



**US Army Corps
of Engineers**
Louisville District

Environmental Assessment
for the
Clarence J. Brown Dam and Reservoir Master Plan
Springfield, Ohio



Photo Credit: Brian Menker, USACE Ranger

March 2020

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Finding of No Significant Impact

for the

Master Plan Update for Clarence J. Brown Dam and Reservoir

Clark County, Ohio

The U.S. Army Corps of Engineers, Louisville District (Corps) has conducted an Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and Engineering Regulation (ER) 200-2-2, *Policy and Procedures for Implementing the NEPA*. The EA dated July 2020, for the Clarence J. Brown Dam and Reservoir Master Plan evaluated alternatives to update the Master Plan in compliance with guidance in Engineering Regulation 1130-2-550 and Engineering Pamphlet 1130-2-550, to include revised land classifications and updated resource objectives.

The EA evaluated potential impacts to natural, cultural, and socioeconomic resources from the proposed alternative. The recommended plan is:

- Implementation of the Updated Clarence J. Brown Dam and Reservoir Master Plan

In addition to the recommended plan, a “no action” plan was evaluated. The no action plan would entail the continued use of the 1971 Master Plan and would result in no change from current management direction or level of management intensity.

For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

Resource/Area of Concern	Insignificant Adverse Effects	Insignificant Effects as a Result of Mitigation	No or Negligible Effects	Beneficial Effect
Aesthetics and Visual Qualities	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Air Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cultural Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Demographics and Environmental Justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Habitats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

HTRW Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Listed Species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Noise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Recreation and Visitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reservoir, Pool, and Lake Operation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Surface Water Hydrology and Groundwater	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Topography, Geology, and Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

All practical means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. The recommended plan does not include major development of new facilities or other construction activities that could negatively impact the environment. Best management practices (BMPs) as detailed in the EA will be implemented during continued maintenance activities to minimize impacts.

No compensatory mitigation is required as part of the recommended plan.

Public review of the EA was completed on [PENDING]. All comments submitted during the public comment period were responded to in the Final EA. A 30-day state and agency review of the Report and EA was also completed on [PENDING]. Comments from state and Federal agency review did not result in significant changes to the EA. [PENDING].

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to cause adverse effects on historic properties.

There is no discharge of dredged or fill material or any other discharge into waters of the U.S. associated with the recommended plan. Therefore, a Section 404(B)(1) evaluation, pursuant to the Clean Water Act of 1972, as amended, was not conducted and a water quality certification pursuant to Section 401 of the Clean Water Act is not required.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the

recommended plan would not significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

Eric D. Crispino
Colonel, U.S. Army
District Commander

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Executive Summary

The U.S. Army Corps of Engineers' (USACE) Clarence J. Brown Dam and Reservoir Project (Project) is located adjacent to the city of Springfield, Ohio in the west-central portion of the state, approximately 40 miles west of Columbus and 28 miles northeast of Dayton. The project is within Clark County, Ohio.

The USACE holds title to 4,085 acres of land and water that comprise Clarence J. Brown Dam and Reservoir. In addition, the Corps has 318.4 acres of flowage easement lands. Of the fee land, 3,769.5 acres are leased to the State of Ohio, Department of Natural Resources (ODNR) for public park facilities and recreation, natural area preservation, fish, wildlife, and forest management purposes. The George Rogers Clark Heritage Association (GRCHA) leases land for operation of the historic Crabill Homestead (8 acres). The ODNR leases land for operation of Buck Creek State Park. The Prairie Road Fen (94.5 acres) and Crabill Fen (25 acres) are both environmentally sensitive areas that are managed as nature preserves by the ODNR, Division of Natural Areas and Preserves.

Master Plans are required for civil works projects (such as the Clarence J. Brown Dam and Reservoir Project) for which the USACE has administrative responsibility for management of natural and manmade resources. Master Plans provide guidelines and direction for future project development and provide a district-level policy consistent with national objectives and other state and regional goals and programs. The existing Project Master Plan was completed in 1971, and there has been no comprehensive revision to the Master Plan in 49 years. As such, the current Master Plan is being revised to provide an up-to-date basis on which to evaluate contemporary proposals.

The purpose of this Environmental Assessment (EA) is to identify the potential impacts to the natural and human environment from the proposed implementation of the 2020 Project Master Plan, and to determine whether the environmental effects of the action have the potential to be significant. The most substantial changes within the updated Master Plan were updates made to the classification of Project lands, including identification of environmentally sensitive areas, and updated resource objectives. There are no adverse environmental impacts expected from implementation of the updated Master Plan.

Within the updated Master Plan, actions are proposed that could help meet outlined goals for the Project. A number of small-scale actions are recommended under the updated Master Plan. Small-scale actions recommended include the maintenance of existing facilities, small-scale improvements to some existing facilities, and actions performed to protect the Project's natural areas and natural resources. There are also two major actions recommended under the updated Master Plan. The first is the removal of a low-head dam from the tailwater area and installation of a white water structure. The second is the construction of a mountain bike trail to help meet recreational goals. This EA does not consider implementation of specific projects recommended within the updated Master Plan, as those projects are conceptual in nature.

Additionally, it is not feasible to define the exact nature of potential impacts for all potential future actions prior to the development of specific project proposals. Accordingly, to ensure future environmental consequences are identified and documented as accurately as possible, additional NEPA analysis will be conducted, as appropriate, for future proposed actions that are in accordance with this Master Plan update (including those identified within the Master Plan update).

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List of Acronyms

AOI – Area of Interest

CEQ – Council on Environmental Quality

CFR – Code of Federal Regulations

EA – Environmental Assessment

EIS – Environmental Impact Statement

ER – Engineering Regulation

EP – Engineering Pamphlet

FONSI – Finding of No Significant Impact

GRCHA – George Rogers Clark Heritage Association

MBTA – Migratory Bird Treaty Act

NEPA – National Environmental Policy Act of 1969

O&M – Operation and Maintenance

ODNR – Ohio Department of Natural Resources

OMP – Operational Management Plan

Project – Clarence J. Brown Dam and Reservoir Project

USACE – United States Army Corps of Engineers

USFWS – United States Fish and Wildlife Service

1 INTRODUCTION

The U.S. Army Corps of Engineers (USACE) produces and operates under Master Plans to guide the responsible stewardship of USACE-administered lands and resources. A Master Plan presents an inventory and analysis of land resources, resource management objectives, land use classifications, resource use plans for each land use classification, current and projected facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. USACE land use classifications provide for development and resource management consistent with authorized purposes and other Federal laws.

The existing Master Plan for the Clarence J. Brown Dam and Reservoir Project (the “Project”) was completed in 1971, and has not been comprehensively updated since then. The USACE is proposing adoption of a new Master Plan at Clarence J. Brown Dam and Reservoir to reflect changes that have occurred to the Project, the region, overall recreation trends, and USACE policy directives since the adoption of the 1971 Master Plan. The Updated Master Plan has been prepared pursuant to Engineer Regulation (ER) 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550.

The purpose of this Environmental Assessment (EA) is to identify the potential impacts to the natural and human environment from implementation of the 2020 Clarence J. Brown Dam and Reservoir Master Plan, and to determine whether the environmental effects of the action have the potential to be significant.

1.1 PROJECT LOCATION

The Project is located adjacent to the city of Springfield, Ohio in the west-central portion of the state, approximately 40 miles west of Columbus and 28 miles northeast of Dayton. The entire project is within Clark County, Ohio.

The dam site is located at stream mile 7.3 of Buck Creek, which is a tributary of the Mad River.

Primary access to the Project is from Croft Rd. which connects to Ohio State Route 4. Ohio State Route 4 runs along the western border of the Project and has direct access to US Hwy 40 and Interstate 70, which connect the larger municipalities of Columbus and Dayton. Figure 1 displays the Project’s location within the Ohio River Basin area.

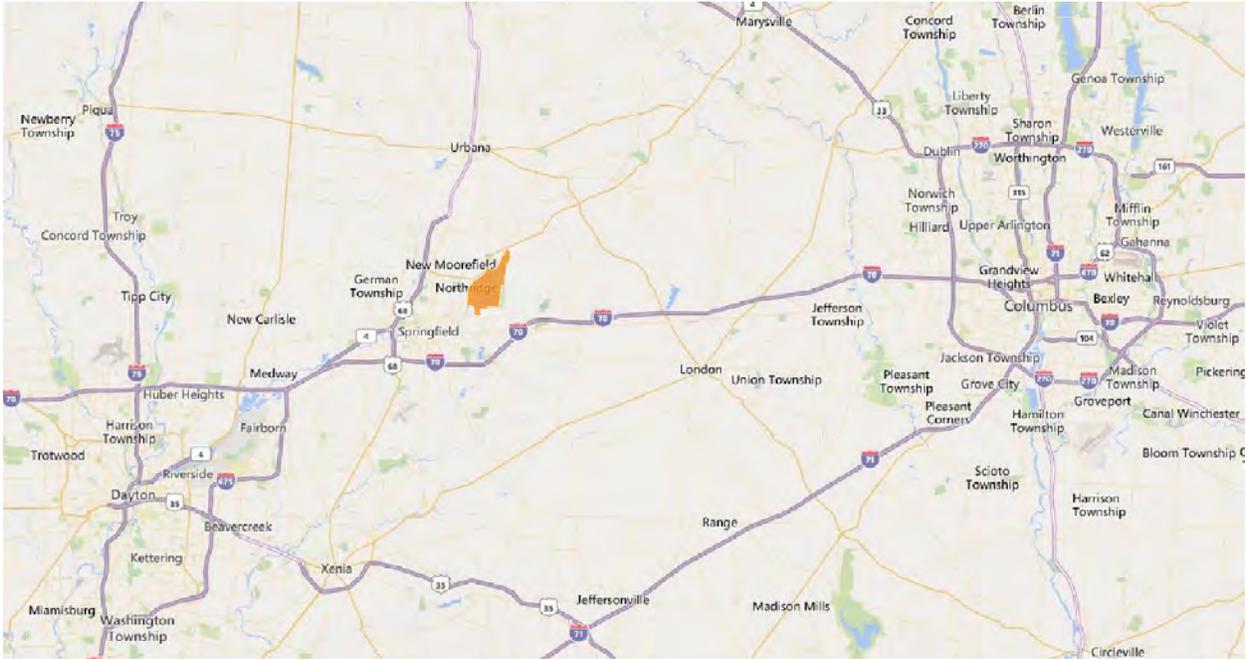


Figure 1. General Location of the Clarence J. Brown Dam and Reservoir Project

1.2 AUTHORIZATION AND PROJECT DESCRIPTION

Congress authorized the construction of Clarence J. Brown (formerly Buck Creek) Reservoir for flood protection in the Mad River Valley above Huffman Dam in Ohio by the Flood Control Act of 23 October 1962 (Public Law 87-874, 87th Congress, 76 Stat. 1190). Recreation, as a project purpose, was included in the formulation studies made in connection with the advanced engineering and design planning efforts for Clarence J. Brown Reservoir in accordance with the provisions of Section 4 of the Flood Control Act approved 24 July 1946 (Public Law 526, 79th Congress, 2nd Session, R.R. 6597) and Senate Document No. 47. Water quality control is included as a project purpose under the purview of the Water Pollution Control Act of 1961 (Public Law 87-82).

The Project is a flood control, recreation, and water quality reservoir with 2,100 surface acres and 14.15 miles of shoreline at seasonal pool. The Project has an earthen dam that is 6,600 feet long and 72 feet high at the highest point. The maximum water depth is 50 feet at the dam. The control tower on the upstream side of the dam has inlets at the bottom which allow the water to pass through a conduit under the dam. An open-cut spillway allows the release of excess water to prevent flow over the dam. The reservoir is in the Great Miami River watershed; it impounds Buck Creek and drains an area of 82 square miles.

The USACE began construction of the earthen dam and control tower in September 1966, and completed construction in fall 1973. The USACE closed the water control gates on January 2,

1974, and filled the lake to approximately 1,000 acres by spring. USACE then held the lake at this level throughout the summer to permit construction of a beach, and to allow channel construction and building of islands in the north end. The USACE filled the lake to seasonal pool in spring 1975. Then lowered water levels in fall 1979 to build a marina and place 16 piling groups for fish habitat structure.

Currently the USACE holds title to 4,115 acres of land and water that comprise Clarence J Brown Dam and Reservoir. In addition, the Corps has 318.36 acres of flowage easement lands. Of the fee land, 3,769.5 acres are leased to the Ohio Department of Natural Resources (ODNR) for public park facilities and recreation, natural area preservation, fish, wildlife, and forest management purposes. The ODNR Division of Ohio State Parks and Watercraft manages 3,650 acres as Buck Creek State Park. The Prairie Road Fen (94.49 acres) and Crabill Fen (25 acres) are both environmentally sensitive areas that are leased and managed as nature preserves by the ODNR, Division of Natural Areas and Preserves. Additionally, the George Rogers Clark Heritage Association (GRCHA) leases eight acres for operation of the historic Crabill Homestead. The USACE operates the lake under the approved water control plan as required by 33 C.F.R. § 222.5 and Engineering Regulation (ER) 1110-2-240.

1.3 NATIONAL ENVIRONMENTAL POLICY ACT OVERVIEW

This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's (CEQ) Regulations (40 Code of Federal Regulations (C.F.R.) §§ 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2. The ER 200-2-2 supplements, and applies in conjunction with, the CEQ regulations.

The regulations set forth a process whereby the USACE assesses the environmental effects of proposed federal actions, and considers reasonable alternatives to these proposed actions. In general, federal agencies prepare an EA to evaluate whether or not a federal action has the potential to cause significant environmental effects. If the agency determines that the action would significantly affect the quality of the human environment, the agency prepares an Environmental Impact Statement (EIS) to evaluate the proposed action and alternatives in greater detail. If the EA concludes that the action will not have significant environmental impacts, the agency will issue a Finding of No Significant Impact (FONSI) to document the basis for that conclusion. Certain federal actions are "categorically excluded" from NEPA documentation requirements because the action does not "individually or cumulatively have a significant effect on the human environment." The Categorical Exclusions applicable to USACE actions include routine operations and maintenance (O&M) activities at completed USACE projects (ER 200-2-2; 33 C.F.R. § 230.9).

The CEQ's NEPA Regulations do not contain a detailed discussion regarding the format and content of an EA, but an EA must briefly discuss the:

1. Need for the proposed action

2. Proposed action and alternatives
3. Probable environmental effects of the proposed action and alternatives
4. Agencies and persons consulted in the preparation of the EA

1.4 SCOPE OF THE EA

NEPA requires federal agencies to review potential environmental effects of federal actions which include the adoption of formal plans, such as Master Plans, approved by federal agencies upon which future agency actions will be based. Pursuant to ER 1130-2-550, this EA has been prepared to fulfill USACE's regulatory requirements under NEPA and provide USACE with the information needed to make an informed decision about the potential effects to the natural and human environment from the proposed adoption of the 2020 Clarence J. Brown Master Plan.

The intent of the proposed Master Plan update is to develop land classifications that will guide the sustainable development of resources within the Clarence J. Brown Dam and Reservoir Project in the future. It is not feasible to define the exact nature of potential impacts for all potential future actions prior to the development of specific project proposals. Accordingly, this EA does not consider implementation of specific projects recommended within the 2020 Master Plan, as those projects are conceptual in nature. To ensure future environmental consequences are identified and documented as accurately as possible, additional NEPA analysis will be conducted, as appropriate, for future projects that are proposed to be carried out in accordance with this Master Plan update (including those identified within the Master Plan update), once funding is available and detailed project planning and design occur.

The scope of the revised Master Plan and Environmental Assessment are limited to actions on USACE property, with the exception of the consideration of potential cumulative effects associated with actions that have taken place or are proposed to take place in the surrounding area.

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2 PURPOSE AND NEED FOR CORPS OF ENGINEERS ACTION

2.1 MASTER PLAN OVERVIEW

Master Plans are required for civil works projects and other fee-owned lands for which the USACE has administrative responsibility for management of natural and manmade resources. The Master Plan is the basic document guiding Corps of Engineers responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources. The Master Plan is a dynamic planning document that deals in concepts, not in details of design or administration. Detailed management and administration functions are handled in a separate Operational Management Plan (OMP), which translates the concepts of the Master Plan into operational terms.

ER 1130-2-550 establishes the policy for the management of recreation programs and activities, and for the operation and maintenance of Corps of Engineers recreation facilities and related structures, at civil works water resource projects. EP 1130-2-550 establishes guidance for the preparation of Master Plans. As stated therein, the primary goals of the Master Plan are to prescribe an overall land and water management plan, resource objectives, and associated design and management concepts, which:

- 1) Provide the best possible combination of responses to regional needs, resource capabilities and suitability, and expressed public interests and desires consistent with authorized project purposes;*
- 2) Contribute towards providing a high degree of recreation diversity within the region;*
- 3) Emphasize the particular qualities, characteristics, and potentials of the project; and*
- 4) Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.*

2.2 PURPOSE AND NEED FOR THE UPDATED MASTER PLAN

It is USACE policy that each Master Plan shall be reviewed on a periodic basis and be revised as required (ER 1130-2-550). The existing Project Master Plan was first approved in 1971, and there has been no revision to the Master Plan in 49 years. There have been changes in demand for recreation, adjacent population growth, and new concerns with threatened and endangered species and sensitive habitats, which dictate the need to update the Master Plan for the Project. Because the current Master Plan does not reflect these changes, it is being revised to provide an up-to-date basis upon which to evaluate contemporary proposals.

The purpose of the Proposed Action is to ensure that the conservation and sustainability of the land, water, and recreational resources at Clarence J. Brown Dam and Reservoir comply with

applicable environmental laws and regulations and to maintain quality land for future use. The Master Plan is intended to serve as a comprehensive land and recreation management plan for the next 15 to 25 years, which reflects changes that have occurred since 1971 in outdoor recreation trends, regional land use, population, legislative requirements, USACE management policy, and wildlife habitat at the Project.

Accordingly, the need for the Proposed Action is to update the Clarence J. Brown Dam and Reservoir Master Plan pursuant to the January 2013 updates to ER and EP 1130-2-550.

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3 ALTERNATIVES

When preparing an EA, federal agencies must consider a range of alternatives that could reasonably achieve the purpose and need that the proposed action is intended to address. The alternatives to be evaluated in this EA are a No Action Alternative (NAA) of continuing to operate the Project under the 1971 Master Plan, and the Proposed Action Alternative (PAA) of implementing and operating the Project consistent with the 2020 Project Master Plan that is proposed for adoption. USACE initially considered other alternatives to the Proposed Action as part of the scoping process for the Master Plan and this EA. During this process, the District and other management partners have worked to develop options for classifying project lands and identifying Resource Objectives (Master Plan, Chapter 3) for these lands. The data collection, public comments, and findings of the planning team revealed that there was only one action alternative that would meet the purpose, need, and objectives of the Master Planning process. As such, no other alternatives beyond the No Action and Proposed Action Alternative are being carried forward for analysis in this EA.

3.1 NO ACTION

Inclusion of the NAA is required by CEQ regulations and serves as a basis for comparison against which the effects of the Proposed Action can be evaluated. Under the No Action Alternative, USACE would take no action and would not adopt the 2020 Master Plan. The 1971 Master Plan would remain in effect, and the NAA would result in "no change" from current management direction or level of management intensity. Master Plans provide the basis for evaluating contemporary proposals, and the 1971 document does not account for the many substantial changes that have occurred since then. The existing Master Plan is capable of providing only minimal support to development and management of the project. Future development decisions would therefore be assessed on an *ad hoc* basis without the benefit of a comprehensive assessment of recreation and natural resource conditions and opportunities at the project.

Under the NAA, development and management of the Project area would likely take the same general direction outlined in the proposed updated Master Plan and therefore, would generally share the same environmental consequences. However, future developments or resource management policies would require approval on a case-by-case basis without the benefit of evaluation in the context of a revised overall plan.

3.2 PROPOSED ACTION ALTERNATIVE – APPROVAL AND USE OF THE UPDATED MASTER PLAN

Under the PAA, USACE would adopt and implement the updated 2020 Clarence J. Brown Master Plan for the Project, which would replace the 1971 Master Plan. The revised Master Plan addresses important updates due to the considerable changes in the demographics, recreation demand, amenities within the project, amenities on adjacent properties, current

environmental conditions, and pertinent laws and policies. This alternative is the Agency Preferred Alternative because it would meet the need for sustainable management and conservation of natural resources within the Project while also providing for current and future quality outdoor recreational needs of the public, and would satisfy USACE regulations governing Master Planning for civil works projects.

3.2.1 Scope and Objectives of the Updated Master Plan

The Master Plan provides guidelines and direction for future project development and use and is based on authorized project purposes, USACE policies and regulations on the operation of USACE projects (USACE, 1996; USACE, 1996a; USACE, 1999), responses to regional and local needs, resource capabilities and suitable uses, and expressed public interests consistent with authorized project purposes and pertinent legislation. The Master Plan provides a District-level policy consistent with national objectives and other state and regional goals and programs.

3.2.2 Land Allocation, Land Classifications, and Resource Objectives

Land allocations at all USACE Civil Works water resource projects are based on the Congressionally-authorized purpose for which the project lands were acquired. The Land classification proposed under the PAA at Clarence J. Brown Dam and Reservoir can be seen in Figure 2. Land classification categories as defined by EP 1130-2-550 are as follows:

1. Project Operations
2. High Density Recreation
3. Mitigation
4. Environmentally Sensitive Areas
5. Multiple Resource Management
 - a. Low Density Recreation
 - b. Wildlife Management
 - c. Vegetative Management
 - d. Future High Density Recreation
 - e. Future Low Density Recreation

Although land management activities would not be changed with the PAA, land classifications would be updated to meet current standards. There are a number of proposed changes in land classifications that differ from the previous Master Plan (Figure 2). All areas proposed to be

established as environmentally sensitive areas are new, these areas include wetlands, areas with sensitive species, cultural history sites, and areas with heavy erosion. The PAA classifies more land for operations. Finally, the PAA classifies land for wildlife management, which is not the case in the previous master plan.

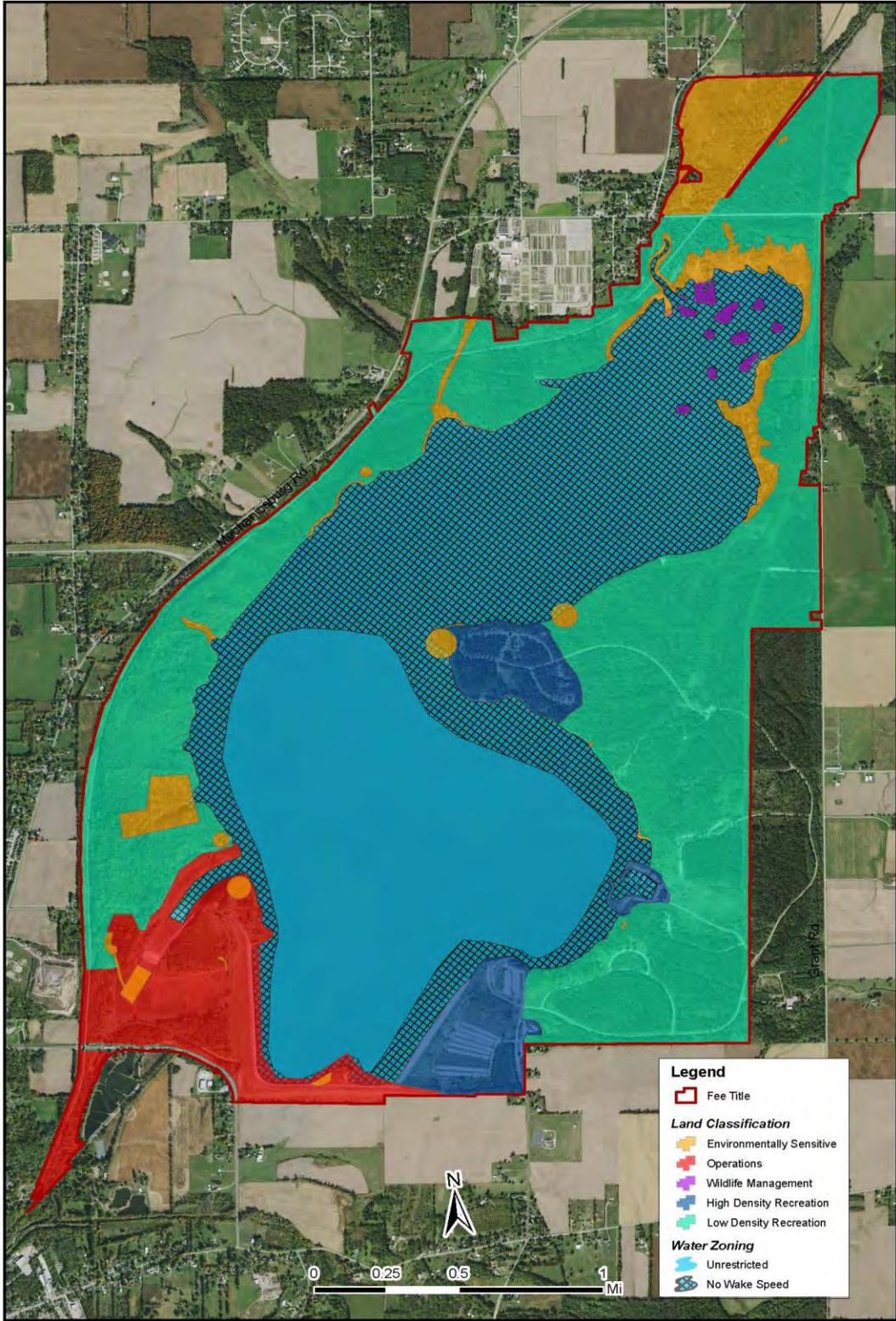


Figure 2. Land Classifications outlined in updated Master Plan for Clarence J. Brown Dam and Reservoir Project.

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4 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

The National Environmental Policy Act and the Council on Environmental Quality's NEPA Implementing Regulations require that an Environmental Assessment identify the likely environmental effects of a proposed project and that the agency determine whether those impacts may be significant. Impacts can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 C.F.R. § 1508.8[a]). Indirect effects are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 C.F.R. § 1508.8[b]).

The determination of whether an impact significantly affects the quality of the human environment must consider the context of an action and the intensity of the impacts (40 C.F.R. § 1508.27).

The term "context" refers to the affected environment in which the proposed action would take place and is based on the specific location of the proposed action, taking into account the entire affected region, the affected interests, and the locality. The term "intensity" refers to the magnitude of change that would result if the proposed action were implemented.

Determining whether an effect significantly affects the quality of the human environment also requires an examination of the relationship between context and intensity. In general, the more sensitive the context (i.e., the specific resource in the proposed action's affected area), the less intense an impact needs to be in order for the action to be considered significant. Conversely, the less intense of an impact, the less scrutiny even sensitive resources need because of the overt inability of an action to effect change to the physical environment. The consideration of context and intensity also must account for the indirect and cumulative effects from a proposed action. This section describes the existing environmental conditions in the project area (affected environment), providing a baseline for measuring expected changes that would result from implementation of the proposed revised Master Plan.

This Section presents the adverse and beneficial environmental effects (direct and indirect) of the PAA and the NAA. The section is organized by resource topic, with the effects of alternatives discussed under each resource topic. Impacts are quantified whenever possible. Qualitative descriptions of impacts are explained by accompanying text where used.

Qualitative definitions/descriptions of impacts as used in this section of the EA include:

Intensity:

- No Effect, or Negligible – a resource would not be affected, or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.

- Minor – effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate – effects on a resource would be readily detectable, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Significant – effects on a resource would be obvious and would have substantial consequences. The resource would be severely impaired so that it is no longer functional in the project area. Mitigation measures to offset the adverse effects would be extensive, and success of the mitigation measures would not be guaranteed.

Duration:

- Short term – temporary effects caused by the construction and/or implementation of a selected alternative; and
- Long term – caused by an alternative and remain after the action has been completed and/or after it is in full and complete operation.

All potentially relevant resource areas were initially considered for analysis in this EA. Consistent with NEPA implementing regulations and guidance (40 CFR § 1502.2[b]), some resource topics are not discussed, or the discussion is limited in scope, due to the lack of direct effect from the Proposed Action on the resource or because that resource is not located within the Project.

4.1 RESERVOIR, POOL, AND LAKE OPERATION

4.1.1 Existing Condition

The primary purposes of the Project are flood risk reduction and recreation. The reservoir was designed to store floodwaters and slow the release downstream, reducing flood risk in the Mad River Basin and ultimately along the Ohio River. Figure 3 shows inundation areas between the seasonal and flood stage pool. Permanent, or winter, pool level is 1009 feet above mean sea level (msl), seasonal pool level is 1012 msl, and the flood control level and spillway is 1023 msl. The top of the dam is at 1040 msl. Based on the inundation areas displayed in Figure 3, the most significant flooding will occur upstream of the main basin. The highest water event occurred in January 2005 and reached 1015.6 msl. When the lake is at winter pool, approximately 160 acres of land is exposed. This is primarily in the form of mudflats at the far north end. Fluctuations between the pool levels contribute to minor shoreline erosion visible a few places at the project.

The USACE must release a minimum of 5 cubic feet per second (cfs) of lake flow during normal operations. When the reservoir is above an elevation of 995 msl, up to 120 cfs can be released when requested to maintain low flow augmentation on the Great Miami River at Miamisburg.

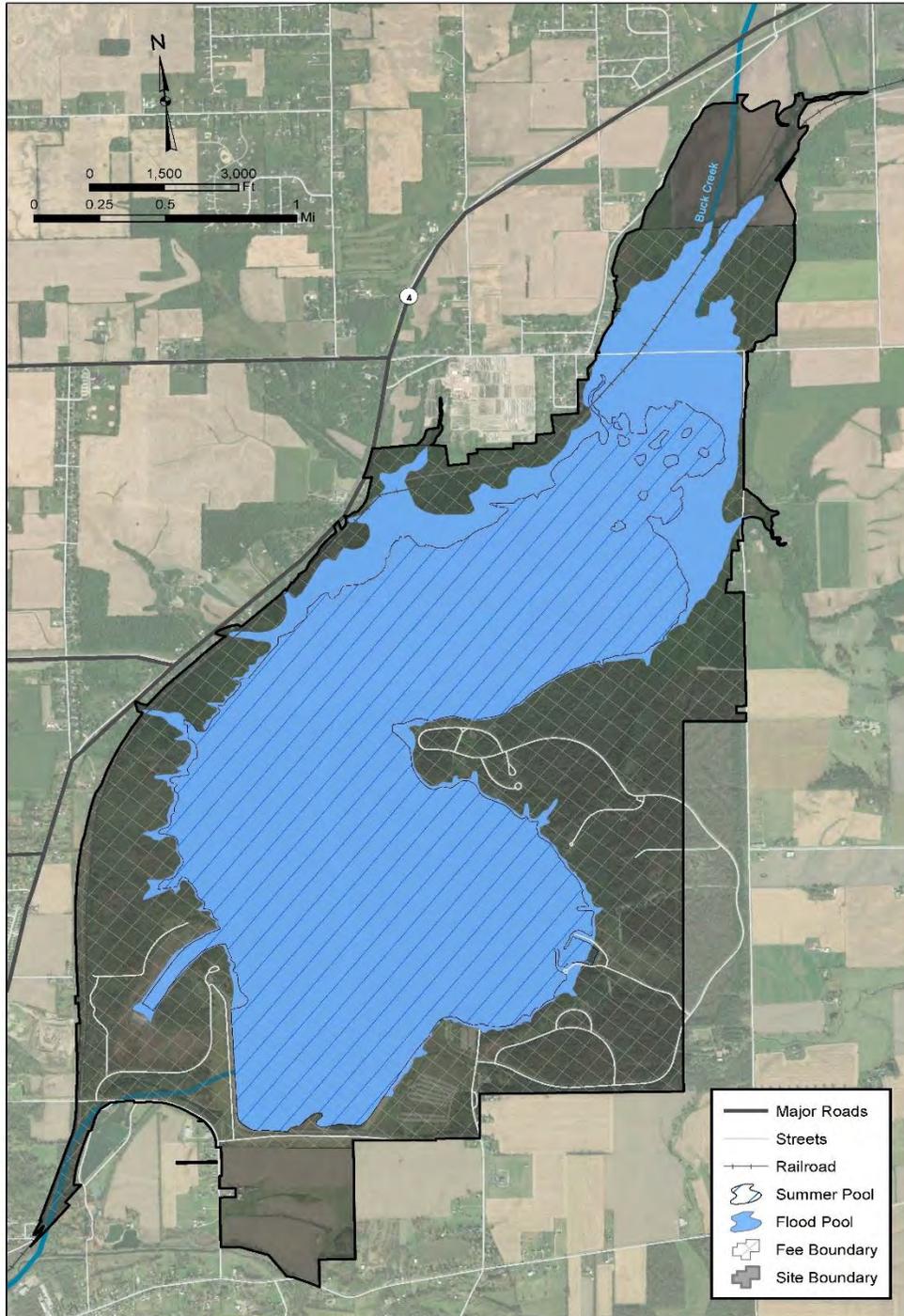


Figure 3. Inundation levels for permanent, winter, and flood pool of the Clarence J. Brown Dam and Reservoir Project.

4.1.2 Environmental Consequences

4.1.2.1 No Action

As this alternative would result in the operation and management of the Project continuing as outlined in the 1971 Master Plan, and current Operational Management Plan, no effect to Reservoir, Pool, and Lake Operation is anticipated.

4.1.2.2 Proposed Action

Project management under the PAA would result in no effect to the Project Reservoir, Pool, and Lake Operation. Operations are controlled by the project's Operational Management Plan; the revised Master Plan does not change lake operations.

4.2 CLIMATE

4.2.1 Existing Condition

Climate data were gathered from the nearest National Oceanic and Atmospheric Administration weather station in Springfield Ohio approximately four miles west of the Project (latitude 39.9735 and longitude -83.8072) at 951 msl (National Oceanic and Atmospheric Administration 2020). This station collected temperature and precipitation data between 1981 and 2010. The climate of the area is generally temperate with cold winters and warm summers. The average daily temperature is 50.9°F. The average hottest month is July with a mean daily high of 83.9°F. The coldest average month is January, with the mean daily low being 18.4°F. The average yearly precipitation is 38.51 inches. The wettest average month is May (4.68 inches), and the driest average month is February (1.85 inches).

4.2.2 Environmental Consequences

4.2.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on climate.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term increased greenhouse emissions through construction activities, or increase visitation to the project resulting in long term increased emissions from vehicles. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to climate caused by potential future actions would not be expected to be significant at the local, regional, or global level.

4.2.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on climate.

Within the updated Master Plan there are potential future actions that are recommended to meet objectives outlined for the Project. Potential future actions could possibly generate short term increased greenhouse emissions through construction activities, or increase visitation to the project resulting in long term increased emissions from vehicles. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to climate caused by potential future actions would not be expected to be significant at the local, regional, or global level.

4.3 AIR QUALITY

4.3.1 Existing Condition

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called “criteria” pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air, but that forms in the atmosphere when three atoms of oxygen (O₃) are combined by a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

Clark County is in attainment for all criteria pollutants (U.S. Environmental Protection Agency, 2020), and therefore the General Conformity Rule does not apply.

4.3.2 Environmental Consequences

4.3.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on air quality.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects to air quality through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require

appropriate environmental review and NEPA compliance. As such, the effects to air quality caused by potential future actions would not be expected to be significant.

4.3.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on air quality.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term negative effects to air quality through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to air quality caused by potential future actions would not be expected to be significant.

4.4 TOPOGRAPHY, GEOLOGY, AND SOILS

4.4.1 Existing Condition

Clarence J. Brown Dam and Reservoir is underlain by bedrock of Silurian to Devonian age (359-445 mya). The Silurian aged bedrock is mostly comprised of Dolomite, which supports some carbonate aquifers in the region. The Devonian aged bedrock is mostly comprised of shale of the Ohio Shale group.

Above the bedrock lies deposits of glacial till. All drift exposed at the surface in Clark County was deposited during the Wisconsin stage, however, there are some Illinois deposits buried beneath the Wisconsin tills. The Wisconsin glacier was split into two lobes by highlands in the vicinity of Bellefontaine, Logan County. Its southward advance was concentrated along two main valleys, the Scioto Valley in central Ohio, and the Miami Valley in western Ohio. From these principal routes the ice lobes spread outward and entered Clark County from two directions, the Scioto lobe from the east and the Miami lobe from the northwest. When the valleys became free of ice they were drainage courses for meltwater which deposited pervious sand and gravel, called valley-train deposits. Valley-train deposits vary from less than 1/2 mile to 1 mile wide in the Buck Creek flood plain. These deposits are 20 - 25 foot thick at the damsite.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), there are 29 soil associations at the Project (Appendix A). The project area is 4,395 acres. Of that, 1,968; 1,864; and 563 acres are classified as open water, prime farmland soils, and not prime farmland soils respectively (Appendix A). Prime farmland soils include those classified by the NRCS as "all areas are prime farmland", "farmland of local importance", and "prime farmland if drained". The five most common soil associations are listed in Table 1, and have been divided into two development suitability categories.

1. Suitable for development
2. Unsuitable for development

Table 1. Most Common Soil Associations in Order of Predominance

Soil Association	Typical slope	Suitability Based on Slope and Soil Type
Eldean silt loam	Gentle - Moderate	<i>Suitable.</i> May have some limited suitability due to depth to saturated zone.
Lippincott silty clay loam	Flat	<i>Unsuitable.</i> Characterized by floodplains and prone to frequent flooding
Ockley silt loam	Flat	<i>Suitable.</i> There are no development limitations for this soil association.
Rodman gravelly loam	Very Steep	<i>Unsuitable.</i> Characterized by very steep slopes which do not allow for development.
Sloan silt loam	Flat	<i>Unsuitable.</i> Characterized by floodplains and prone to frequent flooding.

There are three areas on the project that have issues with erosion. They are all along shoreline of the lake and erosion is caused by the increase and decrease in lake levels during yearly lake operations. These areas are within soil types that are classified as prime farmland.

4.4.2 Environmental Consequences

4.4.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan. The 1971 Master Plan does not identify areas with current soil erosion issues and does not classify those areas as environmentally sensitive. This lack of identification of sensitive soils and a comprehensive planning document is not in compliance with USACE regulations and could result in poor stewardship of the resource. Thus moderate to significant adverse effects on soils could be realized. Additionally, the areas where erosion is occurring is classified as prime farmland, which means moderate to significant adverse effects to prime farmland could be realized.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate negative effects to topography, geology, and soil through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this

EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to topography, geology, and soils caused by potential future actions would not be expected to be significant.

4.4.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan. This identifies areas of erosion and classifies their land use as environmentally sensitive areas. Therefore, the updated Master Plan provides a proper framework for the stewardship of soil resources.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term negative effects to topography, geology, and soil through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to topography, geology, and soils caused by potential future actions would not be expected to be significant.

4.5 SURFACE WATER HYDROLOGY AND GROUNDWATER

4.5.1 Existing Condition

Clarence J. Brown Dam and Reservoir is a 2,720 acre project fed by Buck Creek. The tailwater drains into Buck Creek, which flows generally southwest for approximately seven miles before reaching its confluence with the Mad River. The lake gathers stormwater runoff from an 82 square mile watershed, in Champaign and Clark counties. The major tributary of the drainage is Buck Creek. The East Fork of Buck Creek and Dugan Ditch flow into Buck Creek approximately 1.5 and 4.5 miles upstream of the lake respectively. Land use of the watershed is primarily agricultural.

Construction of the Clarence J. Brown Dam began in September 1966 and was completed in November 1973. The reservoir filled in 1974 after the Army Corps began limiting outflow on January 2. Summer and winter pool for the lake are maintained at 2,120, and 1,940 acres of water respectively, with a flood storage pool capacity of 2,720 acres of water.

Water use zoning is implemented at Clarence J. Brown Dam and Reservoir to reduce conflicts between different users. The zones controlling boating at Clarence J. Brown Dam and Reservoir can be seen in Figure 2. There is a no wake zone that extends 300 ft from the shore around the entire lake. No wake zones are also marked north of the campgrounds, around the boat ramp, and around the marina. Boats are not permitted in the area adjacent to the dam and control tower.

4.5.1.1 Tailwater Area

The tailwater area is located downstream of the dam. The minimum flow from the dam is five cfs. The tailwater area has facilities to promote bank fishing and picnicking. Additionally, there is a low-head dam located in the tailwater. This low-head dam was identified as detrimental to water quality by the Ohio EPA; causing the pooling of nutrients and chemicals in agricultural runoff. There have been three other low-head dams modified or removed from Buck Creek, downstream from the Project, and this is the last remaining.

4.5.1.2 Groundwater

Four aquifers are present in the project area that have the potential to yield 100 to 300 gallons of water per minute (See Aquifer Map in Appendix A. Along the areas influenced by Buck Creek there are thick deposits of sand and gravel at depths ranging from 35 to 155 ft. The southern portion of the project area contains thin layers of sand and gravel in unconsolidated glacial deposits at depths ranging from 75 to 205 ft. In the eastern and western parts of the project area there are glacial drift deposits that range in depth up to 215 ft., below that lies a carbonate rock aquifer at depths above 315 ft. Water wells can be found around the project boundaries (See Aquifer Map in Appendix A).

4.5.2 Environmental Consequences

4.5.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on surface water hydrology or groundwater.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects to surface water hydrology and groundwater. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects, caused by potential future actions, would not be expected to be significant.

4.5.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on surface water hydrology and ground water.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term

negative effects to surface water hydrology and groundwater through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to surface water hydrology and groundwater caused by potential future actions, would not be expected to be significant.

4.6 WATER QUALITY

4.6.1 Existing Condition

Water quality at Clarence J. Brown Dam and Reservoir varies greatly depending on seasons, runoff volume, pollution sources, and lake capacity. Immediately around the lake and in the Buck Creek drainage above the lake, wastewater treatment is primarily done with septic tanks. Septic tanks are known to affect lake water quality due to failure, often caused by home expansion without septic expansion. Sewage from failing septic systems can cause nutrient loading of nitrogen and phosphorus in surface waters. Additionally, the upper Buck Creek drainage, which feeds the lake, is primarily agricultural. Agricultural runoff is also known to increase nutrient loading of phosphorus and nitrogen, due to the use of fertilizer and livestock in streams. Elevated nutrient levels result in high microbial populations in surface waters, and those contaminated by sewage often exceed the maximum allowance under the Environmental Protection Agency's (EPA) standards and may result in harmful algal blooms (HABs) and high levels of *Escherichia coli* (*E. coli*).

The Ohio Environmental Protection Agency (Ohio EPA) determines water quality standards based on the designated beneficial uses of the water body. Clarence J. Brown Dam and Reservoir and Buck Creek's designations are for cold water habitat and recreation. In 2009 the Ohio EPA released Total Maximum Daily Loads (TMDL) for the Mad River Watershed. The Buck Creek watershed was classified as impaired, for its designated uses, due to direct habitat alterations, flow alterations, and bacteria. Buck Creek above East Fork Buck Creek and East Fork Buck Creek need nitrate reductions of 42 and 38 percent, respectively to be in attainment for its designated uses. Habitat and flow alteration are causing some impairment in macroinvertebrate communities in Buck Creek downstream of the Clarence J. Brown Reservoir. Ammonia discharging from the reservoir is likely caused by nitrate entering the reservoir, which is converted to ammonia in the water. Nitrate reductions upstream of the reservoir are therefore likely to reduce ammonia outputs. Additionally, the low head dam located in the tailwater negatively affects water quality by reducing dissolved oxygen levels and creating lentic conditions which promote the pooling of nutrients and buildup of algae biomass.

Recommended BMPs for the watershed to reduce nutrient loading are:

- Installation of grass swales
- Riparian buffer restoration

- Grazing land protection
- Land preservation through conservation easements
- Removal of low head dam to restore more natural flow
- Inspection and maintenance of onsite septic systems

4.6.2 Environmental Consequences

4.6.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on water quality.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects to water quality. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to water quality caused by potential future actions would not be expected to be significant.

4.6.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on water quality.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term negative effects to water quality through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to water quality caused by potential future actions would not be expected to be significant.

4.7 HABITATS

4.7.1 Existing Condition

There are six habitat types at the site, which are described below.

Open water aquatic

The majority of the project consists of open water. Fish living in the open water environment include muskellunge, walleye, channel catfish, bullhead catfish, white crappie, black crappie,

bluegill, sunfish, largemouth bass, white bass, and carp. The ODNR annually stocks walleye and muskellunge according to the needs of the ODNR fisheries program. Fish habitat and cover is actively maintained and created by the ODNR.

Wetlands

There are a number of wetlands located on the project. Many wetlands are located in floodplains surrounding the lake and tailwater. Typical wetland flora of Ohio includes various sedges, cattail, spikerush, smartweed, knotweed, arrowhead, pickerelweed, pondweed, naid, watermilfoil, bladderwort, duckweed and waterlily. Trees such as willow, cottonwood, sycamore, maple, ash, and oak are also typical. There are two high quality fens on site, which are grassy wetlands with peat soils and a basic pH. These fen wetlands are incredibly diverse and contain a profusion of wildflowers, insects, and reptiles (see section 1.2.4 for discussion of rare species and habitats). Other common animals found in wetlands include red-winged blackbird, muskrats, mink, beaver, amphibians, as well as a wide range of waterfowl.

Forests

Forest habitat make up the majority of the Project. The forests on the project are second growth, *i.e.* they have been cut before and are not old growth. The project is within the oak-hickory forest type as described by Braun (1950) and later described by the ODNR (1982).

In the uplands the forest is described as oak-hickory with common species include black cherry, black oak, black walnut, bur oak, hackberry, honey locust, pignut hickory, mockernut hickory, red oak, shagbark hickory, and white oak. The bottomlands are described as maple-cottonwood-sycamore floodplain forests with common species including American elm, black willow, boxelder maple, cottonwood, green ash, hackberry, honey locust, Ohio buckeye, sandbar willow, sycamore, and white ash.

Forests are important for a number of wildlife including eastern fox squirrel, eastern grey squirrel, owl species, pileated woodpeckers, raccoon, Cooper's hawk, southern flying squirrel, Virginia opossum, warbler species, white-tailed deer, and various other raptors, songbirds, and woodpeckers.

Managed grassland

This habitat is present in three plots that were established through the seeding of native grassland mix in the 1980's and are maintained through prescribed mowing and burning. These plots total 30.8 acres and consist of a variety of native forbs and grasses including big bluestem, little bluestem, Indian grass, switch grass, black eyed Susan, purple coneflower and more. Wildlife species may include cottontail rabbit, white-tailed deer, coyotes, foxes, thirteen-lined ground squirrel, turkey, grouse, wrens, sparrows, and other various songbirds. Additionally, this habitat type is utilized by bobwhite quail, whose range-wide population has dramatically dropped likely due to habitat loss caused by modern farming techniques.

Old field

This habitat is maintained on the site through periodic mowing. Old fields are successional habitats characterized by the majority of the vegetation being herbaceous with some woody species beginning to establish. The habitat is characterized by aster species, big bluestem, fleabane species, goldenrod species, little bluestem, oxeye daisy, black-eyed susan, switchgrass. Common woody species include black raspberry, and Pennsylvania blackberry. Wildlife use of this habitat is similar to managed grassland.

Successional shrubland

Successional shrublands are areas that were once open herbaceous habitat and are being allowed to succeed into woody growth. This habitat differs from old fields in that it is primarily dominated by woody growth and is beginning to transition into a young forest. Prior to the introduction to the many non-native invasive species that disrupt the natural process of succession, many native ruderal woody species would have colonized these areas including: American elm, black cherry, black gum, black locust, black raspberry, eastern redbud, flowering dogwood, Pennsylvania blackberry, persimmon, red mulberry, and white ash. Today non-native invasive species often take over these shrubland habitats limiting space for the prior mentioned species, and permanently altering the successional trajectory of habitat, *i.e.* the area may never develop into a natural forest type without management. Common invasive species include: amur honeysuckle, autumn olive, Bradford pear, bush honeysuckle, multiflora rose, and white mulberry. These habitats are still useful for wildlife including bobwhite quail, brown thrashers, eastern cottontail rabbit, coyote, fox, indigo buntings, sparrow species, white-tailed deer, wild turkey, wren species, and yellow-breasted chats.

4.7.2 Environmental Consequences

4.7.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on Habitat.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects to habitat. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to habitats caused by potential future actions would not be expected to be significant.

4.7.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would result in beneficial effects on habitats within the Project.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term negative effects to habitat through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to habitats caused by potential future actions would not be expected to be significant.

4.8 LISTED SPECIES

Lists of threatened, endangered and species of special concern are maintained by the USFWS and the State of Ohio. Under the Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531-1544), endangered species are defined as any species in danger of extinction throughout all or portions of its range. A threatened species is any species likely to become endangered in the foreseeable future. The ESA defines critical habitat of the above species as a geographic area that contains the physical or biological features that are essential to the conservation of a particular species and that may need special management or protection. This section also covers birds listed under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C §§ 703-712) as birds of conservation concern.

4.8.1 Existing Condition

The USFWS maintains lists of rare plants and wildlife that occur in each county of the US. The State of Ohio maintains a separate inventory of state-ranked endangered, threatened, and species of special concern. Lists of state listed species by county can be obtained through the ODNR Division of Wildlife website.

An official threatened and endangered species list from the USFWS (Appendix A), dated March 31st, 2020, for the Project area included five species. The Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), eastern massasauga (*Sistrurus catenatus*), rayed Bean (*Villosa fabalis*), and eastern prairie-fringed orchid (*Platanthera leucophaea*).

Indiana bat has a range that intersects with the Project. In the spring, bats emerge from hibernation and migrate to summer roost sites. During the summer months, female Indiana bats establish maternity colonies of up to 100 bats under the loose bark of trees and in tree cavities. Loss and fragmentation of forest habitat are among the major threats to Indiana bat populations. Other threats include white-nose syndrome, winter disturbance, and environmental contaminants (USFWS, 2006).

The northern long-eared bat has a range that intersects with the Project. It was listed as threatened in 2015 due to declines mostly associated with white-nose syndrome. The bats spend winter hibernating in caves and mines. During the summer the bats roost singly or in colonies underneath bark or in cavities of both snags and live trees.

The eastern massasauga was listed as threatened in 2016 and is known to occur on the Project. Its habitat is primarily open prairie wetlands. Massasaugas also use the adjacent uplands around wetlands for part of the year. In the winter they hibernate in crayfish or small mammal burrows. Loss of wetland habitat as well as invasion of wetland habitat by invasive woody shrubs is a major threat. Mowing and prescribed burning are recommended for the prairies they occur on, however the timing should be prior to their emergence from hibernation (USFWS, 2016).

The rayed bean is a small (less than 1.5 inches) freshwater mussel that has a range that overlaps with the Project, however it is not known if this species occurs in Buck Creek above or below the reservoir, or if it occurs in reaches of the watershed downstream from the Project. It can be found in smaller headwater streams, but may also be found in larger rivers or wave-washed areas of glacial lakes. It prefers gravel or sand substrate, and is often found around roots of aquatic vegetation. The rayed bean is threatened by dams and altered flow regimes, pollution from agricultural and private septic runoff, sedimentation, and invasive species (USFWS, 2012).

The eastern prairie fringed orchid has a range that overlaps with the Project, however it is not known if it occurs on the Project. It is a vascular plant that occurs in open prairie wetlands, including fens like those that are on the Project. It requires full sun for optimum growth and can tolerate little to no woody encroachment. This species is threatened mainly due to habitat loss and invasion of woody invasive species. Additionally, collection is a threat, as with many orchids.

Bald eagles are known to nest within the vicinity of the Project, and have been sighted at the project. These birds are protected under the MBTA and the Bald and Golden Eagle Protection Act (BGEPA).

4.8.2 Environmental Consequences

4.8.2.1 No Action

Under the NAA there will be no update in areas identified as environmentally sensitive. The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project without the aid of a comprehensive planning document. Potential future actions could possibly generate negative effects to listed species. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to listed species caused by potential future actions would not be expected to be significant.

4.8.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect

on Indiana bat, northern long-eared bat, eastern massasauga, rayed bean, or the eastern prairie-fringed orchid.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate negative effects to listed species through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to listed species caused by potential future actions would not be expected to be significant.

4.9 DEMOGRAPHICS AND ENVIRONMENTAL JUSTICE

4.9.1 Existing Condition

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations (Executive Order, 1994), directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority population and low-income populations. When conducting NEPA evaluations, the Corps of Engineers incorporates Environmental Justice considerations into both the technical analyses and the public involvement in accordance with the USEPA and the CEQ guidance (CEQ, 1997).

The CEQ guidance defines “minority” as individual(s) who are members of the following population groups: American Indian or Alaskan native, Asian or Pacific Islander, Black, not of Hispanic origin, and Hispanic. The Council defines these groups as minority populations when either the minority population of the affected area exceeds 50-percent of the total population, or the percentage of minority population in the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Low-income populations are identified using statistical poverty thresholds from the Bureau of the Census Current Population Reports, Series P-60 on Income and Poverty (USCB, 2010). In identifying low-income populations, a community may be considered either as a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. The threshold for the 2010 census was an income of \$10,956 for an individual and \$21,954 for a family of four (USCB, 2010). This threshold is a weighted average based on family size and ages of the family members.

The proposed Master Plan identified an area of influence (AOI) of the Project. The simple definition of the area of influence is the area in which the majority of project visitors live. USACE defined the primary AOI as counties within 30 minutes of travel from the project and the secondary AOI as counties within 60 minutes of travel from the project (Figure 5). The Project

AOI is comprised of 17 counties in Ohio, four in the primary area of influence and 13 in the secondary area of influence (Figure 5).

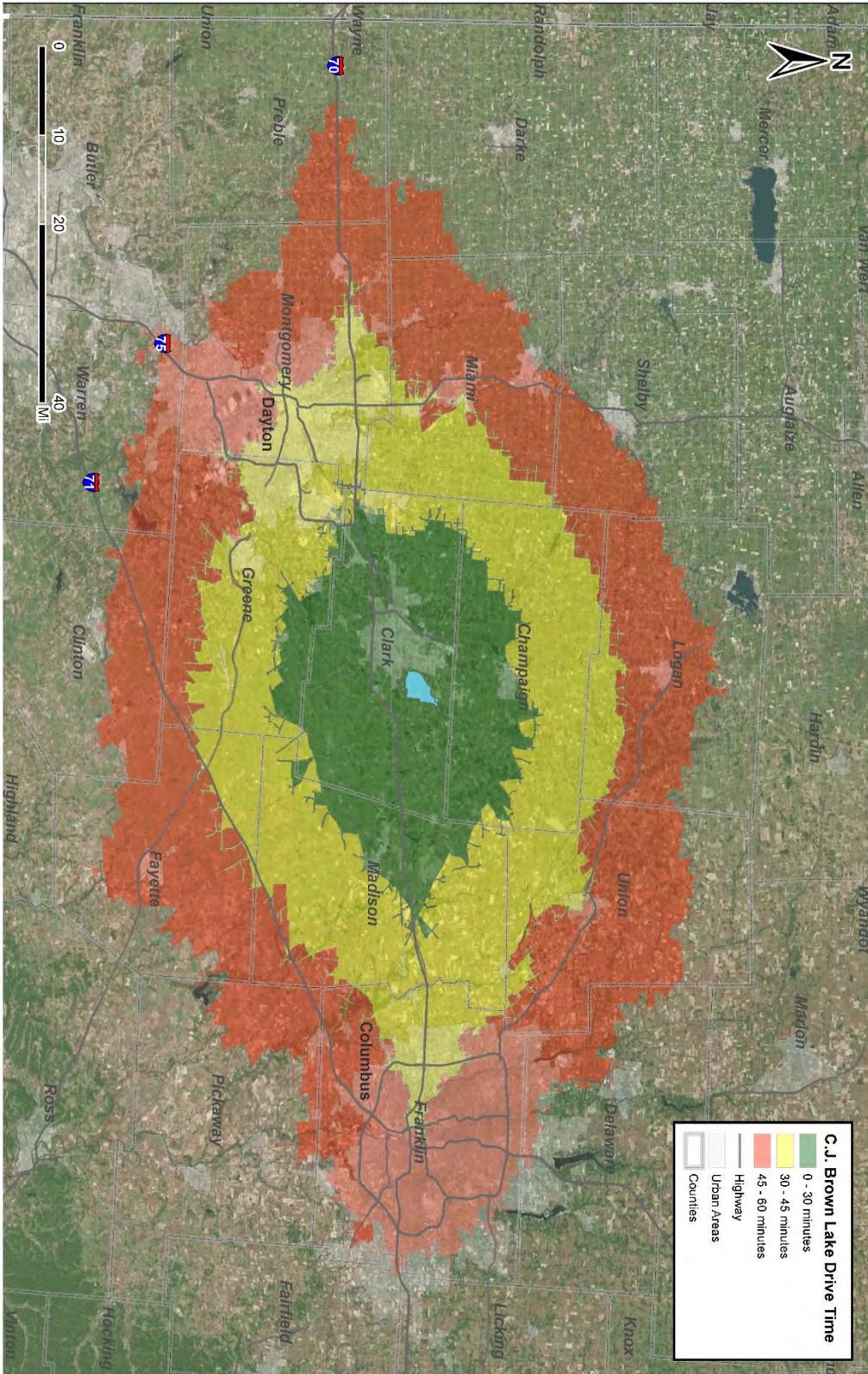


Figure 5. Area of influence map for the Clarence J. Brown Dam and Reservoir Project.

Table 2 shows the median household incomes and poverty rate in the primary and secondary AOI, the state of Ohio, and the United States. Generally the AOI has a higher median income and lower poverty rate than the state of Ohio. The AOI also has a lower poverty rate than the United States. However, median income is slightly less than the national

Table 2. The 2018 Median Household Income and Poverty Rate of the Project Area of Influence, State of Ohio, and United States.

Area of Influence	Income	% of Families in Poverty
Primary	\$57,175	9.18
Secondary	\$60,343	8.63
State of Ohio	\$52,407	10.80
United States	\$63,179	11.80

Table 3 shows historic populations as well a population projections for each area of influence and displays the projected population change from 2020 to 2040. The population is expected to shrink slightly within the primary AOI, while it is expected to grow significantly within the secondary AOI. The majority of population growth is expected to be in the Columbus metropolitan area in Franklin and Delaware Counties. This is consistent with the general nationwide trend of rural areas decreasing or remaining relatively stable, while urban areas increase in population.

Table 3. Historic and Future Population in the Area of Influence of Clarence J. Brown Dam and Reservoir

Area of Influence	2000 Population	2010 Population	2020 Population	2030 Population	2040 Population	% Change (2020-2040)
Primary	371,731	383,438	381,940	379,940	376,470	-1.43
Secondary	2,347,453	2,557,558	2,717,400	2,851,150	2,975,090	9.48
Total	2,719,184	2,940,996	3,099,340	3,231,090	3,351,560	8.14

Source: Ohio Development Services Agency

In general, Ohio’s population is aging, with an increasingly larger portion of the population being 65 or older. This also is true within the Project’s AOI, with all counties projected to have an increased proportion of older individuals through the year 2040. Generally the metropolitan areas of the AOI, like Columbus and Dayton, have younger populations than rural areas. However, the populations of urban counties are still projected to increase in age.

4.9.1.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan. Under the NAA, the trends of growth of population observed in the recent years surrounding the Project would be expected to continue. There would also be no disproportionate adverse effects to minority or low-income communities as a result of implementing the NAA.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects to habitat. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to demographics caused by potential future actions would not be expected to be significant, and the NAA is not expected to have any disproportionate adverse effects to any minority or low-income communities.

4.9.1.2 Proposed Action

Changes in population and associated stresses on the municipal resources and services over the past 40 years have occurred while the USACE has managed the Project. Implementing the revised Master Plan would be expected to have no effect on the demographic trends of the surrounding communities. The Proposed Action would not result in any appreciable effects to the local or regional socioeconomic environment. Changes to land use classification would have no impact on socioeconomics or to minority or low income communities. Construction of future projects consistent with the Updated Master Plan would be expected to have minor beneficial effects associated with short term employment of construction personnel and transportation of goods and materials to the construction sites. There would be no disproportionate adverse effects to minority or low income communities since the Proposed Action would be located within federal lands and projects would benefit local residents by enhancing recreational opportunities.

4.10 RECREATION AND VISITATION

4.10.1 Existing Condition

The Project affords its visitors many choices for outdoor recreation. Table 4 lists major activities available to visitors, with location and capacity for each.

Table 4. Recreational Activities at Clarence J. Brown Dam and Reservoir

Activity	Location	Description
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Boating	Buck Creek Ln Boat Ramp	Five-lane boat launch
	Buck Creek State Park Marina	Marina with over 180 slips, fuel, snack bar, and bait shop
Camping	Buck Creek State Park Campground	86 electric sites, 22 non-electric sites
	Buck Creek State Park Cabins	25 two bedroom cabins
	Clarence J. Brown Dam and Reservoir	Boat camping available
Fishing	Overlook Drive	Bank access and handicap accessible fishing pier
	Buck Creek Ln boat ramp	Bank access
	Buck Creek State Park Marina	Bank access and handicap fishing pier
Hunting and Trapping	Buck Creek State Park hunting area	Approximately 330 acres of land available for hunting and trapping
	Clarence J. Brown Dam and Reservoir	The majority of the lake is open to waterfowl hunting (See Figure 6)
Picnicking	Lake View Shelter	12 picnic tables
	Meadow View Shelter	12 picnic tables
	Prairie View Shelter	14 picnic tables
	USACE visitor center and surrounding area	50 picnic tables
Swimming	Buck Creek State Park Beach	2,400 foot sand beach and swimming area

Hiking

Buck Creek State Park

13.29 miles of moderate trails

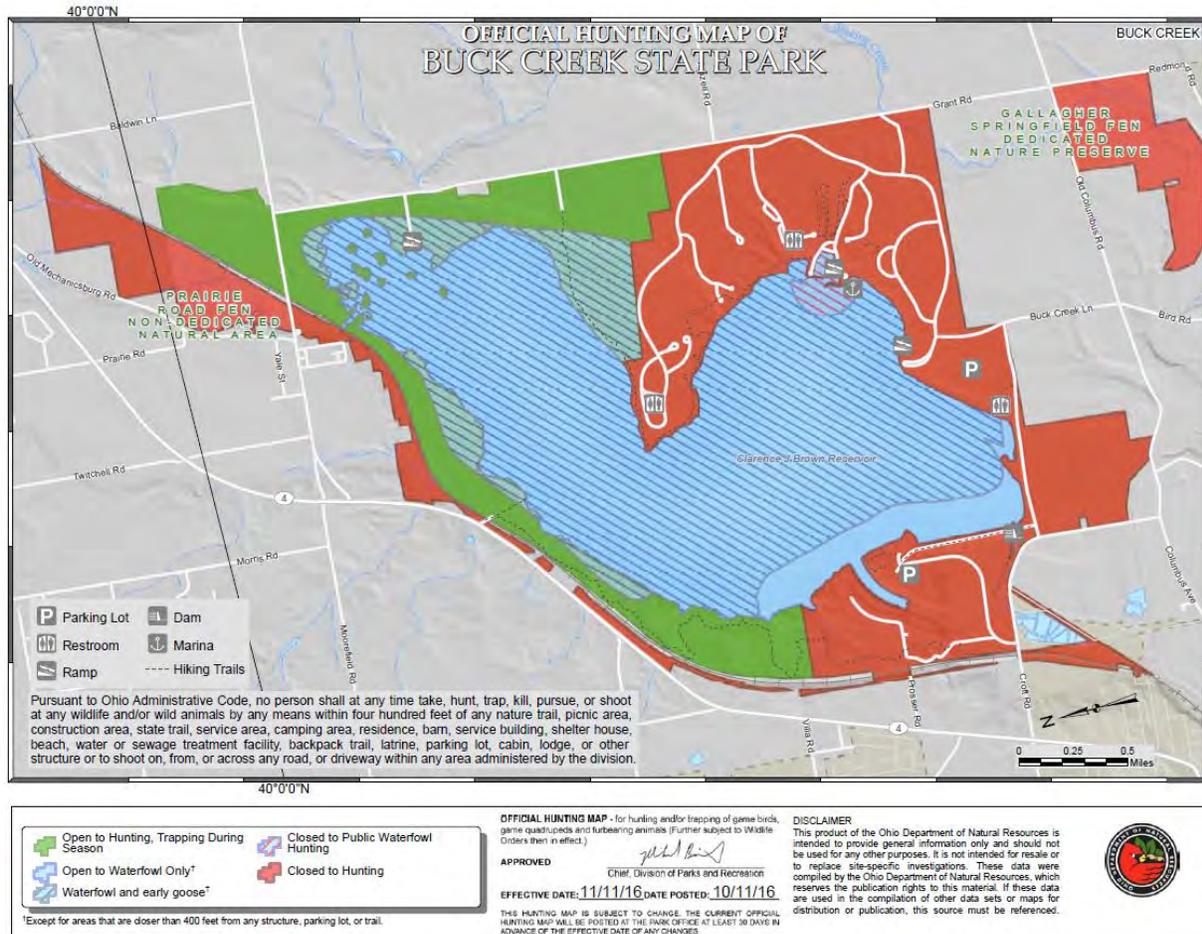


Figure 6. General hunting map for the Clarence J. Brown Dam and Reservoir Project. Taken from the Ohio Department of Natural Resources.

National and regional variables affect the way people decide to spend their leisure time. For that reason, Clarence J. Brown Dam and Reservoir visitation can fluctuate from year to year. Table 5 presents historic visitation data for the total Project dating from Fiscal Year (FY) 2013-14 to FY 2019-20. Generally, there is a trend of increased visitation seen from 2014 to 2019, with one year (2015) showing a decrease. Visitation data for 2017 was unavailable.

Table 5. Visitation Data 2014-2019

Fiscal Year	Project Visitation
2014	507,783

2015	425,096
2016	518,230
2017	N/A
2018	553,010
2019	688,731

Source: USACE Natural Resource Management Gateway, 2020

4.10.1.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on recreation and visitation.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions could possibly generate short term negative effects recreation and visitation. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to recreation and visitation caused by potential future actions would not be expected to be significant.

4.10.1.2 Proposed Action

This alternative would result in an updated resource objectives, land classifications (Figure 2), and management of the Project under the updated Project Master Plan. Once implemented, these updates would be expected to result in beneficial effects to recreation and visitation at the Project. While areas designated for recreation would not change from the previous Master Plan, the updated resource objectives would improve the recreational experience of visitors.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate short term negative effects to recreation and visitation through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to recreation and visitation caused by potential future actions would not be expected to be significant.

4.11 CULTURAL RESOURCES

4.11.1 Existing Condition

Several cultural resource surveys have been carried out around Clarence J. Brown Dam and Reservoir. All of the previous investigations at Clarence J. Brown Dam and Reservoir were

carried out as part of compliance with Section 106 under the National Historic Preservation Act. The earliest archeological investigations in the Clarence J. Brown Dam and Reservoir area were undertaken after the impoundment of Clarence J. Brown Dam and Reservoir. The Ohio Historical Society carried out an archaeological survey of Clarence J. Brown Dam and Reservoir of exposed soils and areas identified as high probability to contain prehistoric habitations or mounds. The 1976 survey did not identify any sites. A recommendation was made for additional survey and testing at site 33CL16 (prehistoric mound) to determine if any additional habitation features related to the mound were still present. The survey also recommended additional testing at the David Crabill House to search for any outbuildings, features, or subsurface deposits related to the house (Chapman and Otto 1976).

In 1989, Archaeological Services Incorporated, Inc. carried out an archaeological survey of 27 acres associated with a project in support of the Clarence J. Brown Dam and reservoir. The survey did not identify any sites within the lake boundary. Archaeological Services Incorporated recommended no more archaeological work for the project (Beamer 1989).

In 1994, Algonquin Consultants, Inc. carried out a Phase I archaeological survey of the low pool shoreline along Clarence J. Brown Dam and Reservoir (Hawkins and Ruter 1995). Algonquin Consultants survey identified five sites during their survey (33CL283–287). Additional testing was recommended for sites 33CL284 and 33CL287 and monitoring of site 33CL283 was recommended if any ground disturbing activities are planned within its vicinity. They recommended no further work for sites 33CL285 and 33CL286 (Hawkins and Ruter 1995).

In 1996, the Corps carried out limited archaeological investigations at the National Register of Historic Places (NRHP) listed David Crabill House. The investigation consisted of a series of shovel tests along with general surface collection at a proposed well site and associated pipeline route. The majority of artifacts recovered during the survey date to the 20th century. Few of the items recovered during the survey could be dated to the 19th century. The Corps recommended developing a management plan for the house and to conduct additional testing (Ball and Bader 1996).

In 1998, 3D Environmental Services conducted a cultural resources survey of 6.5 miles of the redesignation of a 6.5-mile long snowmobile trail to a dual use snowmobile I bridle trail for the Ohio Department of Natural Resources. The survey did not find any historic properties within the trail and recommended no further cultural resources work for the project (Striker 1998).

In 2002, the USACE carried out cultural resource surveys for a picnic shelter, vault toilet, and well at the Horseman's Staging Area and ahead of the installation of primitive campground spaces, several campground pull-ins, and a gravel looped path at the Buck Creek State Park (Keeney 2002a; 2002b). The surveys found no evidence of cultural resources within the two areas surveyed and recommended no additional surveys for the projects.

In 2002, ASC Group conducted a cultural resources survey of the proposed Buck Creek State Park Marina and Dock Improvements in Moorefield Township, Clark County, Ohio (Gibbs 2002).

The 2002 survey did not uncover any cultural resources within the area of the proposed marina and dock improvements and recommended no further cultural resources work for the project.

In 2013, Weller and Associates carried out a Phase I cultural resources survey of 3.5 miles of bridle trails at Buck Creek Park (Zink and Weller 2013). The Weller and Associates survey did not uncover cultural resources during their survey and recommended no further work in regards to historic properties.

In 2017 and 2018, Ch2M Hill Engineers, Inc. carried out a Phase I archaeological reconnaissance of the East Springfield-Tangy 138 kV Loop to Broadview Substation (Greenburg et al. 2018). A portion of the transmission line crossed portions of Clarence J. Brown Dam and Reservoir property. Ch2M's survey did not identify any archaeological sites on Clarence J. Brown Dam and Reservoir property. Ch2M recommended no further work on the portion of the line that crossed Clarence J. Brown Dam and Reservoir property.

Currently there is one NRHP listed historic property located within the reservoir's boundary (David Crabill House). This property is listed on the NRHP for its local historical significance—David Crabill was a veteran of the War of 1812 and one of the founding members of Clark County—and also because of its excellent example of late Federal architectural style. There is also a potential for subsurface structures or middens associated with this property.

In addition to the Crabill House, three other historic era sites (33CL284–287) and one historic cemetery (33CL283) have been recorded within the reservoir boundary. Three of the four historic sites (33CL284, 33CL286, and 33CL287) are believed to represent past homesteads dating between the mid-19th to the mid-20th centuries. The other historic site (33CL285) is a historic scatter of artifacts dating from the mid-19th to the mid-20th centuries. The cemetery (33CL283) is associated with the David Crabill house, but may have been used well into the 1900s; all human remains from 33CL283 were reportedly exhumed and buried elsewhere before impoundment.

Known prehistoric sites are limited within the reservoir's boundary. The Foley mound site (33CL3) is a Woodland earthen mound. The Engle mound site (33CL16) was destroyed by gravel-quarrying operations before the dam's construction. Furthermore, a single isolated find of a gorget fragment (Late Archaic to Early Woodland period) was recovered at one of the historic homestead sites (33CL284). The artifact could have been part of a collection held by the historic residents or may have been secondary deposited from elsewhere. Lastly, the Chenowith Site (33CL161) is a prehistoric burial of unknown age.

4.11.2 Environmental Consequences

4.11.2.1 No Action

Under the NAA there will be no update in areas identified as environmentally sensitive. The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project without the aid of a comprehensive planning

document. Potential future actions could possibly generate negative effects to cultural resources. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review as well as NEPA and NHPA compliance. As such, the effects to cultural resources caused by potential future actions would not be expected to be significant.

4.11.2.2 Proposed Action

This alternative would result in an updated land classification for the project (Figure 2) and management of the project under the updated Project Master Plan. This would designate cultural sites as environmentally sensitive areas, and thus protect them from development and incompatible uses. As a result, the PAA would have a beneficial effect on cultural resources.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions could possibly generate negative effects to cultural resources through construction activities. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. Prior to implementation of any ground disturbing activity, field surveys and Section 106 NHPA coordination with the Ohio State Historic Preservation Office (SHPO) will be conducted by the USACE. Federal and state laws require federal agencies to minimize or mitigate adverse impacts to historic properties (36 CFR Part 800.13). Should unanticipated historic or prehistoric resources be discovered during ground disturbing activities, work must cease immediately and the USACE will contact the SHPO. As such, the effects to cultural resources caused by potential future actions, would not be expected to be significant.

4.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE MATERIALS (HTRW)

4.12.1 Existing Condition

The USEPA Envirofacts database was queried to identify HTRW sources within a five-mile radius of the Project boundaries. No permitted hazardous waste disposal facilities were identified and there are no known sites of hazardous, toxic, or radioactive materials on Project lands.

4.12.2 Environmental Consequences

4.12.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on or to HTRW.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions have the potential to create HTRW materials as a result of equipment malfunction or failure during the

construction process exists (e.g., fluid leaks from heavy equipment). However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects on or to HTRW from potential future actions would not be expected to be significant.

4.12.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on or to HTRW.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions have the potential to create HTRW materials as a result of equipment malfunction or failure during the construction process exists (e.g., fluid leaks from heavy equipment). However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects on or to HTRW from potential future actions would not be expected to be significant.

4.13 AESTHETICS/VISUAL QUALITIES

4.13.1 Existing Condition

The Project includes a variety of aesthetic natural resources. The Prairie Fen State Nature Preserve has a boardwalk which offers unique views of rare habitat, wildflowers, and wildlife that are difficult to find in Ohio. Overlook Drive and other roads on the project offer panoramic views of Clarence J. Brown Dam and Reservoir and the wildlife that occupy it, including waterfowl. Additionally, the various habitats offer opportunities to view wildlife, including birds at the Project, which is designated as an important bird area by the Audubon Society.

4.13.2 Environmental Consequences

4.13.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on aesthetics.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions have potential negative effects to aesthetics. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to aesthetics caused by future potential actions would not be expected to be significant.

4.13.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect on aesthetics.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions have potential negative effects to aesthetics. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to aesthetics caused by potential future actions would not be expected to be significant. Comprehensive planning under the new Master Plan could potentially facilitate improved construction planning minimizing the short term aesthetic effects during potential future actions.

4.14 NOISE

4.14.1 Existing Condition

Changes in noise are typically measured and reported in units of dBA, a weighted measure of sound level. The primary sources of noise within the Project area include everyday vehicular traffic along the adjacent highways (typically between 50 and 60 dBA at 100 feet) and human-generated recreational activities at the Project. Noise ranging from about 10 dBA for the rustling of leaves to as much as 115 dBA (the upper limit for unprotected hearing exposure established by the Occupational Safety and Health Administration) is common in areas where there are sources of recreational activities, construction activities, and vehicular traffic.

4.14.2 Environmental Consequences

4.14.2.1 No Action

This alternative would result in the management and land use of the Project continuing as outlined in the 1971 Master Plan, which would have no effect on noise levels.

The USACE would continue to perform actions in the future to maintain and improve environmental and recreational resources at the Project. Potential future actions have potential negative effects to noise levels. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, while operating under the NAA, would require appropriate environmental review and NEPA compliance. As such, the effects to noise levels caused by potential future actions would not be expected to be significant.

4.14.2.2 Proposed Action

This alternative would result in an updated land use classification for the project (Figure 2) and management of the project under the updated Project Master Plan, which would have no effect

on noise levels. No areas are designated for high density recreation, or other classifications that could increase ambient noise, in the updated Master Plan that are not already used for that purpose.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions have potential negative effects to noise levels. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects to noise levels caused by potential future actions would not be expected to be significant.

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5 CUMULATIVE EFFECTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impact of the action. A cumulative impact is defined as *“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable potential future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR§1508.7).”* Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These actions include on- or off-site projects conducted by government agencies, businesses, or individuals that are within the spatial and temporal boundaries of the actions considered.

The Master Plan is intended to guide the USACE toward achieving its goal of managing, conserving and enhancing natural resources, while providing quality opportunities for outdoor recreation to the public. The plan is consistent with authorized project purposes and relevant legislation and regulations, and was developed in response to regional and local needs, resource capabilities and suitability, and expressed public interests. As previously discussed, it is anticipated that the Proposed Action will have no effect or negligible effects on the resource types or areas of concern (reservoir operation, air quality, topography, geology, soils, surface water hydrology, groundwater, water quality, habitats, listed species, demographics and environmental justice, recreation and visitation, cultural resources, HTRW materials, aesthetics and visual resources, and noise). Thus, there would be no cumulative effects of the Proposed Action on these resources when added to the impacts of other past, present, and reasonably foreseeable potential future actions in the region.

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6 SUMMARY OF ENVIRONMENTAL EFFECTS

The updated Master plan provides guidelines and direction for future Project development and use. It is based on authorized Project purposes, USACE policies and regulations on the operation of USACE projects, responses to regional and local needs, resource capabilities and suitable uses, and expressed public interests consistent with authorized Project purposes and pertinent legislation.

Careful planning, sound engineering, appropriate coordination with resource agencies and effective execution have developed the recreational resources at the Project while protecting and enhancing the important environmental resources; these practices would be expected to continue.

Implementation of the updated Master Plan, which includes updated land use classifications, is expected to have no adverse effect on all environmental resources analyzed (Table 6.). As there is no adverse effect expected to any environmental resource, there is no adverse cumulative effect expected by the implementation of the PAA.

Within the updated Master Plan there are potential future actions that are recommended to meet goals outlined for the Project. Potential future actions have the potential to cause negative effects to all environmental resources analyzed. However, analysis of future unplanned actions is not feasible and is outside of the scope of this EA. All potential future actions taken by USACE, recommended in the updated Master Plan or otherwise, would require appropriate environmental review and NEPA compliance. As such, the effects caused by potential future actions would not be expected to be significant.

Table 6. Summary of Environmental Effects Caused by the Proposed Action Alternative (PAA)

Environmental Resource	Intensity of Effect caused by PAA
Reservoir, Pool, and Lake Operation	No Effect
Climate	No Effect
Air Quality	No Effect
Topography, Geology, and Soils	No Effect
Surface Water Hydrology and Groundwater	No Effect
Water Quality	No Effect
Habitats	Beneficial Effect
Listed Species	No Effect

Demographics and Environmental Justice	No Effect
Recreation and Visitation	Beneficial Effect
Cultural Resources	Beneficial Effect
Hazardous, Toxic and Radioactive Waste Materials	No Effect
Aesthetic/Visual Qualities	No Effect
Noise	No Effect

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7 COMPLIANCE WITH ENVIRONMENTAL LAWS

Implementation of the updated Master Plan for the Clarence J. Brown Dam and Reservoir will achieve compliance with all applicable environmental laws and regulations, described below, upon coordination of this EA with appropriate agencies, organizations, and individuals for their review and comments. No future action, recommended within the updated Master Plan or otherwise, would begin until compliance with the laws below are met. Potential future actions will also be coordinated with appropriate agencies, organizations, and individuals for their review and comments, per NEPA regulations.

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 668a-668d.

In compliance.

The Bald and Golden Eagle Protection Act imposes requirements on Corps of Engineers projects concerning bald eagles. Approval and implementation of the revised master plan would not adversely affect bald eagles or their habitat.

Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.

In compliance.

The purpose of the Clean Air Act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for States to attain, or maintain. Implementation of the PAA would be in compliance with the Clean Air Act, as no emissions would be released as a result of implementing a new Master Plan. Because Clark County is currently designated as being in attainment for all criteria pollutants, no General Conformity Rule determination is required.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. 1251, et seq.

In compliance.

The objective of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. 1251). The Corps of Engineers regulates discharges of dredged or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. Section 404 requires authorization to place dredged or fill material into waters of the United States. If a Section 404 authorization is required, a Section 401 water quality certification from the state in which the discharge originates is also needed. The proposed projects recommended in the master plan would not be expected to result in the placement of dredged or fill material into water bodies or wetlands. Any potential future actions at the Project which would result in the placement of dredged or fill material into waters of the United States would be undertaken in compliance with Section 404 and Section 401 of the Clean Water Act.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

Not applicable.

CERCLA governs (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment that presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. The implementation of the revised master plan would not involve real estate transactions, and no release or threatened release of hazardous substances into the environment at the Project is known.

Endangered Species Act, as amended. 16 U.S.C. 1531, et seq.

In compliance.

Section seven of the Endangered Species Act (16 U.S.C. 1536) states that all Federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior (Secretary), insure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to be critical.

This Environmental Assessment represents the assessment and findings regarding the proposed revised master plan and serves as the Biological Assessment with a determination of no effect to the Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), eastern massasauga (*Sistrurus catenatus*), rayed Bean (*Villosa fabalis*), and eastern prairie-fringed orchid (*Platanthera leucophaea*).

Environmental Justice (E.O. 12898).

In compliance.

The Executive Order governing environmental justice directs that every federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The Project does not disproportionately affect minority or low-income populations.

Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661, et seq (FWCA).

In compliance.

The FWCA requires governmental agencies, including the Corps of Engineers, to coordinate activities so that adverse effects on fish and wildlife would be minimized when water bodies are

proposed for modification. No modifications to water bodies are proposed in association with the proposed update to the Master Plan. Any comments received from resource agencies are located in Appendix A of this EA.

Migratory Bird Treaty Act of 1918 (MBTA)

In compliance.

The MBTA is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs agencies to take certain actions to implement the act. The Corps of Engineers will consult with the USFWS (through their review of the draft EA) with regard to their consideration of the effects of the actions identified in the master plan revision for potential effects on migratory birds. No effects are anticipated.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq (NHPA).

In compliance.

The NHPA requires that Federal agencies having direct or indirect jurisdiction over a proposed federal or federally assisted undertaking take into account the effect of the undertaking on any district, site, building, structure, or object that is included in, or eligible for inclusion in, the NRHP. The USACE has made the determination in accordance with 36 CFR Part 800.3 (a)(1) of the NHPA that the implementation of the proposed master plan revision and updates do not have the potential to adversely impact historic properties.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq.

In Progress.

This Environmental Assessment and Finding of No Significant Impact (FONSI) has been prepared in accordance with the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR §§ 1500-1508). An Environmental Impact Statement (EIS) is not required. Signing of the FONSI will conclude compliance with the NEPA.

Noise Control Act of 1972, 42 U.S.C. Sec. 4901 to 4918.

In compliance.

The Noise Control Act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise emissions to within compliance levels. No increase to noise levels at the

Project are anticipated from implementation of the revised Master Plan. Noise emission levels at the Project site may increase above current levels temporarily if construction of improvements or features identified in the proposed master plan revision is undertaken, but those potential future actions would undergo separate review for compliance with the Noise Control Act and other applicable environmental laws. Appropriate measures would be taken during those activities to keep the noise level within the compliance levels.

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

In compliance.

Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The proposed action would not involve the construction of structures within the Projects reservoir or streams. Any future action that would, such as the recommended removal of the low-head dam and construction of whitewater structure, would require independent analysis for compliance with this law.

Floodplain Management (E.O. 11988).

In compliance.

Section one of the Executive Order on floodplain management requires each agency to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. The proposed action would not affect the flood holding capacity or flood surface profiles of Clarence J. Brown Dam and Reservoir. Additionally, the proposed action does not significantly change land use in the floodplains of the project, with major changes to land use being the identification of environmentally sensitive areas. Designation of environmentally sensitive areas would have no negative effect to floodplains.

Protection of Wetlands (E.O. 11990).

In compliance.

The Executive Order on protection of wetlands directs that Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies responsibilities. Each

agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The proposed action classifies the land use of all known wetlands as environmentally sensitive areas, which prohibits construction or agriculture and therefore gives added protection to the wetlands on the project.

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8 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented” (42 U.S. Code § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. The impacts for this project from the reclassification of land would not be considered an irreversible commitment because much of the land could be converted back to prior use at a future date. Any future development or construction projects to be undertaken consistent with the revised Master Plan would undergo separate NEPA analysis, as appropriate, before any irretrievable and irreversible commitment of resources (financial or otherwise) would occur to implement those projects.

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9 PUBLIC INVOLVEMENT

In compliance with 40 CFR 1501.4(e)(2), this EA is being circulated for a 30-day review to concerned agencies, organizations, and the interested public, along with a copy of the draft revised Master Plan. All comments received during this review period will be evaluated and changes to the EA will be implemented and addressed in the Finding of No Significant Impact (FONSI), as appropriate. All received comments will be included in Appendix A of this EA. The EA and Finding of no Significant Impact (FONSI) will be retained in the Louisville District's administrative files for future reference and as a record of NEPA compliance.

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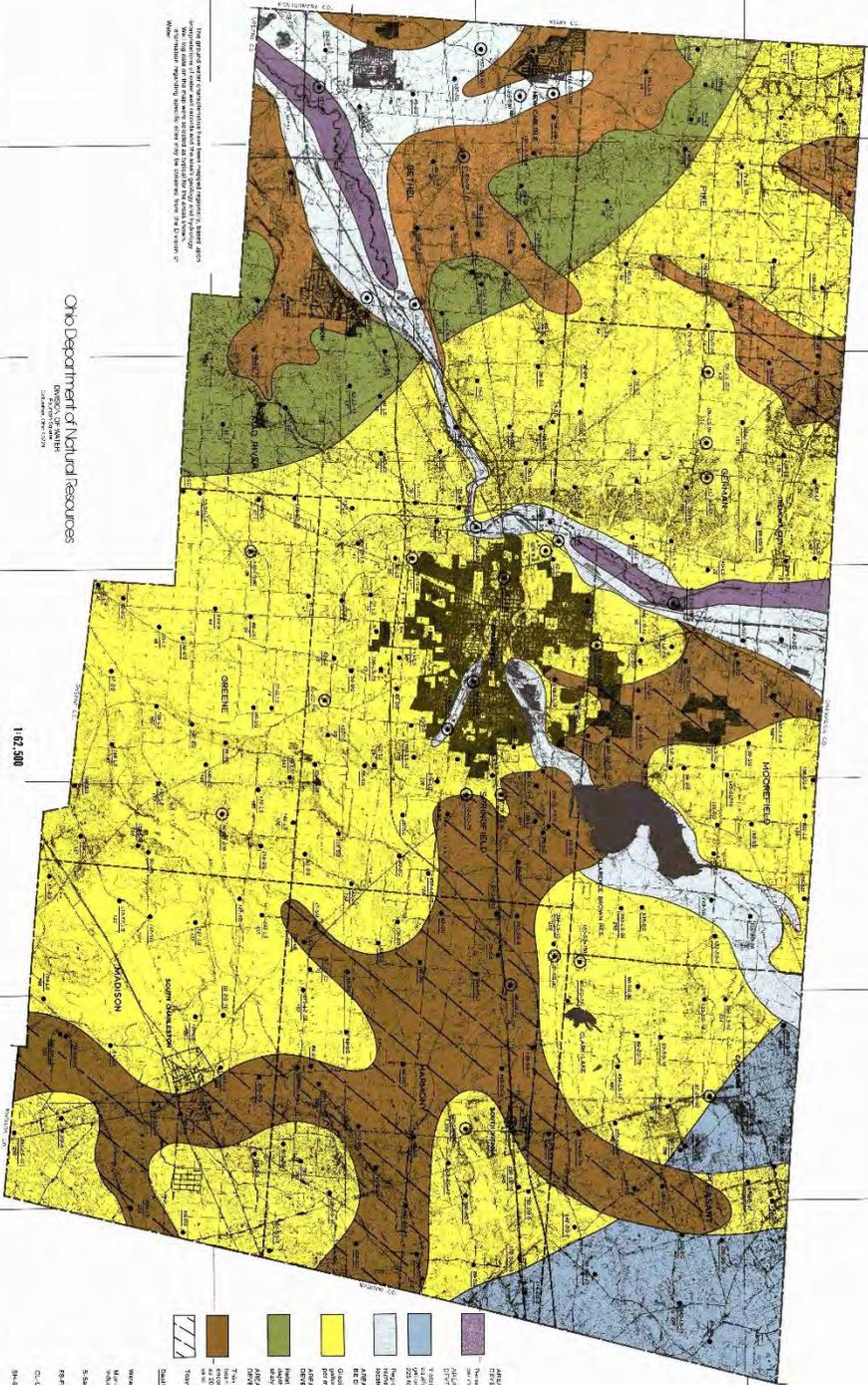
Appendices

Appendix A
Supporting Documents

Ground-Water Resources of CLARK COUNTY

by
James J. Schmidt
(after Norris, S. E. 1952)

Index Map



This ground water classification has been compiled primarily from geologic maps of Clark County, Ohio, and the vicinity of Clark County, Ohio. The author acknowledges the cooperation and assistance of the following persons:

Ohio Department of Natural Resources
DIVISION OF WATER
COLUMBUS, OHIO

1:82,500
Scale in miles



Graphic Interval: 10 feet

Cartography: Douglas E. Kern

- APPROXIMATE COORDINATES: 84° 15' 00" WEST, 40° 15' 00" SOUTH
- The symbols used in this map are those of the National Hydrogeological Information System (NHIS) and are defined in the National Hydrogeological Information System (NHIS) Manual, 1978, published by the U.S. Geological Survey, Reston, Virginia.
- Ground water resources are classified into three categories: (1) High potential, (2) Moderate potential, and (3) Low potential. The classification is based on the geologic and hydrogeologic characteristics of the aquifers and the estimated recharge to the aquifers.
- High potential resources are those areas where the aquifers are unconsolidated and are generally composed of sand and gravel. These areas are generally located in the western and central parts of the county.
- Moderate potential resources are those areas where the aquifers are unconsolidated and are generally composed of sand and gravel. These areas are generally located in the eastern part of the county.
- Low potential resources are those areas where the aquifers are consolidated and are generally composed of shale and limestone. These areas are generally located in the southern part of the county.
- Legend:
- High potential resources (Yellow)
 - Moderate potential resources (Light Green)
 - Low potential resources (Dark Green)
 - Unconsolidated sand and gravel (Light Blue)
 - Consolidated sand and gravel (Dark Blue)
 - Shale (Brown)
 - Limestone (Dark Brown)
 - Water well (Black circle)
 - Spring (Black circle with a dot)
 - Stream (Blue line)
 - Road (Black line)
 - Property boundary (Black line)
 - Topographic contour (Black line)

Published, 1987

Soil Unit Symbol	Soil Type	Acres in Project	Percent of Project	Farm Class
EmA	Eldean silt loam, 0 to 2 percent slopes	175	4.00%	All areas are prime farmland
EmB	Eldean silt loam, 2 to 6 percent slopes	397.4	9.00%	All areas are prime farmland
EmB2	Eldean silt loam, 2 to 6 percent slopes, eroded	9.4	0.20%	All areas are prime farmland
EpB2	Eldean-Miamian complex, 2 to 6 percent slopes, eroded	6.5	0.10%	All areas are prime farmland
MhA	Miamian silt loam, 0 to 2 percent slopes	3.2	0.10%	All areas are prime farmland
MhB	Miamian silt loam, 2 to 6 percent slopes	33.5	0.80%	All areas are prime farmland
MkB2	Miamian silty clay loam, 2 to 6 percent slopes, eroded	4.2	0.10%	All areas are prime farmland
OcA	Ockley silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	260	5.90%	All areas are prime farmland
Rn	Ross silt loam, 0 to 2 percent slopes, occasionally flooded	1.2	0.00%	All areas are prime farmland
RuA	Rush silt loam, 0 to 2 percent slopes	136.9	3.10%	All areas are prime farmland
ThA	Thackery silt loam, 0 to 2 percent slopes	1	0.00%	All areas are prime farmland
Ts	Tremont silt loam, occasionally flooded	5.6	0.10%	All areas are prime farmland
WeA	Warsaw silt loam, 0 to 3 percent slopes	56.7	1.30%	All areas are prime farmland

WpA	Waupecan silt loam, 0 to 2 percent slopes	0.3	0.00%	All areas are prime farmland
Ad	Adrian muck, drained	12.9	0.30%	Farmland of local importance
Cb	Carlisle muck, undrained	19.1	0.40%	Farmland of local importance
Soil Unit Symbol	Soil Type	Acres in Project	Percent of Project	Farm Class
EmC2	Eldean silt loam, 6 to 12 percent slopes, eroded	43.4	1.00%	Farmland of local importance
EnC2	Eldean-Casco complex, 6 to 12 percent slopes, eroded	18.2	0.40%	Farmland of local importance
EpC2	Eldean-Miamian complex, 6 to 12 percent slopes, eroded	77.6	1.80%	Farmland of local importance
Ae	Adrian muck, undrained	39.7	0.90%	Not prime farmland
CcD2	Casco gravelly loam, 12 to 20 percent slopes, eroded	0.1	0.00%	Not prime farmland
DAM	Dam	43.7	1.00%	Not prime farmland
EpC3	Eldean-Miamian complex, 6 to 12 percent slopes, severely eroded	1.6	0.00%	Not prime farmland
EpD2	Eldean-Miamian complex, 12 to 18 percent slopes, eroded	118.2	2.70%	Not prime farmland
RgE	Rodman gravelly loam, 18 to 35 percent slopes	244.8	5.60%	Not prime farmland
Ud	Udorthents, loamy	115.1	2.60%	Not prime farmland
W	Water	1,967.00	44.80%	Not prime farmland

Lm	Lippincott mucky silt loam	58.5	1.30%	Prime farmland if drained
Lp	Lippincott silty clay loam, 0 to 2 percent slopes	317.7	7.20%	Prime farmland if drained
ScA	Savona silt loam, 0 to 2 percent slopes	3.7	0.10%	Prime farmland if drained
So	Sloan silt loam, sandy substratum, occasionally flooded	222.4	5.10%	Prime farmland if drained
Totals for Project		4,394.70	100.00%	

Appendix B
Agency Consultation



Miami Tribe of Oklahoma

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Ph: (918) 541-1300 • Fax: (918) 542-7260
www.miamination.com



Via email: jennifer.m.guffey@usace.army.mil

April 14, 2020

Jennifer Guffey
Archaeologist & Tribal Liaison
Planning Branch
US Army Corps of Engineers, Louisville District
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202

Re: Miami River Basin Five Master Plans Update – Comments of the Miami Tribe of Oklahoma

Dear Ms. Guffey:

Aya, kikwehsitoole – I show you respect. My name is Diane Hunter, and I am the Tribal Historic Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma.

The areas in which the five lakes in question were built are within the aboriginal homelands of the Miami Tribe; however, we are not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the five lake areas. In any case, if any human remains or Native American cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or archaeological evidence is discovered at or near these lakes, the Miami Tribe requests immediate consultation with the entity of jurisdiction for the location of discovery. In such a case, please contact me at 918-541-8966 or by email at dhunter@miamination.com to initiate consultation.

I suggest you also contact the Shawnee Tribe, the Eastern Shawnee Tribe, and the Ohio History Connection, as any of them might have information about the area.

Respectfully,

Diane Hunter
Tribal Historic Preservation Officer