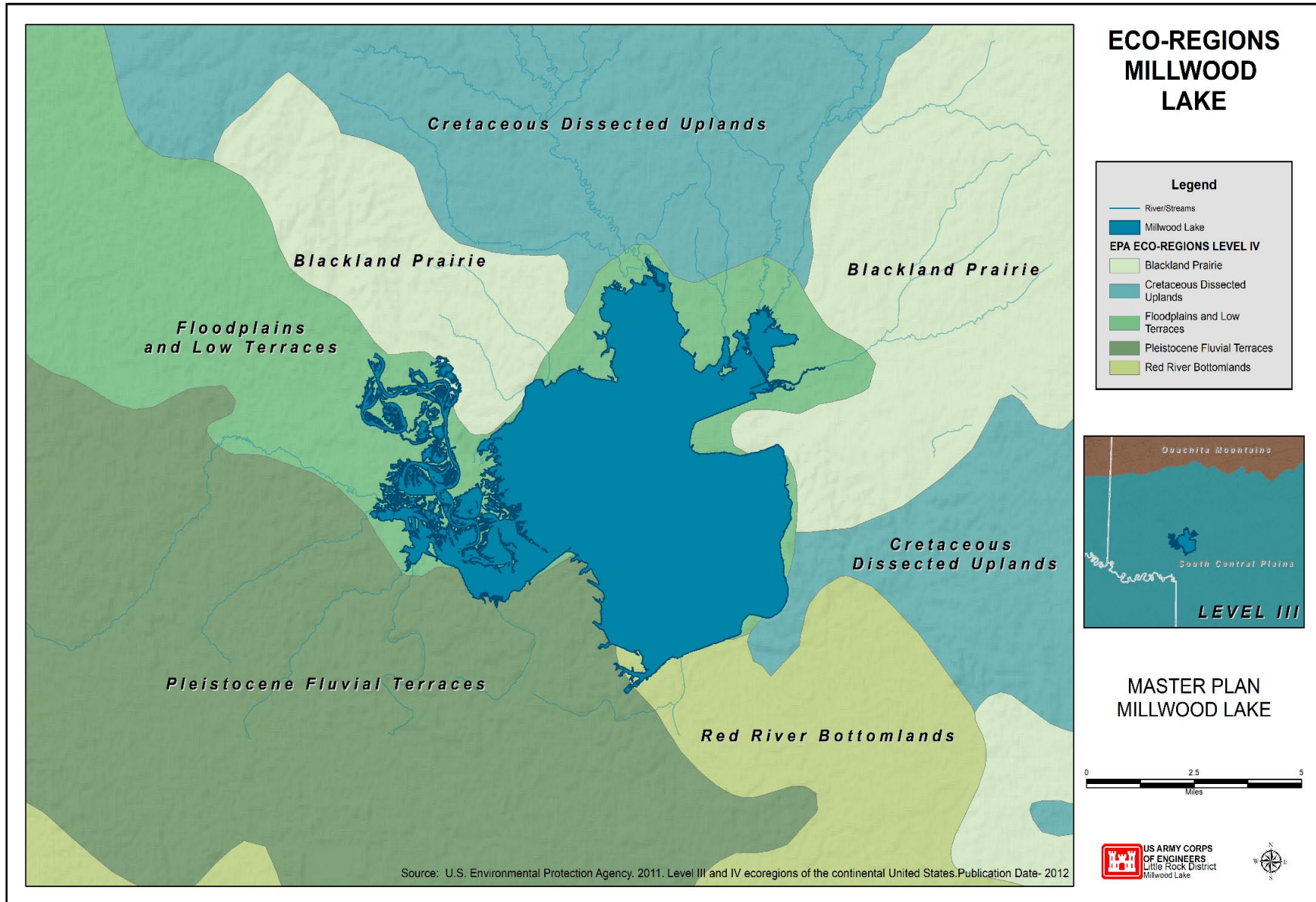
be reviewed and revised, if necessary.

#### 4.3 Topography, Geology, and Soils

The topography in the upper northern watershed of Millwood Lake includes steep inclines typical of the Ouachita Mountains. This portion of the watershed has a rugged topography, with average relief of several hundred feet and some areas that exceed 1700 feet in elevation. The southern portion of the watershed around Millwood Lake lies within The Gulf Coastal Plain, which is an area of low relief, seldom exceeding 100 feet in elevation, and consists of gently rolling to hilly terrain.

The Ouachita Mountain Geologic Province is underlain mainly by Paleozoic sedimentary rocks composed mainly of shale, chert, sandstone, conglomerates, novaculite and volcanic tuff. The Stanley Shale is the most widespread formation in the Ouachita Mountains. The oldest rock forms occur in the northern portion of the province, and consist of Ordovician Polk Creek Shale, Silurian Missouri Mountain Shale, and Blaylock Sandstone. The Devonian Arkansas Novaculite is also exposed in this area of the watershed. In the southern Ouachita Mountains, the Jackfork Sandstone occurs, primarily in major mountain ridges. The geology of the Gulf Coastal Plain in the lower watershed generally consists of unconsolidated to semi-consolidated deposits of Cretaceous age sand, clay, marl, and gravel overlain by Quaternary terrace and alluvial deposits. Surface materials are generally unconsolidated top semi-consolidated sand and clay. Figures 4-1 and 4-2 depict ecoregion and geological formations located in the Millwood Lake area.

Figure 4-1 Ecoregions Bordering Millwood Lake





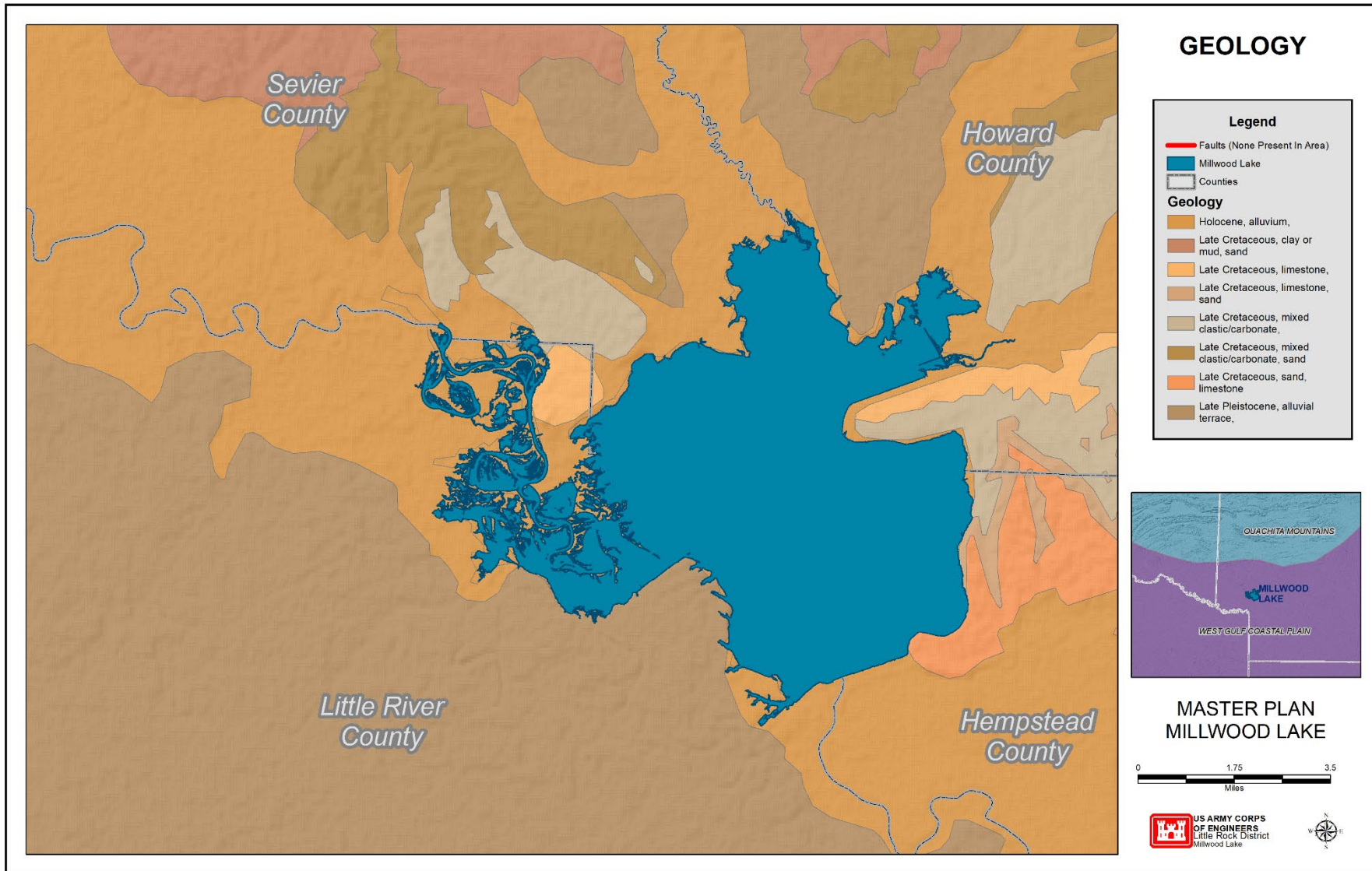


Figure 4-2 Geology of Millwood Lake Watershed

The major soil groups in the Ouachita Mountains portion of the Millwood Lake watershed are Carnasaw-Clebit-Sherless and Yanush-Avant-Bigfork. These soils are deep and tend to be gravelly and/or stony. The major soil groups of the Gulf Coastal Plain in the southern watershed include clays, silt loams and fine sandy silt loams. These soils are usually very deep. Alluvial soils occur in the floodplains along the Little River, and the other major tributaries, including the Rolling Fork, lower Cossatot, Saline River and Mine Creek. Major soil groups associated with the Blackland Prairie are also present in the lower watershed.

Soil surveys as published by the Natural Resource Conservation Service (NRCS) are available for all the counties located in the Millwood Lake watershed. These could be utilized for developing specific resource management plans for the Operational Management Plan.

Soil conservation and management are major considerations when planning natural resource and recreation management practices. While soil movement is influenced by climate, soil type, and topography, which are uncontrollable, it can also be negatively affected by compaction, modification of vegetative cover, and very high lake pool elevations which increase wave action and inundation of unprotected shoreline.

## 4.4 Aquatic Environment

### 4.4.1 Hydrology and Groundwater

Millwood Lake is located on the Little River and was formed by the construction of the Millwood Dam at mile 16 in Hempstead and Little River Counties, Arkansas. Dam construction began in 1961 and was completed in 1966. The elevation of the top of the conservation pool is 259.2 feet NGVD29 with the flood pool being at 287 feet NGVD29. The conservation pool top area is approximately 29,200 surface acres and the flood pool top area is approximately 92,500 surface acres. The shoreline length of the design conservation pool is approximately 78 miles. Millwood Lake is located within the Little River Drainage Basin, which drains approximately 4,114 square miles in southwest Arkansas and southeast Oklahoma. Millwood Lake has an average depth of 9 feet. The total water storage capacity of Millwood Lake is 2,623,200 acre-feet, with 1,854,900 acre-feet of flood control storage, 204,970 acre-feet of conservation storage, and 51,710 acre-feet of inactive storage.

Most ground water withdrawn from water wells occurs in the Quaternary age alluvium associated with the Red River and its tributaries, the Nacatoch Sand the Ozan Formation, the Tokio Formation and the Trinity Group, all of Cretaceous age. All but the Ozan aquifer have been or are being used as a significant source of water supply in the southern watershed of the Millwood Lake area, with the Tokio Formation aquifer being used most often.

### 4.4.2 Water Quality

Overall surface water quality in the Millwood Lake area is good and the lake has been designated as suitable for primary and secondary contact, municipal, industrial and agricultural water supply by the Arkansas Department of Energy and Environment (ADEE). The waters of the Arkansas portion of the Little River watershed have all been designated by the ADEE for fisheries, primary and secondary contact recreation, and domestic, agricultural, and industrial water supplies (ADEE, 2012). Millwood Lake is classified by ADEE as a Type E water body, which includes most larger lowland lakes of generally 1000 to 30,000 acres in size, located in the Delta, Gulf Coastal Plains and Arkansas River Valley ecoregions. Average depth, in Type E lakes, is usually less than 10

feet. The watersheds of Type E lakes contain a mixture of row crop agriculture, confined animal operations, pastureland and some forestlands.

The Environmental Quality Branch of ADEE have been conducting quarterly water chemistry profiles on Millwood Lake at two locations, one in the upper lake and one near the dam, since 2011. In addition to the chemical analyses, field data, including dissolved oxygen, temperature, and pH were collected. The data reflect the nature of the watershed by reflecting elevated turbidity and chlorophyll A at certain times during the years. Sedimentation and nutrient influx from the feeder streams are both major issues for water quality in the lake. Wave action due to wind and boating activity resuspends bottom sediments from this shallow lake, creating turbidity in the water column. Turbid water absorbs more sunlight, which elevates water temperatures, and excess nutrients promote algae and aquatic vegetation growth.

#### 4.4.3 Fish Species and Habitat

The impoundment of the Little River and other tributary streams and rivers which form Millwood Lake and other watershed lakes, resulted in changes in the composition of the fish populations. Fish population dynamics are altered, through impoundment, by favoring the lentic (static water) lake species and their habitats, over the lotic (flowing water) or riverine species. Arkansas Game and Fish Commission (AGFC) is the agency primarily responsible for managing the fishery and through their efforts, a variety of fish species are well-established in the lake. Sport fish species currently found include, largemouth bass, spotted bass, white bass, striped bass, flathead catfish, channel catfish, white crappie, black crappie, and various species of sunfish. Due to the quality and diversity of the fishery, Millwood Lake serves as a national fishing destination, hosting many bass tournaments and fishing derbies annually.

Millwood Lake was first impounded in 1966 and most of the standing timber was retained after the impoundment. Since impoundment, the standing timber that was submerged provides structure and forage habitat for fish. Several boating lanes have been established since impoundment, which provides fishermen access to the standing timber habitat.

### 4.5 Terrestrial Resources

#### 4.5.1 Wildlife

White-tailed deer is the most common big game animals found and hunted in the Millwood Lake area. Wild turkey, although present, are rarely seen in the area. Black bears have been translocated into Felsenthal National Wildlife Refuge, located southeast of Millwood Lake, so occasional bear sightings may become common in the area. American alligator has also increased in numbers in and around Millwood Lake and provide hunters with a permitted hunting season. The principal small game species found in the open upland areas include bobwhite quail, cottontail rabbit, and mourning dove. Gray and fox squirrels are common in upland wooded areas and are also popular for sportsmen. Furbearing animals found in the Millwood Lake area include coyote, red fox, gray fox, otter, mink, muskrat, beaver, bobcat, and raccoon. Habitat management that includes wildlife food plot plantings, mowing, soil disturbance, removal of exotic species and application of prescribed fire provide benefit to these populations.

Birding enthusiasts are provided an excellent opportunity for viewing in the Millwood Lake area. Of the over 400 birds on the state list, 331 have been recorded around Millwood Lake. A wide variety of species of conservation concern breed here including, Hooded Merganser, Osprey, Red-

headed Woodpecker, Brown-headed Nuthatch, Prothonotary Warbler, and Painted Bunting. The lake is especially well known for its water birds, Anhinga, Tricolored Heron, Black-Crowned Night-Heron, Yellow-Crowned Night-Heron, White Ibis, Wood Stork, Purple Gallinule, and Common Moorhen. Thousands of American White Pelicans, Franklin's Gulls, and Tree Swallows forage here during migration. Other species identified here, include all three Jaegers, Black-Headed Gull, Black-Legged Kittiwake, Bridled Tern, Couch's Kingbird, Cave Swallow, Rock Wren, Northern Wheatear, and Snow Bunting. Canada geese, gadwall, American Wigeon, Mallards, Blue and Green-Winged Teal, Shoveler, Pintail, Ring-Necked Ducks, Lesser Scaup, Common Goldeneye and Ruddy Ducks are all common migratory waterfowl species visiting Millwood Lake. These duck species are sometimes present in large numbers, due to the shallow water and ample food sources around the lake shoreline.

#### 4.5.2 Vegetation

The Gulf Coastal Ecoregion around Millwood Lake is characterized by three sub-ecoregion types. Flood plains and low terraces lie adjacent to the lake on the north, while the western adjacent watershed is characterized by blackland prairie and cretaceous dissected uplands. The adjacent watershed on the east side of the lake is primarily blackland prairie. Vegetation types within these sub-regions include forested wetlands and pasture lands north of the lake, some oak-hickory-pine forests interspersed with pasture lands in the cretaceous dissected uplands west of the lake, and the black land prairie sub-region east of the lake being dominated by hay lands and pasture lands. Some remnants of natural prairie remain in this area. USACE conducts a prescribed fire program to help to maintain these specialized vegetative ecosystems in the Millwood Lake area. Along the rivers, streams, and lake shores the riparian habitats are characterized by wetland hardwood species such as oak, sweet gum, cypress, elm, birch, ash and cottonwood. Pockets of invasive aquatic plant species are common in inlets and coves around the lake. Periodic drawdowns of the lake have been employed to aid in control of these plant species, as well as use of biological control measures.

#### 4.6 Wetlands

Wetlands are complex habitats that are transitional from dry land to open water, and they have soil, water, and plant components. Wetlands are defined as those areas inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Many common species of waterfowl, fish, birds, mammals, and amphibians also live in wetlands during certain stages of their lives.

Millwood Lake wetland areas are classified as lacustrine (open-water approximately 28,300 acres), and palustrine (standing dead timber and vegetated shorelines). Palustrine wetlands include freshwater ponds (included in lacustrine acres), fresh water emergent (approx. 22 acres), and shoreline wetlands, which include a mixture of scrub/shrub (6 meters or less in height) or forested wetland species of greater than 6 meters in height. These forested/shrub type wetlands occupy approximately 4,638 acres in the project area. Common woody wetland species typically include buttonbush, willow, green ash, hackberry, elm, willow oak, water oak, overcup oak, sweetgum, and river birch. Some locations may have cypress as well. Palustrine forested/shrub wetlands also occur in the feeder streams' floodplains and are called riverine wetlands.



## 4.7 Threatened and Endangered Species

There are many species in the Gulf Coastal Ecoregion that are considered either threatened, endangered, or state species of concern. Species become listed for a variety of reasons including over-hunting, over-fishing, and habitat loss as a result of human development and pollution; of these, habitat loss is the main contributor that imperils most species. A threatened species is one that is likely to become endangered within the foreseeable future. An endangered species is one in danger of extinction, throughout all or a significant portion of its range. The bald eagle (*Haliaeetus leucocephalus*) is common during the winter months around Millwood Lake. In addition, several bald eagle nests are located around the lake. Although the bald eagle was delisted by USFWS in 2007 due to recovery of the species, both the bald and golden eagles are still protected in accordance with the Bald and Golden Eagle Protection Act.

Table 4-1 lists species known to occur on project lands as reported from the U.S. Fish and Wildlife Service's federally classified status list of species and the Arkansas Natural Heritage data set.

Table 4-1 Threatened, Endangered, and Species of Concern

Common Name	Scientific Name	Status
Piping Plover	<i>Charadrius melodus</i>	Threatened
Red Knot	<i>Calidriou carnutus rufa</i>	Threatened
Eastern Black Rail	<i>Laterallus jamaicensis</i>	Threatened
Ouachita Rock Pocketbook	<i>Arkansia wheeleri</i>	Endangered
Rabbits Foot	<i>Quadrula cylindrica</i>	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Protected
Source: U.S. Fish and Wildlife Service		

ANHC Data obtained 2020– species located on or intersect corps property				
Scientific name	Common Name	State Status	Global Ranking	State Ranking
<i>Atractosteus spatula</i>	Alligator Gar	INV	G3G4	S2
<i>Haliaeetus leucocephalus</i>	American Bald Eagle	INV	G5	S3B, S4N
<i>Liodytes rigida</i>	Glossy Swampsnake	INV	G5	S3
<i>Procambarus regalis</i>	Regal Burrowing Crayfish	INV	G2G3	S2
<i>Microstylum morosum</i>	Giant Prairie Robber Fly	INV	G3G4	S1
<i>Gallinula galeata</i> ,	Common Gallinule	INV	G5	S2B
<i>Porphyrio martinicus</i>	Purple Gallinule	INV	G5	S1B
<i>Fundulus blairae</i> ,	Lowland Topminnow	INV	G4	S2
<i>Hyla avivoca</i>	Bird-voiced Treefrog	INV	G5	S3
<i>Pleurobema riddellii</i>	Louisiana Pigtoe	INV	G1G2	S1
<i>Myotis austroriparius</i>	Southeastern Bat	INV	G4	S3
<i>Amorpha paniculata</i> ,	Panicled Indigo-bush	ST	G2G3	S1
<i>Spiranthes odorata</i>	Fragrant Ladies' Tresses	INV	G5	S1
<i>Echinodorus berteroi</i>	Upright Burhead	INV	G5	S1S3

<i>Saratoga Landing Blackland Prairie</i>	Western Gulf Coastal Plain Northern Calcareous Prairie	INV	GNR	S2
<i>White Cliffs Natural Area</i>	<i>Juniperus ashei</i> Dry Chalk Outcrop Woodland	INV	G1	SNR
<i>Spiranthes odorata</i>	Fragrant Ladies'-tresses	INV	G5	S1
<i>Pyrrhopappus pauciflorus</i>	Few-flower False Dandelion	INV	G5	S1S2
<i>Penstemon cobaea</i>	Showy Beardtongue	INV	G4	S3

E = Endangered; S2: Imperiled: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the nation or state (1,000 to 3,000)-typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000); S3: Vulnerable: Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals; G3: Vulnerable: Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals.

#### 4.7.1 Invasive Species

In accordance with Executive Order (EO) 13112, an invasive species means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species can be microbes, plants, or animals that are non-native to an ecosystem. In contrast, exotic species, as defined by EO 11987, include all plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States. Invasive species can take over and out-compete native species by consuming their food, taking over their territory, and altering the ecosystem in ways that harm native species. Invasive species can be accidentally transported, or they can be deliberately introduced because they are thought to be helpful in some way. Invasive species cost local, state, and federal agencies billions of dollars every year. The Millwood Project is being impacted from the spread of invasive species. Locally, the project office works with its partners, AGFC, University of Arkansas Extension Services and United States Department of Agriculture, to help stop the spread of these species. Terrestrial invasive species include feral hogs (*Sus scrofa*), sericea lespedeza (*Lespedeza cuneata*), Japanese honeysuckle (*Lonicera japonica*), English ivy (*Hedera helix*), Trifoliate orange (*Citrus trifoliata*), Pyracantha, Callery pear (*Pyrus calleryana*), Privet (*Ligustrum*), Bull thistle (*Cirsium vulgare*), and the emerald ash borer (*Agrilus planipennis*). Aquatic invasive species in Millwood Lake include Hydrilla, Alligator Weed, and the recently discovered Giant Salvinia. Project rangers post signage in all the recreation areas to communicate the dangers of spreading invasive species on project lands and waters. Rangers also place emerald ash borer traps on project lands to monitor any infestations of this species.

## 4.8 Archaeological and Historic Resources

### 4.8.1 Historical Sites

Cottonshed Landing, the one historic site on project land, contains no known remains of structures or other artifacts, so the site is not subject to vandalism or accidental destruction. A sign identifying the site and briefly explaining its significance will be erected, in the public-use areas.

### 4.8.2 Archaeological Sites/Resources

Unlike geological sites, archeological sites are highly subject to vandalism and “pothunting,” especially in areas where there are heavy concentrations of people. Fortunately, the only known major site located in an area proposed for intensive deployment is at White Cliffs, a new area. The National Park Service and the Arkansas Archeological Survey will be encouraged to complete excavation and salvage operations prior to development of the area. National and State antiquities laws will be enforced by Park Rangers to discourage unauthorized collecting.

The Millwood Lake archeology is important not only to the immediate area, but to the entire Little River System and the Caddoan cultural area. With the exception of Paleo-Indian sites (8,000-14,000 years ago), a complete sequence of human history can be reconstructed at Millwood. Early Archaic (8,000 B.C.), Middle Archaic (3,000 B.C.), Late Archaic, Fourche Maline, Coles Creek, Gibson, and Fulton time periods are all represented. Three archaeological surveys have been conducted by the National Park Service and the Smithsonian Institution cooperation with the Corps of Engineers and the Bureau of Reclamation. These surveys located 66 sites in the Millwood Lake area. Subsequent discovery of one other important village site has brought the total to 67 documented sites. There are 33 village sites, nine of which have been excavated, and 34 campsites. Information obtained from the surveys and subsequent excavations indicates that the earliest prehistoric occupation in the Millwood Lake area is represented by a small dual-component site dating from approximately 8,000-5,000 B.C. The people who inhabited the area during this period sustained themselves principally by hunting, and to some degree, gathering. Associated with the occupations are side-notched projectile point forms of the early Archaic period. The Late Archaic period (2,000-1,000 B.C.) is represented by three village sites and is recognized by an increased dependence on horticulture. The Caddoan period was the last prehistoric occupation of Millwood. During this time, from possibly 700 A.D. to 1600 A.D., a fairly large village of primarily farming families, could be found. The versatile use of potter by the Caddo people was one of their most outstanding characteristics. The Corps of Engineers will continue to cooperate with the National Park Service and the Arkansas Archeological Survey to encourage the identification and salvage or protection of archeological sites in the project area. Park rangers will be instructed in methods of protecting archeological sites from the public. The sites on project lands are already subject to vandalism by “pothunters” and the need for protection is a reality. Tentative plans are to establish an interpretive center in the project office with a general description of archeological components, supplemented with limited artifact displays. Artifacts that have already been recovered, plus artifacts excavated in the future, will provide an ample source of material. For rotational display, Dioramas or actual reconstructions based on archeological data, would further complement these resources.

#### **Previous Investigations in the Millwood Lake Area**

The most recent broad cultural resources inventory for Millwood Lake was conducted in 1988 for the *Cultural Resources Priority Plan for the U.S. Army Engineer District, Little Rock* (Blakely and

Bennett, Jr., 1988). Table 4-2 lists previous surveys performed along the Millwood Lake. Table 4-2 includes the most up to date survey information according the records of the Arkansas Archeological Survey and the Missouri Department of Natural Resources.

Table 4-2 Previous Archeological Investigations on Millwood Lake

<b>Author</b>	<b>Title</b>	<b>Year</b>
Howard, Lynn E	Archeological Survey in Millwood Region of Arkansas	1963
Spears, Carol, Nancy Myer, Hester Davis	Watershed Summary of Archeological and Historic Resources in the White River Basins, Arkansas and Missouri.	1975
Novick, Lee and Charles Cantlry	Millwood Lake: An Archeological Survey of a Portion of Millwood Lake Shoreline.	1979
Lee, Aubra Lane	Cultural Resources Investigations at Millwood Lake, Arkansas	1986
Blakely, Jeffrey A. and W.J. Bennett Jr.	Cultural Resources Priority Plan for the U.S. Army Engineer District	1988

### **Recorded Cultural Resources in the Millwood Lake Area**

Today, the Millwood Project is home to approximately 138 identified archeological sites made up of camp sites, shelter and cave sites, rock cairns, and earthen mound sites. A vast majority of these sites were submerged by impoundment of the Little River. Less than five percent of the known sites within the lake area were investigated any further than documentation. Table 4-3 summarizes the previously recorded resources at Millwood Lake.

Table 4-3 Previously Recorded Resources at Millwood Lake

Type of Site	Number of Sites
Historic	4
Prehistoric	114
Multicomponent	20
Total	138
National Register Eligibility Status	
Not Evaluated	132
Not Eligible	5
Eligible	1

#### 4.9 Air Quality

Millwood Lake is located in the Gulf Coastal Plain ecoregion and is close to the Domtar Paper Mill in Ashdown, and the Turk Power Plant in Fulton. While both facilities discharge air quality contaminants, the air quality in the Millwood Lake area is clean with low levels of air emissions below local emission thresholds. There has been one violation of the current National Ambient Air Quality Standards (NAAQS) established by EPA. Air monitoring requirements are established by EPA and are dictated under their guidance and monitoring objectives. Monitoring sites are placed in areas believed to have higher concentration of pollutants, which generally consist of the state's larger metropolitan areas. These areas, called Metropolitan Statistical Areas (MSA's) are defined by the larger population centers and surrounding counties. Based on these guidelines, the TX-AR MSA, covering Bowie County, TX, and Little River and Miller Counties, AR, have an air quality monitoring site, with carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, small diameter particulate matter (PM<sub>2.5</sub>), and large diameter particulate matter (PM<sub>10</sub>) constituents being monitored. The PM<sub>2.5</sub> constituent was the only one exceeding EPA standards, resulting in one unhealthy day for sensitive groups in the year 2020 record. Of the 358 days of reported Air Quality Index (AQI) values, there were 270 days of good air quality and 87 days of moderate air quality for the counties comprising the TX-AR MSA of Texarkana, Arkansas and Texarkana, Texas.

#### 4.10 Socio-Economic Resources

Millwood Lake is located entirely within the state of Arkansas, and its physical area is split between four counties, Little River, Hempstead, Howard, and Sevier. The metropolitan area closest to the lake is the Texarkana, Texas (TX)-Arkansas (AR) Metropolitan Statistical Area (MSA), which is located approximately 15 to 20 miles south/southwest of the lake. The Texarkana MSA is made up of Bowie County in Texas and Miller County in Arkansas.

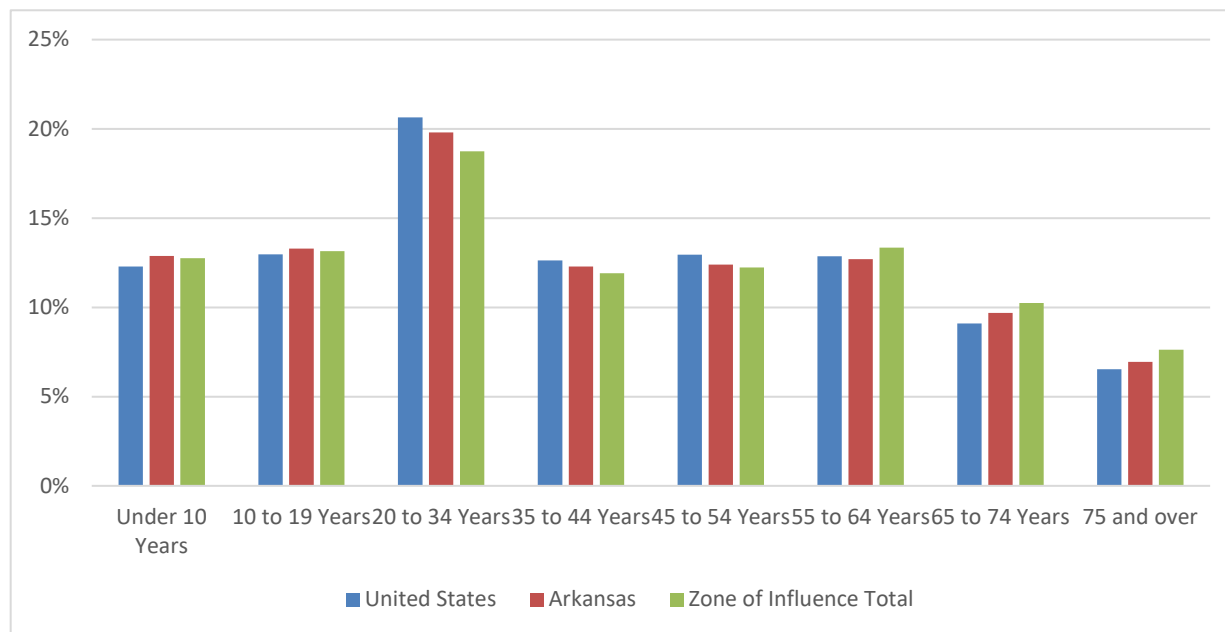
Data from the 2010 Census, the U.S. Bureau of Labor Statistics, and the 2019 American Community Survey were used to summarize socioeconomic conditions in the project area. Table 4-4 shows 2010 and 2019 population estimates, as well as the estimated annual growth rate for each county in the area. The annual growth rate in recent years (2010-2019) has been largely negative in the zone of influence. The annual growth rate in the zone of influence between 2010 and 2019 was -0.1%. During the same timeframe, the annual growth rate was 0.6% in the United States, 0.3% in Arkansas, 0.3% in Louisiana, 0.5% in Oklahoma, and 1.3% in Texas.

Table 4-4 Population Estimates and Trends

Geographical Area	2010 Population Estimate	2019 Population Estimate	Population Percent Change (2010- 2019)
United States	308,745,538	324,697,795	0.6%
Arkansas	2,915,918	2,999,370	0.3%
Louisiana	4,533,372	4,664,362	0.3%
Oklahoma	3,751,351	3,932,870	0.5%
Texas	25,145,561	28,260,856	1.3%
<b>Zone of Influence</b>	<b>1,224,263</b>	<b>1,214,373</b>	<b>-0.1%</b>
Source: U.S. Bureau of the Census, 2010 Census (2010 Estimate); U.S. Bureau of the Census, American Community Survey (2019 Estimate).			

Figure 4-3 displays the population by age group for the country, states of Arkansas, and the ZOI. In the ZOI, 13% of the population is 0 to 10 years old, another 13% is 10 to 19 years old, 19% is 20 to 34 years old, 12% is 35 to 44 years old, 12% is 45 to 54 years old, 13% is 55 to 64 years old, 10% is 65 to 74 years old, and 8% is 75 years and over. This age distribution is comparable to the state of Arkansas and the U.S.

Figure 4-3 Population Distribution by Age Group (2019)



Key income indicators (median household income and per capita income) are presented in Table 4-5. Per capita income for counties in the project area varies but is consistently lower than their respective state, often significantly. Average per capita income weighted by population for the entire ZOI was \$24,988 in 2019. By comparison, per capita income was \$34,103 in the United States, \$26,577 in Arkansas, \$27,923 in Louisiana, \$28,422 in Oklahoma, and \$31,277 in Texas.

In terms of industries, the distribution across the ZOI is similar to that of the U.S. as well as the states surrounding the project area. The largest majority of the ZOI (31%) is employed in the Management, business, science, and arts occupations, followed by 22% in Sales and office occupations, 19% in Service occupations, 17% in Production, transportation, and material moving occupations, and 12% in Natural resources, construction, and maintenance occupations. Compared to the country, the ZOI has slightly less individuals employed in Management, business, science, and arts occupations and slightly more in Production, transportation, and material moving occupations.

Table 4-5 Income and Employment

Geographical Area	Median Household Income	Per Capita Income	Civilian employed population 16 years and over	Management, business, science, and arts occupations	Service occupations	Sales and office occupations	Natural resources, construction, and maintenance occupations	Production, transportation, and material moving occupations
United States	\$62,843	\$34,103	154,842,185	59,647,283	27,489,501	33,491,626	13,713,796	20,499,979
Arkansas	\$47,597	\$26,577	1,303,490	438,892	220,282	281,025	133,382	229,909
Louisiana	\$49,469	\$27,923	2,033,758	694,364	390,254	447,126	233,659	268,355
Oklahoma	\$52,919	\$28,422	1,772,123	615,904	310,390	392,689	199,411	253,729
Texas	\$61,874	\$31,277	13,253,631	4,867,492	2,288,826	2,937,388	1,433,389	1,726,536
<b>Zone of Influence</b>	<b>NA</b>	<b>\$24,988</b>	<b>496,310</b>	<b>152,920</b>	<b>93,092</b>	<b>108,308</b>	<b>57,764</b>	<b>84,226</b>
Source: U.S. Bureau of the Census, American Community Survey (2019 Estimate)								

In counties adjacent to Millwood Lake, tourism and recreation is also an important part of local economies. Recreation at the lake has substantial impact to local economies based on surveys of visitor spending and attendance at Corps projects. Between 2005 and 2019, annual average visitation was 386,000. In 2019, roughly 215,000 people visited Millwood Lake. Though visitation was slightly down compared to previous years, visitors still spent \$7.4 million in local economies within 30 miles of the lake. This spending generated \$6.9 million in business sales revenue and supported about 74 full and part time jobs with \$2.1 million in labor income for local economies.

Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” addresses potential disproportionate human health and environmental impacts that a project may have on minority or low-income communities. Thus, the environmental effects of the Project on minority and low-income communities or Native American populations must be disclosed, and agencies must evaluate projects to ensure that they do not disproportionately impact any such community. If such impacts are identified, appropriate mitigation measures must be implemented.

To determine whether a project has a disproportionate effect on potential environmental justice communities (i.e., minority or low-income population), the demographics of an affected population within the vicinity of the Project must be considered in the context of the overall region. Guidance from the Council on Environmental Quality (CEQ) states that “minority populations should be identified where either: (1) the minority population of the affected areas



exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997).”

Table 4-6 displays Census data summarizing racial and ethnic characteristics of the ZOI. Table 4-7 displays poverty indicators for the ZOI. The purpose is to analyze whether the demographics of the affected area differ in the context of the broader region; and if so, do differences meet CEQ criteria for an Environmental Justice community. Based on the analysis, poverty and unemployment are more prevalent in the ZOI than in the states surrounding the lake as well as the United States. Further, the minority population in the ZOI is greater than that of Arkansas, Louisiana, and Oklahoma, though it does not exceed 50 percent.

Table 4-6 Population by Race and Ethnicity, 2019

Area	White alone	Black or African American alone	Hispanic or Latino (of any race)	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race alone	Two or more races
United States	61%	12%	18%	1%	5%	0%	0%	2%
Arkansas	72%	15%	7%	1%	1%	0%	0%	2%
Louisiana	59%	32%	5%	1%	2%	0%	0%	2%
Oklahoma	66%	7%	11%	7%	2%	0%	0%	7%
Texas	42%	12%	39%	0%	5%	0%	0%	2%
<b>Zone of Influence</b>	63%	26%	7%	1%	1%	0%	0%	2%
Source: U.S. Bureau of the Census, American Community Survey (2019 Estimate)								

Table 4-7 also displays the percentage of children (individuals under the age of 18) by county in the ZOI. The purpose of the data is to assess whether the project disproportionately affects the health or safety risks to children as specified by Executive Order (E.O.) 13045 - *Protection of Children from Environmental Health Risks and Safety Risks* (1997).



Table 4-7 Poverty Indicators and Number of Children (2019)

Area	Unemployment Rate	Percent of population below poverty line in last 12 months	Percent of Population Under 18 Years Old
United States	3.7%	13.4%	18.5%
Arkansas	3.5%	17.0%	23.7%
Louisiana	4.7%	19.2%	27.2%
Oklahoma	3.1%	15.7%	21.5%
Texas	3.5%	14.7%	20.9%
<b>Zone of Influence</b>	4.0%	20.3%	29.8%
Source: Bureau of Labor Statistics (Unemployment); U.S. Bureau of the Census, American Community Survey (2019 Estimate)			

#### 4.11 Recreation Resources

The recreational resources of Millwood Lake are considered to be of great importance to this Gulf Coastal region. Tourism and lake visitation are major sources of income for the counties surrounding this lake. USACE has taken advantage of the natural and scenic beauty and constructed a variety of recreational facilities around the lake. The Project offers many recreational activities such as wildlife viewing, boating, fishing, hunting, picnics, and camping, as well as hiking and biking trails. There are 12 public use areas around Millwood Lake operated by the Corps of Engineers, and four additional leased areas. Future development of parks and recreation facilities will follow the guidelines as stated in the Arkansas 2019-2023 SCORP. These criteria furnish guidelines for determining the type and number of facilities needed to satisfy the current and projected demand and also furnishes guidelines for serviceability, operation, and maintenance of facilities. Considerations for the physically handicapped will be included in the design of facilities.

For a detailed description of the recreational resources, as well as visitation data at Millwood Lake. See Chapter 2 of the Millwood Revised Master Plan.

#### 4.12 Health and Safety

Safety of project visitors and project staff are the highest priority in daily project operations. Facilities and recreational areas are routinely evaluated to ensure sites are safe for visitor use. Project staff conducts numerous water safety programs and public announcements to educate children and project visitors about ways to be safe on the lake.

Boating lanes established on the lake are kept clean for boater's safety and ease of navigation through flooded timber. Park Rangers provide visitor assistance and work with county law enforcement agencies to ensure public safety. Park Rangers and Arkansas Game and Fish personnel provide water safety and enforcement patrols on the lake as their budgets allow.

#### 4.13 Aesthetics

Management objectives include, maintaining scenic vistas, while limiting impacts that would

negatively affect aesthetics. Natural landscapes and views of undeveloped lands are an important feature that enhances the recreational experience. The perimeter lands around Millwood Lake provide a natural setting that is aesthetically pleasing as well as buffering the lake from development and negative impacts such as erosion and storm water runoff. However, there are problems in maintaining these aesthetic qualities. Project resource staff is continually investigating trespasses that include activities such as timber cutting and land destruction by unauthorized off road vehicles. In addition, litter and illegal trash dumping both on project lands and project waters are continual problems. Vandalism within recreation areas also occurs. Other concerns that impact aesthetics are demands put upon project resources for uses such as, road and utility line corridors.

## 5. ENVIRONMENTAL CONSEQUENCES

The following table summarizes the resources that are likely to be affected by each of the alternatives for an update of the Millwood Master Plan including the No Action alternative. A detailed discussion of the potential impacts of each of the alternatives follows the synopsis provided in the table.

Table 5-1 Resources Likely Affected with Implementation of Alternatives

<b>Resource Category</b>	<b>Alternative 1 Maximum Conservation</b>	<b>Alternative 2 Moderate Conservation</b>	<b>Alternative 3 No Action</b>	<b>Alternative 4 Minimum Conservation</b>
<b>Climate, Topography, Geology and Soils</b>	The Maximum Conservation Alternative is the most protective of all alternatives in terms of potential impacts on climate, topography, geology, and soils due to the classification of all low density acreage to environmentally sensitive.	The Moderate Conservation Alternative would be more protective than the No Action Alternative in terms of potential impacts on climate, topography, geology and soils due to a reduction in low density acreage.	There would be an impact, although not significant, on climate, topography and geology as a result of implementation of the No Action Alternative due to the potential for new development around the lake provided by a larger proportion of high density designated lands.	The Minimum Conservation Alternative would have fewer potential impacts on climate, topography, geology and soils than the No Action Alternative due to a reduction in low density acreage.
<b>Aquatic Environment</b>	The Maximum Conservation Alternative is similar to the Moderate Conservation Alternative in potential impacts on the hydrology and groundwater components of the aquatic environment but should be more protective of water quality due to the elimination of low density lands and the potential for new development.	The Moderate Conservation Alternative is similar to the No Action Alternative in terms of potential impacts to the hydrology and groundwater components of the aquatic environment, but water quality would be enhanced due to reduced potential for new development.	The hydrology and groundwater components of Millwood Lake would not change from the existing condition due to the implementation of the No Action Alternative. Water quality may be minimally impacted due to a greater amount of high density designated land which results in a higher risk for new development.	The Minimum Conservation Alternative would result in little to no impacts on the hydrology and groundwater components of the aquatic environment. Water quality impacts would likely be negligible under this alternative.

<b>Resource Category</b>	<b>Alternative 1 Maximum Conservation</b>	<b>Alternative 2 Moderate Conservation</b>	<b>Alternative 3 No Action</b>	<b>Alternative 4 Minimum Conservation</b>
<b>Terrestrial Resources</b>	The Maximum Conservation Alternative would have the greatest positive impact on the lakeside terrestrial resources of all the alternatives evaluated due to the elimination of low density lands and the reduction in potential new development.	Implementation of the Moderate Conservation Alternative would have a positive impact on terrestrial resources in comparison to the No Action Alternative. Due to an increase in environmentally sensitive and wildlife management lands, this would have a positive benefit to the acreage around the lake.	Under the No Action Alternative there is no modification of existing low density acres. Based on this, the potential exists for continual degradation of shoreline vegetation due to probable increased development and subsequent vegetation removal/mowing activities.	The Minimum Conservation Alternative would be similar to the Conservation Alternative, however small portion of environmentally sensitive lands would convert to low density under this alternative. This may result in minimal impacts to wildlife and vegetation due to the land conversion and potential for additional development.
<b>Wetlands</b>	The Maximum Conservation Alternative would have the greatest positive impact on the lakeside terrestrial resources of all the alternatives evaluated due to the elimination of low density lands and the reduction in potential new development.	Implementation of the Moderate Conservation Alternative would have a positive impact on terrestrial resources in comparison to the No Action Alternative. Due to an increase in environmentally sensitive and wildlife management lands, this would have a positive benefit to the acreage around the lake.	Under the No Action Alternative there is no modification of existing low density acres. Based on this, the potential exists for continual degradation of shoreline vegetation due to probable increased development and subsequent vegetation removal/mowing activities.	The Minimum Conservation Alternative would be similar to the Conservation Alternative, however small portion of environmentally sensitive lands would convert to low density under this alternative. This may result in minimal impacts to wildlife and vegetation due to the land conversion and potential for additional development.
<b>Threatened &amp; Endangered Species</b>	The Maximum Conservation Alternative could have a significant positive impact on Threatened, Endangered, Protected, or Species of State Concern, due to the fact that this alternative would eliminate all low density lands reducing the potential for future development. There would be positive effects on lakeside flora and fauna due to shoreline protection.	The Moderate Conservation Alternative would likely have no significant on any listed Threatened, Endangered, Protected, or Species of State Concern. Due to the increase in Environmentally Sensitive and Wildlife Management lands, there may be some positive benefits to any or all the listed species.	The No Action Alternative would have no significant impact on any listed Threatened, Endangered, Protected, or Species of State Concern.	The Minimum Conservation Alternative would likely have little to no impacts on any species listed Threatened, Endangered, Protected, or Species of State Concern.

<b>Resource Category</b>	<b>Alternative 1 Maximum Conservation</b>	<b>Alternative 2 Moderate Conservation</b>	<b>Alternative 3 No Action</b>	<b>Alternative 4 Minimum Conservation</b>
<b>Archaeological &amp; Historic Resources</b>	The Maximum Growth Alternative would have the highest potential to avoid and decrease impacts on cultural resource sites and historic properties compared to all the alternatives due to the reclassification of all Low Density acreage to Environmentally Sensitive lands.	Under the Moderate Conservation Alternative, due to increases in Environmentally Sensitive and Wildlife Management acreage, potential impacts on cultural resources and historic properties would be minimal.	Under the No Action Alternative, the greatest potential for effects to cultural resources and historic properties would occur in the areas classified as Low Density, High Density, and No Allocation.	Under the Limited Growth Alternative, the amount of Low Density acreage would increase. This alternative would slightly raise the potential for impacts on cultural resource sites or historic properties.
<b>Air Quality</b>	Implementation of the Maximum Conservation Alternative would have the greatest positive impact to air quality of all the evaluated alternatives due to the elimination of Low Density lands and thereby a decrease in future development	Implementation of the Moderate Conservation Alternative would result in some reduction in negative air quality impacts as compared to the No Action Alternative due to a decrease in Low Density acreage and thereby a decrease in future development.	Under the No Action Alternative, the air quality around the lake would remain the same as currently exists. There could be an increase in vehicular exhaust emissions due to localized development, and associated construction equipment. No violations of the current National Ambient Air Quality Standards (NAAQS) established by the EPA would be expected under this alternative.	Implementation of the Limited Growth Alternative would result in less potential impact to existing air quality compared to the No Action Alternative due to a decrease in Low Density acreage and thereby a decrease in future development.

<b>Resource Category</b>	<b>Alternative 1 Maximum Conservation</b>	<b>Alternative 2 Moderate Conservation</b>	<b>Alternative 3 No Action</b>	<b>Alternative 4 Minimum Conservation</b>
<b>Socio-economics</b>	The Maximum Conservation Alternative may have negative impacts on the socio-economic situation in the counties surrounding Millwood Lake due to the reclassification of all Low Density lands to Environmentally Sensitive acreage.	The Moderate Conservation Alternative would likely have minimal impact on the socio-economic situation in the counties surrounding Millwood Lake since this alternative reflects how the lake is currently managed and operated.	The No Action Alternative would likely have the most impact on the socio-economic situation in the counties surrounding Millwood Lake due to the potential for future development in the Low Density and High Density land classifications.	The Minimum Conservation could have some positive effect on the socio-economic situation in the counties surrounding Millwood Lake due to the potential for future development in the Low Density land classification.
<b>Recreation Resources</b>	Under the Maximum Conservation Alternative, areas around Millwood would receive greater protection since all Low Density lands would be reclassified as Environmentally Sensitive. This may enhance the recreational experience for wildlife viewing, hunting, fishing, and lake aesthetics.	The Moderate Conservation Alternative would reclassify shoreline acreage to reflect current uses. Implementation of this alternative would allow continued public use of the lake while sustaining the natural, cultural, and socio- economic resources of the area. Current unclassified lands would have a land classification.	Provision of recreational facilities and services would continue at Millwood Lake without an update to the Millwood Lake Master Plan. However, the master plan would not accurately reflect the current status of project facilities. Lands with no classification would remain unclassified.	The Limited Growth Alternative would have some positive recreation impact as potential opportunities would be increased, due to an increase in Low Density lands.

<b>Resource Category</b>	<b>Alternative 1 Maximum Conservation</b>	<b>Alternative 2 Moderate Conservation</b>	<b>Alternative 3 No Action</b>	<b>Alternative 4 Minimum Conservation</b>
<b>Health &amp; Safety</b>	The Maximum Conservation Alternative would most likely promote a safer lake environment, by indirectly reducing boat traffic due to the conversion of all Low Density lands to Environmentally Sensitive. Recreational boating experiences and boater satisfaction may be impacted.	The Moderate Conservation Alternative would still allow potential development opportunities, but not to the degree to cause significant boat congestion or increase water related accidents. The increase in Environmentally Sensitive and Wildlife Management areas could result in an increase in human exposure to insects and wildlife. The availability of recreational opportunities, balanced with conservation of natural environment could lead to better health, both mental and physical, of visiting populations.	The No Action Alternative would retain current land classifications, in which potential development could impact water quality. Continued development may lead to increased water traffic, with the potential for increased accidents and pollution.	Under the Minimum Conservation Alternative, access to Millwood Lake would be enhanced, with a potential for an increase in water-based recreational opportunities. Land-based recreational opportunities, such as hiking, hunting, and wildlife observation could also be slightly altered.
<b>Aesthetics</b>	Under the Maximum Conservation Alternative, the conversion of all Low Density lands to Environmentally Sensitive would enhance the unspoiled and untamed aesthetic of this landscape. This alternative would maintain the area of pristine shoreline and preserve regions of boulders, bluffs, and mature forest flora that currently dominate views.	Under the Moderate Conservation Alternative, the wide panorama of Millwood Lake and the nearby shore would continue to convey a sense of enormity of the lake, and the limited development would continue to promote the sense of a relatively pristine shoreline. The developed areas are, for the most part, shielded from the lake view, which preserves the views of those recreating on the lake.	Under the No Action Alternative, the visual characteristics surrounding the Millwood Lake landscape could potentially change due to continued development in High and Low Density land classifications.	The Minimum Conservation Alternative would allow more potential development, but not to a degree that would significantly impact the scenic beauty and/or aesthetics of the lake.

## 5.1 Climate

### 5.1.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative allows less potential development by only having 13% of the shoreline as High or Low Density lands. With 79% of the land classified as Environmentally Sensitive, the vast majority of the lake shoreline vegetation would remain unaltered. This would allow shading of the water and reduced erosion, which serve to reduce air and water temperature. The shoreline vegetation produce oxygen through photosynthesis, which improves air quality. All these factors would improve the climate around Millwood Lake.

### 5.1.2 Moderate Conservation (Alternative 2 - Proposed)

The Moderate Conservation Alternative is more protective than the No Action Alternative in terms of potential impacts on air and water temperature modification. A conversion of both High Density and Unallocated lands to Environmentally Sensitive and Vegetative Management lands would reduce the potential for development, which reduces the potential impact on climate due to vegetation removal. This reclassification would provide a better buffering effect which would result in storm water velocity reduction and act as a filtering mechanism. This would help reduce erosion and sediment deposition in the lake.

### 5.1.3 No Action (Alternative 3)

There could be some potential impact to climate as a result of implementation of the No Action alternative. Of the 9,332.8 total land acres, 1,384.3 acres are classified as High Density lands under this alternative. This potential for development could modify the vegetation component near the shoreline, allowing more sunlight penetration. Greater temperature fluctuations generally occur when woody vegetation is removed from an area. Reduced ground cover could cause an increase in sedimentation during rainfall events, which could increase the turbidity of the water, resulting in a potential for a small increase in water temperature.

### 5.1.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative would also provide some positive potential impacts on climate. While this alternative retains 1,054 acres of High Density lands and 663.5 acres of Low Density lands, 79% of the vegetated shoreline would remain unaltered, being classified as Environmentally Sensitive, Wildlife Management, or Vegetative Management lands. This reclassification would provide a shoreline buffering effect, which would result in storm water velocity reduction, act as a sediment filtering mechanism, and help cool the air and water.

## 5.2 Topography, Geology and Soils

### 5.2.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative is different from the No Action Alternative in terms of potential impacts to topography, geology and soils. There would be less impact to the existing conditions regarding these features. High Density recreation acreage would be reduced from 1,384.3 acres to 1,018.5 acres, which represents 11% of the lake shore acreage, while the Low Density acreage is only 186.6 acres (2%). The majority of shoreline acreage has been reclassified



to Environmentally Sensitive lands (79%). Under this alternative the combination of Environmentally Sensitive, Wildlife Management, and Vegetative Management lands would represent 83% of available acreage around the lake. This alternative would have significant positive effects due to reduced erosion and lake sedimentation due to vegetation retention. This additional buffer helps reduce storm water velocity and surface scour during storm events.

### 5.2.2 Moderate Conservation (Alternative 2)

The Moderate Conservation Alternative is more restrictive than the No Action Alternative in terms of potential impacts to topography, geology and soils. There would be little to no change in impacts on the existing conditions regarding these features due to the fact that this alternative reflects current lake usage patterns. High Density Recreation acreage would be reduced from the No Action Alternative (1,384.3 acres) to 1,018.5 acres. These lands would be reclassified to Environmentally Sensitive and Vegetative Management lands, which provide a vegetated lake buffer area. This vegetation helps to reduce storm water velocity and acts as a filtering mechanism. This would help reduce erosion and sediment deposition in the lake.

### 5.2.3 No Action (Alternative 3)

Soil erosion would increase due to development being allowed under this alternative. Approximately 15% of available acreage (56,348 acres) around the lake is currently classified as High Density recreation, as well as 150.6 acres of unallocated land. High Density acreage would potentially allow development of more recreational activities including campgrounds, parks, marinas, resorts and other public development infrastructure. Development results in soil disturbance, vegetation removal and transforming some pervious surfaces to impervious areas. It also promotes erosion during construction activities and increased runoff velocity after development is completed. The remaining pervious surfaces around these developed areas would become more impervious due to increased foot traffic from recreational activity.

### 5.2.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative would increase Low Density lands by 663.5 acres as compared to the No Action Alternative but would decrease High Density by 330.4 acres. This would allow potential development on the additional Low Density acreage, which could have some impact on the topography, geology and soils. The reduction in High Density recreation acreage would help minimize the potential for soil erosion due to development. The combination of High and Low Density recreation land represents only 18% of available acreage around the lake. With Environmentally Sensitive and Wildlife Management lands comprising a majority of the shoreline acreage, minimal impacts from erosion and sedimentation would result from the implementation of this alternative.

## 5.3 Aquatic Environment

### 5.3.1 Hydrology and Groundwater

#### 5.3.1.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative is likely to be more protective than the No Action Alternative in terms of potential impact on the hydrology and groundwater components of the aquatic environment. The hydrology and groundwater conditions are generally controlled by the

watershed drainage and existing geology of the area, but when 82% of the shoreline is classified as Environmentally Sensitive and Wildlife Management, rainfall would be much more likely to be absorbed, thereby replenishing the groundwater to a greater degree.

There would be little to no change in the wetland status from the existing condition due to implementation of the Maximum Conservation alternative. Most of the wetland acreage has been identified in the lower reaches of the major tributary streams, therefore the limited High Density shoreline development near the lower end of the lake, as reflected in this alternative, would have little impact to this resource.

#### *5.3.1.2 Moderate Conservation (Alternative 2)*

The Moderate Conservation Alternative is different than the No Action Alternative in terms of potential impacts to the hydrology and groundwater components of the aquatic environment. The hydrology and groundwater conditions are generally a function of the watershed drainage and existing geology of the area but having only 14% of the shoreline classified as High and Low Density lands in the Moderate Conservation Alternative, as compared to over 17% in the No Action Alternative, would enhance rainfall absorption and slow runoff velocity due to retention of Environmentally Sensitive and Wildlife Management land shoreline vegetation.

#### *5.3.1.3 No Action (Alternative 3)*

The hydrology and groundwater components of Millwood Lake would not change from the existing condition due to the implementation of a No Action Alternative. The potential for additional development under this alternative would have some effect on reducing percolation through the soil layers due to ground cover removal, and potentially increasing storm water velocity. Wetland areas are relatively limited within the High and Low Density lands portion of Millwood Lake, and are more prevalent in the shallower portions of the shoreline, so they would not undergo any significant change from existing conditions due to implementation of the No Action Alternative.

#### *5.3.1.4 Minimum Conservation (Alternative 4)*

The Minimum Conservation Alternative would have a similar impact on the hydrology and groundwater components of the aquatic environment as compared to the No Action Alternative. The High and Low Density lands comprise 18% of the shoreline in this alternative, with the remainder dominated by Environmentally Sensitive and Wildlife Management lands which enhance hydrology and groundwater conditions and function.

### *5.3.2 Water Quality*

#### *5.3.2.1 Maximum Conservation (Alternative 1)*

The Maximum Conservation Alternative would result in the greatest degree of water quality protection, as compared to the No Action Alternative. Potentially developable lands in this alternative consist of only 1,018.5 acres of High Density lands and 186.6 acres of Low Density, representing only 11% and 2% respectively, of the available shoreline acreage. The remaining 87% is classified as Environmentally Sensitive (79%), Wildlife Management (3%), Vegetative Management (1%), and Project Operations (4%). These land classifications would retain the

highest amount of vegetated shoreline and create the greatest potential for the maintenance of water quality of all evaluated alternatives.

#### *5.3.2.2 Moderate Conservation (Alternative 2)*

Implementation of the Moderate Conservation Alternative may result in positive benefits to water quality due to a reduction in High Density acreage by 365.8, as compared to the No Action Alternative. There is a corresponding major increase in Environmentally Sensitive acreage, from 2,058 acres to 2,898.1 acres, which represents a gain of 840.2 acres. These land reclassifications would serve to limit development on these lands, thereby reducing impacts to ground disturbance and subsequent increased erosion. Approximately 661 acres of Wildlife Management lands were converted to Environmentally Sensitive lands, providing more protection from vegetation modification. These factors would reduce erosion sedimentation and pollutants scoured from reduced impervious surfaces, with additional benefits of retention of more shoreline vegetation, better fishery habitat, increased water clarity and cooler water temperature conditions due to the decrease of turbidity and sediment deposition.

#### *5.3.2.3 No Action (Alternative 3)*

Lake fluctuations, associated with flood control procedures, result in change in the environment along the shoreline of the lake. Turbidity from heavy rainfall has a temporary, adverse effect on Millwood Lake. During these periods of increased runoff, urban areas and other parts of the terrain, especially those that have had the protective vegetation removed, contribute silt and other suspended particles to the tributaries. While implementation of the No Action Alternative is relatively independent of the existing watershed drainage on the lake water quality, potential continued development around the lake shoreline would exacerbate water quality issues due to potential increased erosion, localized increases in turbidity and increased sedimentation in the lake following storm events. Under the No Action Alternative, High Density recreation land classification would be 1,384.3 acres (15% of total available area), Environmentally Sensitive lands include 2,058 acres (22%), Wildlife Management lands total 5,361.3 acres (57%), while 150.6 acres have no current classification. Based on the current classification, the potential exists for continual degradation of shoreline vegetation due to potential increased development and subsequent vegetation removal and mowing activities. This would result in negative impacts to water quality due to increased storm water velocity, scour and sedimentation.

#### *5.3.2.4 Minimum Conservation (Alternative 4)*

The Minimum Conservation alternative would increase Low Density lands by 663.5 acres (7%) and reduce High Density acreage by 330.4 (4%) compared to the No Action Alternative. This alternative has 18% of shoreline acreage as potentially developable, with 76% classified as Environmentally Sensitive and Wildlife Management lands which would have a positive effect on lake water quality due to the rainwater filtering benefits from shoreline vegetation buffer associated with. Similar to the Moderate Conservation Alternative, these land reclassifications would serve to limit development on these lands, thereby reducing potential impacts from ground disturbance and subsequent increased erosion.

### 5.3.3 Fish Species and Habitat

#### *5.3.3.1 Maximum Conservation (Alternative 1)*

The Maximum Conservation Alternative would enhance the fish resources in Millwood Lake to the greatest degree of all evaluated alternatives. A comparison with the No Action Alternative shows a 365.8-acre reduction in High Density lands, with only 186.6 acres being classified as Low Density lands. Environmentally Sensitive lands make up 79% of available shoreline acreage. Along with the 3% of Wildlife Management lands and 1% of Vegetative Management lands in this alternative, 83% of the total shoreline acreage would retain its natural shoreline vegetation. Shoreline vegetation provides a buffer area that would attenuate storm water runoff, reduce scour and sedimentation, improve fish cover and spawning habitat, and provide a cleaner substrate for macro-invertebrate colonization, which improves the food supply for fish.

#### *5.3.3.2 Moderate Conservation (Alternative 2)*

Implementation of the Moderate Conservation Alternative would have a positive effect on the lake fishery resource as compared to the No Action Alternative. There is a 365.8-acre reduction in High Density lands (-4%), a 9% increase in Environmentally Sensitive lands classification (2,898.1 total acres) and an increase in Vegetative Management lands from 0 acres to 133.2 acres, which results in 1% of available acreage. Wildlife Management lands constitute 50% (4,700 acres) of available shoreline. The lands classified in these three areas would serve as additional protection for lakeside vegetation and preservation of overhanging vegetation, which provides cover for fish, reduces storm flow velocity, reduces erosion scour, and reduces sedimentation. These factors improve spawning habitat, thereby potentially enhancing fish population dynamics in the lake.

#### *5.3.3.3 No Action (Alternative 3)*

The fishery of Millwood Lake may have potential minor impacts from the implementation of the No Action alternative, which has 15% of available shoreline acreage classified as High Density lands and 2% as unallocated lands. Implementation of the No Action alternative would allow potential development around parts of the shoreline. Development often results in vegetation removal down to water's edge, which impacts shoreline stability, removes fish cover provided by overhanging vegetation, tree trunks and roots, and exacerbates storm water erosion and sedimentation. During the spring spawning season, this sedimentation has the potential to disrupt spawning activity and productivity in the coves and lake arms where spawning commonly occurs.

#### *5.3.3.4 Minimum Conservation (Alternative 4)*

The Minimum Conservation Alternative is similar to the Moderate Conservation Alternative in terms of potential positive benefits to the lake fishery. A comparison with the No Action Alternative shows a reduction of 330.4 acres of High Density lands. In this alternative, 76% of the available shoreline acreage would be classified as Environmentally Sensitive and Wildlife Management lands, preserving a majority of the natural shoreline vegetation along the shoreline. Similar to the positive effects discussed in the Moderate Conservation Alternative, this alternative should have a beneficial effect on the fish and fish habitat of Millwood Lake.

## 5.4 Terrestrial Resources

### 5.4.1 Wildlife

#### *5.4.1.1 Maximum Conservation (Alternative 1)*

The Maximum Conservation Alternative would convert some of the existing High Density lands to Environmentally Sensitive acreage, which totals 79% of shoreline. Based on this reclassification, this alternative would result in significant positive effects on terrestrial resources around the shoreline of the lake. White-tailed deer and eastern wild turkey are common game animals found and hunted in the Millwood Lake area. Black bear have also become common in the area and are occasionally seen on the areas of the Millwood Lake watershed. Gray and fox squirrels are common in upland wooded areas and are also popular with sportsmen. All these wildlife species fare better in a natural, undeveloped vegetation cover. This alternative would provide the most wildlife benefits in this regard. Some habitat management activities, including wildlife food plot plantings, removal of exotic species and application of prescribed fire would potentially benefit these populations as well.

#### *5.4.1.2 Moderate Conservation (Alternative 2)*

Implementation of the Moderate Conservation Alternative would have a positive effect on terrestrial resources, when compared to the No Action alternative. There would be a 365.8 acre reduction in High Density lands (to 1,018.5), a 9% increase in Environmentally Sensitive lands classification (2,898.1 total acres) and a decrease in Wildlife Management lands from 5,361.3 acres to 4,700 acres. This would result in 50% of available acreage classified as Wildlife Management lands. The lands classified as Environmentally Sensitive and Wildlife Management land (81%) would provide additional protection for lakeside vegetation, and preservation of habitat for wildlife and migratory bird species. The buffer of natural vegetation that remains along the shoreline from this designated acreage would potentially enhance migration and feeding activities for many species of wildlife.

#### *5.4.1.3 No Action (Alternative 3)*

Under the No Action Alternative, shoreline lands would be classified into High Density recreation lands (1,384.3 acres, or 15% of total available area), Environmentally Sensitive lands (2,058 acres or 22%), and Wildlife Management lands (5,361.3 acres or 57%), while 150.6 acres have no current classification. Based on the current shoreline classification, the potential exists for continual degradation of shoreline vegetation due to increased development and potential vegetation removal and mowing activities. Unclassified lands are potentially developable, resulting in 17% of the shoreline acreage subject to possible increased or new development. This would result in negative effects to wildlife, due to potential removal of trees and understory vegetation (with the highest potential in the High Density lands), thus altering food sources and migratory patterns of insects, birds and mammal species.

#### *5.4.1.4 Minimum Conservation (Alternative 4)*

The Minimum Conservation Alternative is more similar to the Moderate Conservation Alternative than the No Action Alternative in terms of potential effects to the terrestrial resources and land use patterns. A proposed decrease in High Density lands of 330.4 acres, would result in

11% of available acreage classified as High Density, which would have potentially been available for development. This amount of High Density land would likely have some, but still insignificant effect, on wildlife species and activity. In spite of an increase in Low Density lands (220 acres) over the Moderate Conservation Alternative, the majority of natural shoreline vegetation (77%) would likely remain with natural vegetation. Good habitat for wildlife would still be abundant under this alternative.

## 5.4.2 Vegetation

### 5.4.2.1 *Maximum Conservation (Alternative 1)*

The Maximum Conservation Alternative would convert 365.8 acres of High Density lands to Environmentally Sensitive, in addition to 5,072.3 acres as Wildlife Management lands. Based on this reclassification, this alternative would result in significant positive effects on the vegetation resources around the shoreline of the lake, due to the restrictions placed on vegetation modification actions under the Environmentally Sensitive land classification. Some habitat management activities, including wildlife food plot plantings, removal of exotic species and application of prescribed fire would still take place under this alternative and could potentially be beneficial to the area.

### 5.4.2.2 *Moderate Conservation (Alternative 2)*

Implementation of the Moderate Conservation Alternative would have a positive effect on the shoreline vegetation, when compared to the No Action alternative. There would be the same reduction in High Density lands (365.8 acres), a 9% increase in Environmentally Sensitive lands classification (2,898.1 total acres) and a decrease in Wildlife Management lands from 5,361.3 acres to 4,700 acres, which results in 50% of available acreage classified as Wildlife Management lands. The lands classified as Environmentally Sensitive, and Wildlife Management would serve as additional protection for lakeside vegetation and subsequent preservation of habitat for wildlife and migratory bird species. The buffer of natural vegetation that remains along the shoreline from this designated acreage would enhance migration and feeding activities for many species of wildlife, as well as mediate storm water velocity and scour.

### 5.4.2.3 *No Action (Alternative 3)*

Under the No Action Alternative, shoreline lands would be classified into High Density recreation lands (1,384.3 acres, or 15% of total available area), Environmentally Sensitive lands (2,058 acres or 22%), and Wildlife Management lands (5,361.3 acres or 57%), while 150.6 acres have no current classification. Based on this, the potential exists for continued degradation of shoreline vegetation due to increased development and subsequent vegetation removal and mowing activities. Unclassified lands are potentially developable, resulting in an additional 2% of the shoreline acreage subject to possible increased or new development. This would result in potential negative effects to the natural shoreline vegetation composition due to potential removal of trees and understory vegetation, thus possibly altering food sources and migratory patterns of insects, birds and mammal species, as well as increasing a potential for increased storm water erosion effects.



#### 5.4.2.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative is more similar to the Moderate Conservation Alternative in terms of potential effects to the lakeshore vegetation than that of the No Action Alternative. A proposed decrease in High Density lands of 330.4 acres, would result in 11% of available acreage for potential development and have some, but still insignificant effect, on shoreline vegetation. In spite of an increase in Low Density lands (220 acres), over the Moderate Conservation Alternative, the majority of natural shoreline vegetation (77%) would likely remain with natural vegetation. Good habitat for wildlife would still be abundant under this alternative.

### 5.5 Wetlands

#### 5.5.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative would convert 365.8 acres of High Density lands to Environmentally Sensitive, in addition to 5,072.3 acres as Wildlife Management lands. Based on this reclassification, this alternative could result in some positive effects on the wetland vegetation resources around the shoreline of the lake due to the restrictions placed on vegetation modification actions under the Environmentally Sensitive land classification. There would be little to no change in the wetland status from the existing condition due to implementation of the Maximum Conservation alternative. Most of the wetland acreage has been identified in the lower reaches of the major tributary streams, therefore, the limited High Density shoreline development near the lower end of the lake, as reflected in this alternative, would have minimal impact to this resource.

#### 5.5.2 Moderate Conservation (Alternative 2)

Implementation of the Moderate Conservation Alternative would have a beneficial effect on the shoreline wetland vegetation, when compared to the No Action alternative. There would be the same reduction in High Density lands (365.8 acres), a 9% increase in Environmentally Sensitive lands classification (2,898.1 total acres) and a decrease in Wildlife Management lands from 5,361.3 acres to 4,700 acres, which results in 50% of available acreage classified as Wildlife Management lands. The lands classified as Environmentally Sensitive, and Wildlife Management would serve as additional protection for lakeside wetland species and subsequent preservation of habitat for wildlife and migratory bird species. The buffer of natural wetland vegetation that remains along the shoreline from this designated acreage would enhance migration and feeding activities for many species of wildlife, as well as mediate storm water velocity and scour.

#### 5.5.3 No-Action (Alternative 3)

Under the No Action Alternative, shoreline lands would be classified into High Density recreation lands (1,384.3 acres, or 15% of total available area), Environmentally Sensitive lands (2,058 acres or 22%), and Wildlife Management lands (5,361.3 acres or 57%), while 150.6 acres have no current classification. Based on this, the potential exists for some degradation of shoreline vegetation due to increased development and subsequent vegetation removal and mowing activities. Unclassified lands are potentially developable, resulting in an additional 2% of the shoreline acreage subject to possible increased or new development. This could result in

potential negative effects to the natural shoreline wetland vegetation composition due to potential removal of trees and understory vegetation, thus possibly altering the composition and function of these wetlands. A change in food sources and migratory patterns of insects, birds and mammal species, as well as increasing a potential for increased storm water erosion effects could possibly occur under this alternative.

#### 5.5.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative is more similar to the Moderate Conservation Alternative in terms of potential effects to the lakeshore wetland vegetation than that of the No Action Alternative. A proposed decrease in High Density lands of 330.4 acres, would result in 11% of available acreage for potential development and have some, but still insignificant effect, on shoreline vegetation. In spite of an increase in Low Density lands (220 acres) over the Moderate Conservation Alternative, the majority of natural shoreline vegetation (77%) would likely remain with natural vegetation, including wetland areas.

### 5.6 Threatened and Endangered Species

#### 5.6.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative would likely provide the most protection for any species listed as Threatened, Endangered, Protected, or Species of State Concern due to the reclassification of 82% of the shoreline acreage to Environmentally Sensitive (79%) and Wildlife Management lands. Potentially developable lands under this alternative include only 1,018.5 acres of High Density lands, representing 11% of available shoreline acreage. Only 186.6 acres of Low Density lands are included in this alternative. Due to the significant increase of Environmentally Sensitive and Wildlife Management acreage from the No Action land classifications, there may be potential positive benefits to any or all the listed species, and possibly other yet undiscovered species that may exist in the area.

#### 5.6.2 Moderate Conservation (Alternative 2)

The Moderate Conservation Alternative would have no expected negative effects on any listed threatened, endangered, protected, or species of state concern based on the documentation and justification noted in the No Action Alternative. Due to the reclassification of 7,598.1 acres to Environmentally Sensitive and Wildlife Management lands, there may be potential positive benefits to any or all the listed species, and possibly other yet undiscovered species that may exist in the area. This is due to the higher level of protection offered by the Environmentally Sensitive and Wildlife Management land classifications.

#### 5.6.3 No Action (Alternative 3)

Of the species listed in Table 4-1 of Section 4.0, affected environment, all terrestrial species would be most affected by implementation of the No Action Alternative. Potential development could occur in the High Density land classification and the 150.6 unallocated acres that might have negative impact on some species of state concern. The Bald Eagle, *Haliaeetus leucocephalus*, was removed from the threatened listing in 2007 by the USFWS, but it still remains a protected species. While there have been reports of nesting in some locations around the lake perimeter, this species is not confined to a particular area around the lake, so it could be



potentially affected by development near nesting sites.

#### 5.6.4 Minimum Conservation (Alternative 4)

Similar to Alternative 2, the Minimum Conservation Alternative would likely have minimal effects on any listed Threatened, Endangered, Protected, or Species of State Concern based on the proposed reduction of potentially developable acreage from the amount listed in the No Action Alternative. A proposed decrease in High Density lands of 330.4 acres, resulting in 11% of available acreage for potential High Density development. There are 663.5 acres of Low Density lands in this alternative. This may result in some potential minor negative effects to listed species based on possible development activity in these lands.

### 5.7 Archaeological and Historic Resources

#### 5.7.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative would result in the greatest benefit to preservation of cultural resource sites and historic properties. Under this alternative, only 2% of shoreline acreage is classified as Low Density, and approximately 82% of all land would be classified as Environmentally Sensitive and Wildlife Management. This alternative is very preservation-oriented and would constitute the best opportunity to minimize any potential effects to cultural resource sites and historic properties. High Density recreation would decrease by 365.8 acres to approximately 11% of the land coverage. This would minimize the amount of development potential on lands adjacent to Millwood Lake, and subsequently minimize adverse effects on cultural resources.

#### 5.7.2 Moderate Conservation (Alternative 2)

Under the Moderate Conservation Alternative, the area classified as Environmentally Sensitive would increase. With the proposed shoreline acres in both the Wildlife Management Areas and Environmentally Sensitive Area classifications, there would be minimal potential for ground disturbing activities along the shoreline, thus decreasing the potential for effects on cultural resources. The lands having no allocation under the No Action Alternative would be changed to Environmentally Sensitive in effort to preserve the scenic, historical, archaeological, scientific, water quality, or ecological value of the overall project. In areas where the land has been previously classified as High Density, but it has not yet been identified for development, these lands would be converted to Environmentally Sensitive or Wildlife Management.

#### 5.7.3 No Action (Alternative 3)

Under the No Action Alternative there would be no change in the current Master Plan land classifications, as designated under the 1964 Master Plan. Under this alternative, the greatest potential for effects on cultural resources and historic properties would occur in the areas classified as High Density Recreation and those lands with no classification. Cultural Resources under the No Action Alternative would be at risk of disturbance in areas where the land classification would allow for intensive development. Any new ground disturbing activities on USACE lands would require a permit to be issued prior to commencement of the activity. Through the site review process prior to issuance of a permit or any federal action, unknown sites would be identified, and known sites would be evaluated for their significance and eligibility for

the National Register of Historic Places pursuant to 36 CFR Part 800 of the National Historic Preservation Act. Cultural Resource sites within Low Density or High Density classification areas could potentially undergo the most severe impact, due to the fact that activities such as boat dock construction and shoreline use permits result in a degree of ground disturbance, which could pose a threat to intact cultural deposits. Potential mitigation for impact to cultural or historic sites would be the requirement for a cultural or historic resource site evaluation. If evaluation of site identifies a cultural or historic resource, avoidance of the action would be recommended.

#### 5.7.4 Minimum Conservation (Alternative 4)

Under the Minimum Conservation Alternative, High Density Recreation lands would be decreased around Millwood Lake; Low Density would be increased by 420 acres more than in the Preferred Action, while Environmentally Sensitive lands occupy 29% of shoreline acreage, and Wildlife Management Areas consist of 47% of the acreage. This alternative, while having a larger potential for development, as compared to the Preferred Action, would still result in a benefit to cultural resources, based on the large percentage of protected shoreline acreage.

### 5.8 Socio-Economic Resources

#### 5.8.1 Maximum Conservation (Alternative 1)

The Maximum Conservation Alternative would have an effect on the socio-economic situation in the counties that surround Millwood Lake, due to the decreased High Density acreage and the reclassification of a majority of shoreline acreage to Environmentally Sensitive lands. An indirect impact from this alternative would be a reduction in tax revenue to local counties, essentially reducing their economic development, due to the fact that the Corps would not grant new permits allowing expansion or new development. Total housing units would likely stay the same due to the decreased availability of recreation (private shoreline uses) at the lake resulting in minimal new development, but it is unlikely that property values would change. It is unlikely that other facets of socio-economics would change due to the implementation of this alternative.

#### 5.8.2 Moderate Conservation (Alternative 2)

The Moderate Conservation Alternative would likely have less of a positive effect on the socio-economic situation in the counties surrounding Millwood Lake than the No Action Alternative. Population would be expected to stay the same or decline slightly due to the decreased High Density acreage and the increased Low Density lands. Environmentally Sensitive and Wildlife Management lands constitute 81% of shoreline acreage. Under this alternative the demographic makeup of the population would likely be unaffected. Total housing units would stay the same or decrease due to the decreased availability of recreation at the lake, but it is unlikely that housing values would change as a result of the alternative. The economy of the area would likely stay the same or have a slight decline, if this alternative is implemented.

#### 5.8.3 No Action (Alternative 3)

The No Action Alternative may have the most effect on the socio-economic situation in the counties surrounding Millwood Lake due to the fact that 15% of the available shoreline acreage is classified as High Density lands, and another 2% is unallocated land. While the potential for

some development exists around the lake, current population growth and the demographic makeup of the population are expected to remain similar to the current rates and percentages the area experiences now. Housing units and their values would not be affected if the No Action alternative is implemented. It is likely that changes in the socio-economic conditions of the Millwood area would be the result of outside influences, and not those created by the No Action alternative.

#### 5.8.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative would result in a similar socio-economic situation as Alternative 2, but possibly would have less of a positive effect as compared to the No Action Alternative. Low Density acreage in this alternative would be 663.5 acres, representing 7% of available shoreline acreage. The economy in the area could possibly grow slightly, due to a potential increased opportunity for recreation.

### 5.9 Recreation Resources

#### 5.9.1 Maximum Conservation (Alternative 1)

Under the Maximum Conservation Alternative, some recreation opportunities would be reduced, such as private boat docks, due to an increase in the area classified as Environmentally Sensitive, which does not allow most types of development. This alternative would also limit commercial opportunities based on the proposed 1,018.5 acres of High Density classification. Although it minimizes potential for development, it would improve land-based recreational opportunities such as hunting, hiking, bird watching. This alternative also would improve views along the lake since it would allow for native flora and fauna to thrive.

#### 5.9.2 Moderate Conservation (Alternative 2)

Under the Moderate Conservation Alternative, all lands would be classified and some of the existing classifications would be changed. This proposed update in classification would be structured to achieve a balance based on the present public use of the lake while sustaining the natural, cultural, and socio-economic resources of the area and reflecting the current management and operation of lands at Millwood Lake. Under Alternative 2, the current High Density lands, comprising 15% of available shoreline acreage, would be reduced to 11%, while Environmentally Sensitive and Wildlife Management lands, at 22% and 57%, respectively, would change to 31% and 50% of shoreline acreage. These classifications reflect current lake usage, with fishing, boating, hunting and wildlife viewing dominating the recreational activity on the lake. The proposed increase in Wildlife Management and Environmentally Sensitive classified lands action would assist in forging partnerships between public and private entities for recreational and wildlife conservation opportunities. The retention of a major percentage of the natural shoreline vegetation would lead to improved water quality, due to the buffering and filtering capability of this vegetation.

#### 5.9.3 No Action (Alternative 3)

Provision of recreational facilities and services would continue at Millwood Lake without an update to the Millwood Lake Master Plan. However, the plan by which the Resource Manager and staff operate would not accurately reflect the current status of project facilities. Nor would

there be additional measures in place, such as trail corridors and additional land use designations, to better accommodate recreational needs while protecting the natural resources. Currently, there are several boat docks outside of areas currently zoned for them and under the No Action Alternative these uses would remain inconsistent with the Master Plan. A total of 150.6 acres of shoreline would remain unclassified generating confusion about which uses are allowed in these areas.

#### 5.9.4 Minimum Conservation (Alternative 4)

The Minimum Conservation Alternative would not deviate significantly from the Moderate Conservation Alternative in terms of provision of recreational opportunities on the lake. The 663.5 acres of shoreline that would be reclassified to Low Density recreation from Environmentally Sensitive lands would allow for the potential to have additional private boat docks for fishing and lake access, as well as the potential to develop nature trails and wildlife viewing areas, thus potentially increasing recreational traffic along Millwood and its adjacent lands.

### 5.10 Air Quality

#### 5.10.1 Maximum Conservation (Alternative 1)

Implementation of the Maximum Conservation alternative would result in less of an impact to existing air quality, due to the reduction in lands classified for development around the Millwood Lake shoreline. Since the majority of the available acreage would be classified as Environmentally Sensitive and Wildlife Management lands (83% of total available acreage), this would result in much less potential vehicular traffic, boat traffic, construction equipment usage, and lower exhaust emissions on these lands.

#### 5.10.2 Moderate Conservation (Alternative 2)

Implementation of the Moderate Conservation Alternative would also result in minimal change in air quality impacts. Since this alternative would incorporate more shoreline acreage into the Environmentally Sensitive and Wildlife Management land classification, there would likely be a reduction in potential development, local vehicular exhaust emissions, and construction equipment activity, which would avoid or reduce potential impacts on localized air quality. All land classifications are within compliance with the Clean Air Act of 1990. No violations of the current NAAQS established by EPA would be expected as a result of the implementation of this alternative.

#### 5.10.3 No Action (Alternative 3)

Under the No Action alternative, the air quality around the lake would remain the same as currently exists. There would likely be increases in vehicular exhaust emissions due to localized development, and the associated construction equipment and traffic in the area. However, no violations of the current National Ambient Air Quality Standards (NAAQS) established by EPA would be expected, as a result of the implementation of this alternative.

#### 5.10.4 Minimum Conservation (Alternative 4)

Mirroring the Moderate Conservation Alternative, the Minimum Conservation Alternative would

result in fewer air quality effects, as compared to the No Action Alternative. This alternative would reclassify less lands to Environmentally Sensitive, as compared to the Preferred Action, as well as increases in High Density and Low Density lands (35 acres and 420 acres, respectively). This additional Low Density acreage would result in a greater potential for additional development, which could lead to increased local vehicular exhaust emissions. However, this effect would not be significant, based on the small amount of change that could result from this development and increased lake usage activities. No violations of the current NAAQS established by EPA would be expected, as a result of the implementation of this alternative.

## 5.11 Health & Safety

### 5.11.1 Maximum Conservation (Alternative 1)

This alternative limits development to 1,018.5 acres of High Density lands, which would imply that there would be more limited access to Millwood Lake, potentially causing a decrease in water-based recreational opportunities. Although water-based activities would be impacted, there would be an increase in land-based recreation opportunities such as hiking, hunting and wildlife observation. There could also be some partnership opportunities with conservation-based organizations within the region. The decrease in rate of development could also have positive impacts on water quality by reducing runoff quantity and velocity from rainfall events, which would increase sedimentation and shoreline contaminants to the water.

### 5.11.2 Moderate Conservation (Alternative 2)

The recreational opportunities, balanced with conservation of natural environment could lead to better health, both mental and physical, of the visiting population. Implementation of the Moderate Conservation Alternative would likely result in reduced traffic congestion on the water, and a lower potential for water related incidents. The increase in Environmentally Sensitive and Wildlife Management Areas could potentially increase exposure to insects and animals, which is generally understood by the public who utilize these lands.

### 5.11.3 No Action (Alternative 3)

Safety of project visitors and project staff are highest priority in daily project operations. The No Action Alternative would have 15% of available shoreline acreage classified for High Density development, and also 2% of unallocated lands. This would allow for the highest potential for a reduction in lake water quality, as described in Section 5.3.2. There could potentially be an increase in boat traffic on the lake and a possible increase in congestion, creating additional safety issues. Under the No Action Alternative, populations who recreate at the lake could be exposed to health risks associated with impaired water quality, such as *E. coli*, and potential hazardous contaminants, due to the overall potential for increased recreation at the lake.

### 5.11.4 Minimum Conservation (Alternative 4)

Similar to the impacts in Alternative 2, the Minimum Conservation Alternative could also create a potential for additional boat docks being built, due to a greater amount of Low Density lands than in the Preferred Action. This alternative would potentially result in a small increase of traffic congestion on the water, thus water related incidents could potentially become an issue,

under this alternative, but to a lesser potential in comparison to the No Action Alternative.

## 5.12 Aesthetics

### 5.12.1 Maximum Conservation (Alternative 1)

Aesthetics is an important feature that enhances the recreational experience. Lands around Millwood Lake provide a natural setting that is aesthetically pleasing, as well as, buffering the lake from views of development and clearings.

Implementation of the Maximum Conservation Alternative would minimize all activities which could disturb the scenic beauty and aesthetics of the lake. This alternative would be the most aesthetically pleasing for those recreating along the lake but could potentially be a hindrance to property owners and their view of the lake. The user experience in areas such as, Corps parks would still be relatively peaceful at most times, with the aesthetic of domesticated nature. However, some of the more developed and most used parks could experience annual wear and deterioration of lands and existing facilities, due to the potential increased usage of these parks.

### 5.12.2 Moderate Conservation (Alternative 2)

The wide panorama of Millwood Lake and the scenic beauty conveys a sense of tranquility to the lake visitors, and the conversion of 365.8 acres of High Density lands and 150.6 acres of unallocated lands to Environmentally Sensitive and Wildlife Management acreage would continue to preserve the sense of relatively pristine shoreline. The natural vegetation along the shoreline would enhance the views of the people recreating on the lake, while potentially impeding the view of the lake from the shore. Under this proposed alternative, property owners could work with Corps staff to determine the appropriate vegetation management measures for their specific property location adjacent to the shoreline of the lake.

### 5.12.3 No Action (Alternative 3)

Under the No-Action Alternative the visual character of the landscape would slowly change due to potential continued development increasing the amount of land with views of development and human structures. This would increase the amount of visual contrast between the natural and developed landscapes around the lake. Visual contrast is a measure of impact on visual quality and aesthetics. Dock development would eliminate the unspoiled and untamed aesthetic of this landscape. Road and utility line corridors also impact aesthetics and visual resources at Millwood. Since the lake is partially surrounded by pockets of residential development, these demands would continue to increase. In some instances, requests for new shoreline use permits are in areas where the natural vegetation and landscape would be disturbed.

### 5.12.4 Minimum Conservation (Alternative 4)

Implementation of the Minimum Conservation Alternative would be similar in regard to aesthetics as the Moderate Conservation Alternative. Under Alternative 4 there would be 420 more acres of Low Density lands compared to the Preferred Action, which would have the potential for additional boat dock construction and vegetation modification permits, but no significant impacts to aesthetics would be expected.



### 5.13 Cumulative Impacts

Cumulative impacts are those that may result from the incremental impact of the evaluated alternatives added to those of other past, present, or reasonably foreseeable future actions in the local area. The Master Plan for Millwood Lake was last approved in 1964, followed by multiple supplements over the last 57 years. During that time, public use patterns have remained similar, but trends, facility and service demands have shifted in the past 57 years due to the need for alternative experiences in recreation and tourism. Millwood Lake receives pressure for both private shoreline and public recreation use, resulting in management concerns regarding the overall sustainability of the lake. With public use at project facilities changing, reallocations of services at these facilities need to be addressed. Changes involving recreation area closures and improvements have occurred during the last four decades to meet the evolving public use. In addition, cooperative agreements are being considered, in order to operate and maintain facilities, which would reduce the financial burden on the taxpayers.

Two main themes came out of the scoping process, which was a cumulative exercise involving private and public entities, and local, state and federal agencies—improved fishing and habitat and concerns over lake depth and aquatic vegetation management. The Arkansas Department of Energy and Environment has classified Millwood Lake as a Type E waterbody, which is characterized by being a large lowland lake, 1000 to 30,000 acres in size, with average depths of less than 10 feet. Existing conditions at the lake allow for some degree of development on 17% of available acreage, with an additional 150.6 acres having no specific land classification, but it should be noted that reclassification of lands under the proposed alternative would enhance water quality by restricting High Density recreation development, increasing the amount of Environmentally Sensitive and Wildlife Management acreage, thereby retaining more of the natural shoreline vegetation. Approximately 82% of the linear shoreline would have a natural vegetated shoreline due to these land reclassifications identified in the Proposed Alternative. There would be insignificant impacts to climate, topography, geology and soils under this alternative. The aquatic environment of the lake should benefit from a potential reduction in storm water runoff velocity, reduced sedimentation, improved water quality, and a cleaner substrate for macroinvertebrate production and fish spawning activity. This alternative would also enhance wildlife foraging and movement patterns, offer more protection for threatened and endangered species that inhabit the area, and result in minimal impacts to cultural resources. A provision for additional potential development opportunities coupled with an abundance of lands remaining in their natural condition would balance and enhance recreational experiences, which would potentially stimulate the socio-economics of the area. This balanced approach should provide a safe and aesthetically pleasing recreational experience for the public that visits and/or lives at Millwood Lake.

Continued collaboration and coordination with state and federal resource agencies, as well as local agencies and watershed groups, is necessary to monitor, evaluate and remediate aging infrastructure, failing septic systems around the shoreline, and potential water quality impacts. Coordination with these entities could also evaluate and promote watershed enhancement programs that would serve to institute stream bank stabilization, land improvement and conservation programs, and implementation of best management practices to reduce watershed runoff and erosion.

As management of Millwood Lake ensues, the Corps would continue to coordinate with Federal, State, and local agencies to avoid, minimize or mitigate potential impacts.

## 6. ENVIRONMENTAL COMPLIANCE

Compliance with Federal Acts and Executive Orders are summarized in the following table.

Table 6-1 Federal Act/Executive Order Compliance

<b>Act/Executive Order</b>	<b>Status</b>	<b>Compliance</b>
Wetlands (EO 11990)	No effect	C
Prime/Unique Farmlands	N/A	N/A
Floodplain Management (EO 11988)	N/A	N/A
Clean Water Act		
Section 404	No effect	N/A
Section 401	No effect	N/A
NPDES	No effect	N/A
Fish and Wildlife Coordination Act	No effect	C
Endangered Species Act	No effect	C
National Historic Preservation Act	No effect	C
Environmental Justice (EO 12898)	No effect	C
Clean Air Act	No effect	C
Comprehensive Environmental Response Compensation and Liability Act (CERCLA)	N/A	N/A
Resource Conservation and Recovery Act (RCRA)	N/A	N/A
Wild and Scenic Rivers Act	N/A	N/A
Rivers and Harbors Act	N/A	N/A
N/A—not applicable C--Compliant		

### 6.1 Fish and Wildlife Coordination Act

The Corps is required to coordinate with the USFWS and MDNR under the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 USC 661 et. seq.). Coordination was initiated with a scoping notice; no concerns were raised by these agencies. Review of the Environmental Assessment is pending; no concerns are anticipated.

### 6.2 Endangered Species Act

The Endangered Species Act (ESA) requires the determination of possible effects on species or degradation of habitat critical to Federally-listed endangered or threatened species. Implementation of an updated Master Plan is not likely to affect threatened or endangered species. Individual requests for use of project lands would be evaluated to ensure compliance with this Act.



## 6.3 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* requires Federal agencies to promote “nondiscrimination in Federal programs substantially affecting human health and environment”. In response to this directive, Federal Agencies must identify and

address a disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority and low-income populations. The final step in the environmental justice evaluation process is to evaluate the impact of the project on the population and to ascertain whether target populations are affected more adversely than other residents.

Implementing the proposed Master Plan Update would not disproportionately affect minority or low-income populations.

## 6.4 Cultural Resource Requirement

Section 106 of the National Historic Preservation Act of 1966 requires the Corps to identify historic properties affected by the proposed action and to evaluate the eligibility of those properties for the National Register of Historic Places. Section 110 of the Act requires the Corps to assume responsibility for the preservation of historic properties in its ownership. The Act also requires Federal agencies to provide the Advisory Council on Historic Preservation an opportunity to comment on undertakings through the process outlined in the Council’s regulations (36 CFR 800).

There would be no potential adverse effects on cultural resources with implementation of an updated Master Plan. Individual requests for use of project lands would be evaluated on a case-by-case basis to ensure compliance with this act.

# 7. SCOPING AND PUBLIC CONCERN

## 7.1 Introduction

No single agency has complete oversight of stewardship activities on the public lands and waters surrounding Millwood Lake. Responsibility for natural resource and recreation management falls to several agencies that own or have jurisdiction over these public lands and waters.

Increasingly, competition for the use of these lands and waters and their natural resources can create conflicts and concerns among stakeholders. The need to coordinate a cooperative approach to protect and sustain these resources is compelling. Many opportunities exist to increase the effectiveness of Federal programs through collaboration among agencies and to facilitate the process of partnering between government and non-government agencies. To sustain healthy and productive public lands and water with the most efficient approach requires individuals and organizations to recognize their unique ability to contribute to commonly held goals. The key to progress is building on the strengths of each sector, achieving goals

collectively that could not be reasonably achieved individually. Given the inter-jurisdictional nature of Millwood Lake, partnering opportunities exist and can promote the leveraging of limited financial and human resources. Partnering and identification of innovative approaches to deliver justified levels of service defuse polarization among interest groups, and lead to a common understanding and appreciation of individual roles, priorities, and responsibilities.

To the extent practical, this Master Plan and a proactive approach to partnering would position Millwood Lake to aggressively leverage project financial capability and human resources in order to identify and satisfy customer expectations, protect and sustain natural and cultural resources and recreational infrastructure, and programmatically bring Corps management efforts and outputs up to a justified level of service. Public involvement and extensive coordination within the Corps of Engineers and with other affected agencies and organizations is a critical feature required in developing or revising a Project Master Plan.

Agency and public involvement and coordination have been a key element in every phase of the Millwood Lake Master Plan revision.

## 7.2 Scoping

In accordance with NEPA and ER 200-2-2, USACE initiated the environmental compliance and review process for the Millwood Lake MP and SMP revision project. An EA will be prepared to identify potential direct, indirect, and cumulative impacts related to implementation of the MP and SMP. The process of determining the scope, focus, and content of a NEPA document is known as “scoping” and this occurs at the start of the process. Scoping is a useful tool to obtain information from the public and governmental agencies in order to help set the parameters of issues to focus on and analyze.

In March of 2020, a global coronavirus pandemic (COVID-19) was declared. This prompted a lot of changes in the workforce, including USACE implementing telework schedules to keep employees safe and social distanced. In addition, and due to the evolving Federal, State, and Local policies designed to address the spread of COVID-19, the project delivery team (PDT) determined that no in-person agency or public scoping workshops would occur until the threat of the virus subsided. As an alternative, the Millwood Master Plan and Shoreline Management Plan Revision website was created to be the primary source of information during this time. Website information was provided through various sources, such as notification postcards, news releases, agency scoping letters, and media outreach, for individuals to visit the project website to find out more information about the process to update the Master Plan and Shoreline Management Plan of Millwood Lake; to solicit comments for Scoping; and to communicate to the public of the reason behind changing the traditional USACE scoping process in response to the global pandemic. As part of the initial phase of the environmental process, an extended public scoping comment period was held between November 16, 2020, and December 31, 2020, to gather agency and public comments on the MP and SMP revision process and issues that should be examined as part of the environmental analysis. The extension on the comment period was one response to the change in the traditional USACE scoping process due to the pandemic.

In particular, the scoping process was used as an opportunity to get input from the public and

agencies about the vision for the MP and SMP update and the issues that the MP and SMP should address. When people visited the Millwood Lake Master Plan update website, they were encouraged to provide input by completing a comment form that asked for responses to specific questions in addition to soliciting for general comments about the plan and the environmental review.

USACE published notice of the scoping period through an email blast, a direct mail postcard, press releases, and agency notification letters. The postcard notice and email blast were sent to landowners adjacent to USACE-owned lands around the lake, holders of fishing permits purchased in Arkansas who's listed zip code is within 7 miles of Millwood Lake, dock permit holders, dock builders, timber buyers, and those who held reservations to camp at Millwood Lake campgrounds within the 2019 recreational season. Postcards were sent to those for whom only a postal address was available; all others received the email blast. Agency coordination letters were sent to potentially interested agencies.

Agencies were invited to participate in the scoping process and to provide input on the vision for the Millwood Lake MP and SMP on issues that should be addressed through the environmental assessment. A letter was sent on November 10, 2020, to 19 agencies (Appendix B) providing notification of the upcoming agency scoping comment period and links to the project website where more information could be found.

A project website, <https://www.swl.usace.army.mil/Missions/Planning/Millwood-Lake-Master-Plan-Revision/>, was developed for both the MP and SMP revision project. The site included information about Millwood Lake, the MP and SMP revision process, and the scoping process. Information on the scoping process included, how to submit comments and who to contact for more information. Between November 16, and December 31, 2020, 126 people visited the project website.

### 7.3 Draft Master Plan/Draft Environmental Assessment.

The Draft Master Plan/Draft Environmental Assessment is currently scheduled for release at the end of October 2021, with public workshops scheduled for late October 2021.

### 7.4 Final Master Plan/Final EA

The Final Master Plan is currently scheduled for completion in December 2021, with public workshops scheduled in early January 2022.

## 8. CONCLUSIONS

The Master Plan for Millwood Lake was last approved in 1964; this was followed by multiple supplements over the last 57 years. During that time, public use patterns have remained similar, but trends, facility and service demands have shifted in the past 57 years, due to the need for alternative experiences in recreation and tourism. Millwood Lake receives pressure for both private shoreline and public recreation use, resulting in management concerns regarding the overall sustainability of the lake. With public use at project facilities changing, reallocations of

services at these facilities need to be addressed. Changes involving recreation area closures and improvements have occurred during the last four decades to meet the evolving public use. In addition, cooperative agreements are being considered in order to operate and maintain facilities, which would reduce the financial burden on the taxpayers.

The Master Plan is not intended to address the specifics of regional water quality, shoreline management, or water level management; these areas are covered in a project's shoreline management plan or water management plan. However, specific issues identified through the Master Plan revision process can still be communicated and coordinated with the appropriate internal Corps resource (i.e., Operations for shoreline management) or external resource agency (i.e., Arkansas Dept. of Energy and Environment for water quality) responsible for that specific area. To facilitate this action, the current Master Plan development evaluated four alternatives relative to their potential impacts on the land and water resources of Millwood Lake.

These alternatives spanned the gamut of increased shoreline protection to increased shoreline development and the potential effects on the human, terrestrial, and aquatic environment from their implementation. A no action alternative looked at leaving the lake as it currently exists in terms of developable areas and protected areas. Of the 9,332.8 acres of available land around the lake, 15% of this is classified as High Density recreation, with potential future development occurring. While 22% of available acreage is classified as Environmentally Sensitive lands, 150.6 acres of land currently has no classification. Under each of the action alternatives, the lands with no classification are allocated to one of the land classifications.

The action alternatives included a Moderate Conservation Alternative, a Minimum Conservation Alternative, and a Maximum Conservation Alternative. The Maximum Conservation Alternative (Alternative 1) shifted the majority of the available shoreline acreage toward future preservation, with 11% classified as High Density recreation, 79% classified as Environmentally Sensitive, and 3% classified as Wildlife Management lands. Potential effects from this would be decreased vegetation removal and a reduction in soil erosion due to the reclassification of lands previously included as high density lands, having the potential for construction and conversion of pervious surfaces to impervious. This construction activity is generally detrimental to water quality and terrestrial and aquatic wildlife species. Development has the potential to increase the number of boats on the lake, increased health and safety issues, aesthetic impacts, and impaired recreational experiences for many visitors. The Moderate Conservation Alternative (Preferred Alternative 2) also includes the 11% High Density lands, while increasing the 0% of Low Density lands to 3%, with 31% going to Environmentally Sensitive and 50% to Wildlife Management classifications. This action would preserve shoreline vegetation, reduce stormwater runoff quantity and velocity, resulting in less in-lake sedimentation and turbidity, and improve water quality. This action also has the potential to improve health and safety issues, aesthetics, terrestrial and aquatic wildlife habitat. The Moderate Conservation Alternative seeks to balance all components of lake usage, including the provision for growth and recreation potential, while protecting and preserving terrestrial and aquatic resources. A detailed description of the modifications is located in Chapter 5 of the Master Plan.

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## **Appendix A**

### **Millwood Lake Master Plan and Shoreline Management Plan Scoping Report**



**Appendix B**  
**Millwood Lake Master Plan**  
**Draft Release Comments Report**

**Reserved for Draft Release Comment Report**

**Appendix C**  
**Millwood Lake Master Plan**  
**Environmental Assessment**  
**Land Classification Maps**