ENVIRONMENTAL ASSESSMENT
FOR
HYDROPOWER LICENSE

Tallassee Shoals Hydroelectric Project

FERC Project No. 6951-018

Georgia

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, DC 20246

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ACRONYMS AND ABBREVIATIONS

APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
BMPs	best management practices
certification	water quality certification
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
dbh	diameter at breast height
DO	dissolved oxygen
EA	environmental assessment
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	degrees Fahrenheit
FPA	Federal Power Act
fps	feet per second
FWS	U.S. Fish and Wildlife Service
Georgia DNR	Georgia Department of Natural Resources
Georgia EPD	Georgia DNR, Environmental Protection Division
Interior	U.S. Department of the Interior
IPaC	Information for Planning and Conservation
kV	kilovolt
mg/L	milligrams per liter
MW	megawatt
MWh	megawatt-hour
msl	mean sea level
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
RM	river mile
SERC	SERC Reliability Council
Tallassee Shoals Project (project)	Tallassee Shoals Hydroelectric Project
Tallassee Shoals (applicant)	Tallassee Shoals, LLC
T&E species	threatened and endangered species

ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, D.C.

Tallassee Shoals Hydroelectric Project, P-6951-018
Georgia

1.0 INTRODUCTION

1.1 APPLICATION

On September 15, 2021, Tallassee Shoals, LLC (Tallassee Shoals) filed an application for a new license with the Federal Energy Regulatory Commission (Commission) to continue to operate and maintain the Tallassee Shoals Hydroelectric Project No. 6951-018 (Tallassee Shoals Project or project).[1] The 2.3-megawatt (MW) project is located on the Middle Oconee River, in Athens-Clarke and Jackson Counties, Georgia (figure 1-1). The project does not occupy federal land. The project generates 6,100 megawatt-hours (MWh) annually. Tallassee Shoals proposes no changes to the project's capacity or mode of operation.

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of the Tallassee Shoals Project is to provide hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a new license to Tallassee Shoals for the Tallassee Shoals Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, or water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

Issuing a new license for the project would allow Tallassee Shoals to continue to generate electricity at the project for the term of the license, making electric power from a renewable resource available to the regional electric grid.

[1] The current license for the project was issued on October 24, 1983, for a term of 40 years, and expired September 30, 2023. *See* 25 FERC ¶ 62,081 (1983).

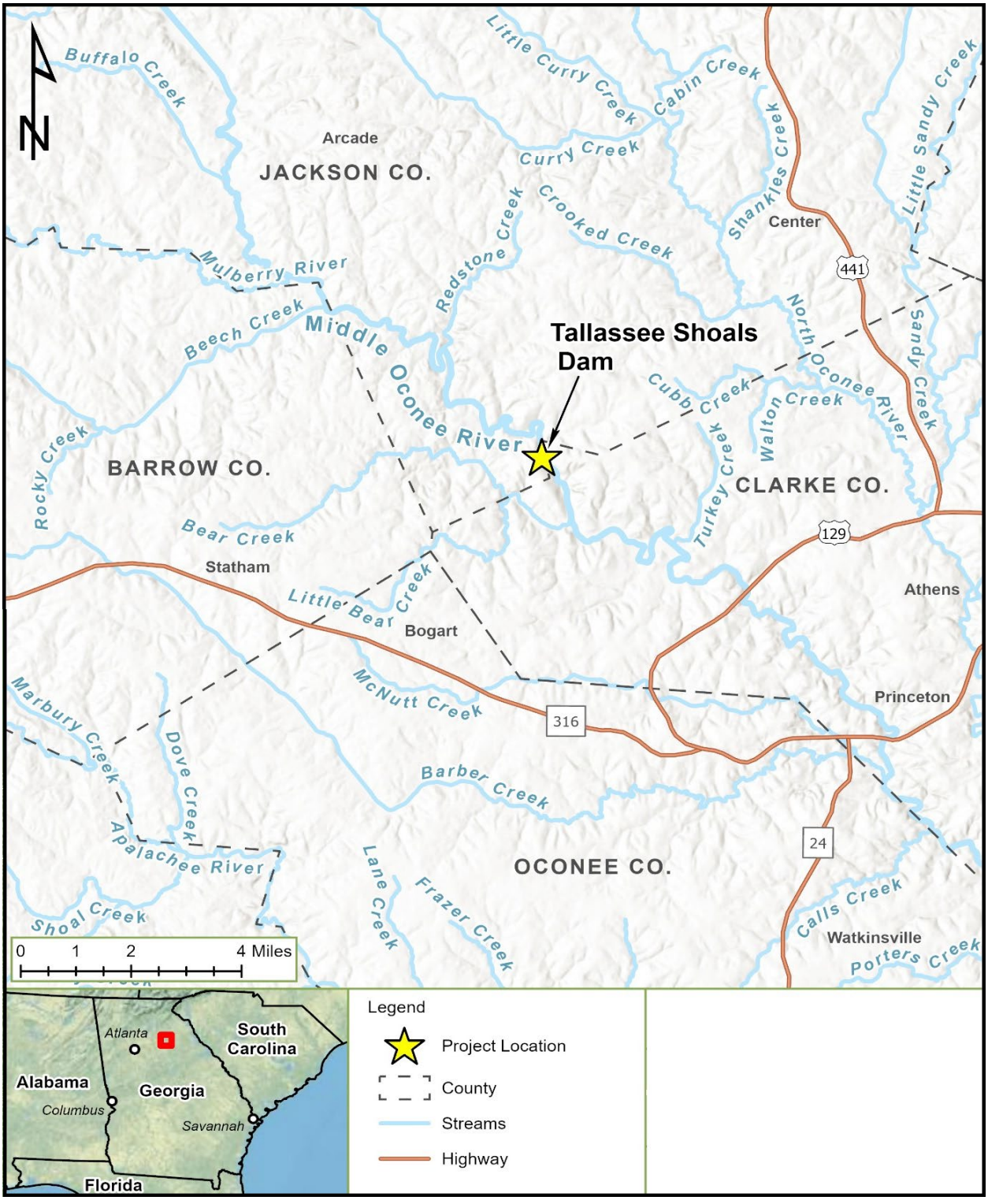

Figure 1-1. Location of the Tallassee Shoals Project (Source: license application, as modified by staff).

We prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA),[2] the Council on Environmental Quality (CEQ) regulations for implementing NEPA,[3] and the Commission's implementing regulations.[4] We assess the environmental and economic effects associated with the continued operation and maintenance of the project and alternatives to the proposed project. It includes a recommendation to the Commission on whether to issue a new license, and if so, recommends terms and conditions to become a part of any issued license.

In this EA, we assess the environmental and economic effects of continuing to operate the project: (1) as proposed by Tallassee Shoals (proposed action); (2) under the proposed action with staff's additional or modified measures (staff alternative); and (3) under a no-action alternative. The primary issues associated with relicensing the project are the effects of continued project operation and maintenance on water quality, aquatic species (resident fish), terrestrial resources and habitat, and cultural and recreational resources.

1.2.2 Need for Power

The Tallassee Shoals project has an installed capacity of 2.3 MW and an average annual energy production of about 6,100 MWh. The project provides power to the grid.

To assess the need for power, we looked at the needs in the operating region in which the project is located. The Tallassee Shoals Project is located within the SERC Reliability Corporation's Southeast region (SERC-Southeast) of the North American Electric Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand nationally and regionally for a 10-year period. According to NERC's 2022 Long-Term Reliability Assessment, the total internal demand for this region is projected to decrease by 0.11 percent from 2023 to 2032. The anticipated reserve margin is forecasted to range from 39.2 percent in 2023 to 49.8 percent in 2032. SERC-Southeast's reference margin is 15.0 percent. Therefore, the forecasted anticipated reserve margin is expected to exceed the reference margin.[5] (NERC, 2022).

Although demand is projected to decrease somewhat in the region, we conclude that power from the project would continue to help meet the regional need for power by providing a portion of the power needed that would otherwise have to come from alternative power sources in the Southeast region. In addition, the project provides power that can displace non-renewable

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[2] National Environmental Policy Act of 1969, amended (Pub. L. 91-190. 42 U.S.C. §§ 4321–4347, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, Pub. L. 97-258, §4(b), September 13, 1982, Pub. L. 118-5, June 3, 2023).

[3] 40 CFR Parts 1500-1508.

[4] 18 CFR Part 380.

[5] The reserve margin is the percentage of a region's electrical supply that exceeds the region's peak demand. It indicates what amount of extra supply is available to meet unexpected additional demand above a region's peak demand. The reference margin is a threshold with which to compare the reserve margin. If the reserve margin exceeds the reference margin, then a region likely has an adequate supply buffer to meet unexpected demand.

sources. Displacing the operation of non-renewable facilities may avoid some power plant emissions, thus creating an environmental benefit.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

Any new license for the Tallassee Shoals Project would be subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in Appendix B.

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 C.F.R. § 5.1) require that applicants consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

1.4.1 Scoping

Before preparing this EA, we conducted scoping to determine what issues and alternatives should be addressed. We distributed a scoping document to interested agencies and others on May 31, 2022, which was noticed in the *Federal Register* on June 6, 2022.[6] The following entities provided written comments:

Commenting Entity	Date Filed
U.S. Fish and Wildlife Service (FWS)	June 24, 2022
Georgia Department of Natural Resources (Georgia DNR)	June 29, 2022
U.S. Environmental Protection Agency	June 30, 2022

1.4.2 Interventions

On July 7, 2022, the Commission issued public notice accepting the license application and setting September 5, 2022, as the deadline for filing protests and motions to intervene. The notice was published in the *Federal Register* on July 13, 2022.[7] The Department of the Interior filed a timely motion to intervene on behalf of the FWS and Bureau of Indian Affairs.

1.4.3 Comments on the Application

On July 7, 2022, the Commission issued a Ready for Environmental Analysis (REA) notice setting September 5, 2022, as the deadline for filing comments, recommendations, terms and conditions, and fishway prescriptions. The notice also established a deadline of October 20, 2022 for filing reply comments. The U.S. Department of the Interior (Interior), and the Georgia DNR filed comments on September 2, 2022. No reply comments were filed.

[6] 87 Fed. Reg. 34,261-34,262 (June 6, 2022).
[7] 87 Fed. Reg. 41,709-41,710 (July 13, 2022).

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the current license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives and to assess the benefits and costs of any measures that might be required under a new license.

2.1.1 Current Project Facilities

The Tallassee Shoals Project consists of the following existing facilities: (1) a 365-foot-long, 25-foot-high concrete dam; (2) a 23-acre impoundment with a gross storage capacity of 230 acre-feet, at 645 feet elevation mean sea level (msl)[8]; (3) a 0.1-MW fixed Kaplan unit integral with the east end of the dam; (4) a 1,400-foot-long headrace canal from the dam to the penstock intake; (5) an 80-foot-long, 11-foot-diameter penstock; (6) a powerhouse containing a single 2.2-MW adjustable Kaplan unit; (7) a 75-foot-long tailrace; and (8) a 100-foot-long, 42-kilovolt transmission line; and (9) appurtenant facilities. The project creates a 2,100-foot-long bypassed reach of the Middle Oconee River. The project's total capacity is 2.3 MW (Figure 2.1).

[8] Unless otherwise noted, all elevation data is provided in mean sea level.

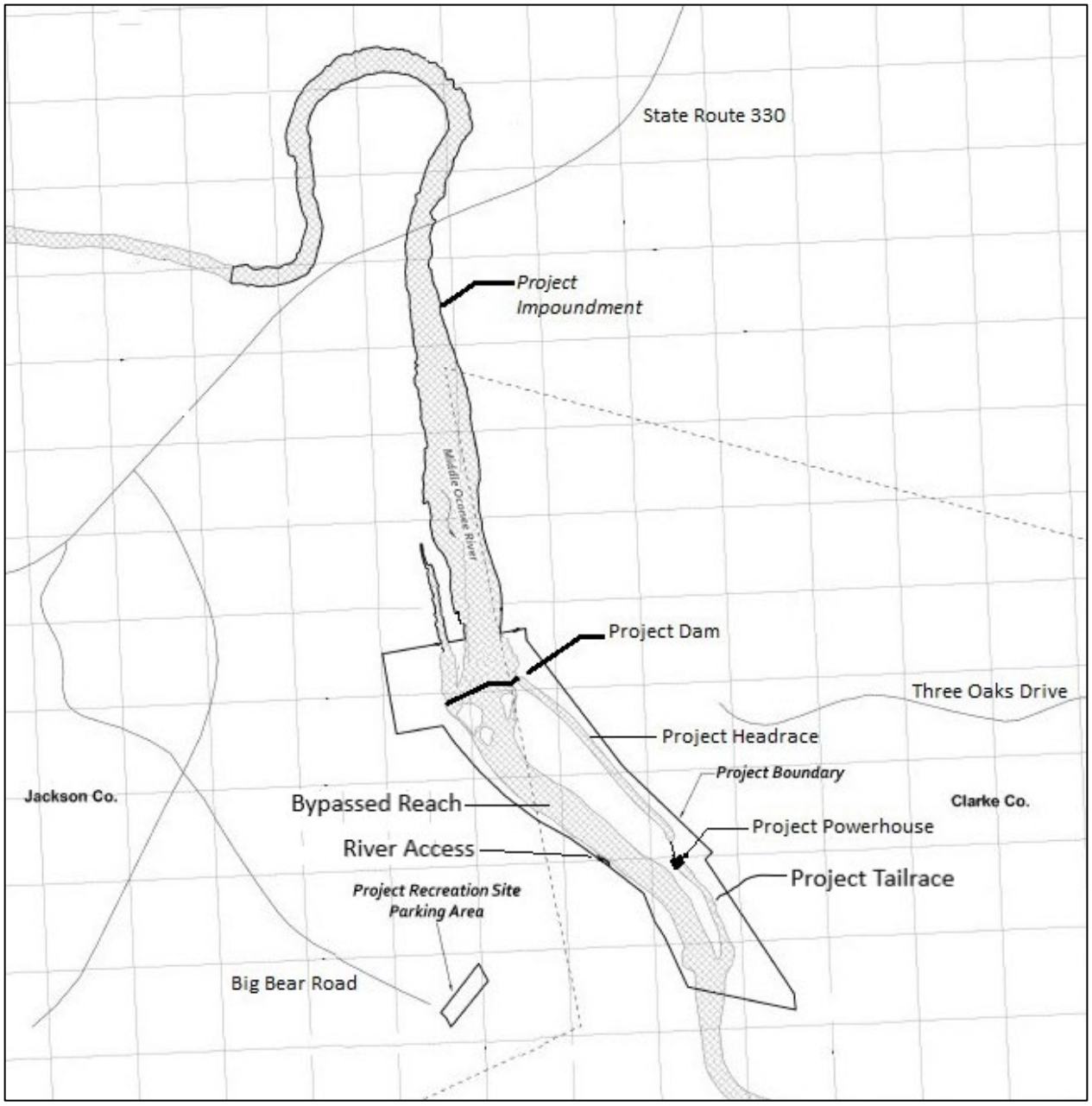

Figure 2-1. Approximate locations of the Tallassee Shoals Project features (source: Additional information filed April 18, 2022, as modified by staff).

2.1.2 Current Project Boundary

The project boundary was established in the current (1983) license prior to the construction of the project. Other than the upper portion of the project reservoir, all project facilities are enclosed in the current project boundary.

2.1.3 Project Safety

The project has been operating under the current license since October 1983. During this time, Commission staff have conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with the terms of the license, and proper maintenance.

As part of the relicensing process, Commission staff will evaluate the continued adequacy of the project's facilities under a new license. Special articles will be included in any license issued, as appropriate. Commission staff will continue to inspect the project during the term of any new license to ensure continued adherence to Commission-approved plans and specifications, special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

2.1.4 Current Project Operation and Environmental Measures

Tallassee Shoals operates the project in run-of-river mode. Operation is automated and controlled remotely. Although the project has two turbine units, Tallassee Shoals operates the project using only the 2.2-MW Unit 2 most of the time.[9] Unit 2, located in the powerhouse, has a minimum hydraulic capacity of 180 cubic feet per second (cfs) and a maximum hydraulic capacity of 850 cfs. The rarely used 100-kW Unit 1 is a submerged unit located at the dam with a minimum hydraulic capacity of 50 cfs, and a maximum hydraulic capacity of 90 cfs.

Tallassee Shoals ceases project operation when river flows reach 10,000 cfs. However, operation may cease before river flows reach 10,000 cfs if there is a significant volume of debris in the river. Operation also ceases when river flows fall below 250 cfs (the minimum hydraulic capacity of 180 cfs through Unit 2 and the minimum flow of 70 cfs released to the bypassed reach).

Article 29, of the current license requires Tallassee Shoals to release a continuous minimum flow of 70 cfs, or inflow to the project reservoir, whichever is less, to protect aquatic resources in the 2,100-foot-long bypassed reach.[10] In addition, Tallassee Shoals is required to

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[9] Tallassee Shoals' January 7, 2022 filing at 6 clarifies that the 100-kW Unit 1 operates with a 1 5/8-inch trashrack that is difficult to clean, and limits operation of Unit 1 to about 4 percent operation per year (from 2018 to 2021, Tallassee Shoals operated Unit 1 for 39 days).

[10] Article 29 of the 1983 license required the licensee to release a minimum flow of 70 cfs or inflow, whichever is less, to the bypassed reach and a seasonal flow of 138 cfs, during the month of May, downstream of the project tailrace. Additionally, Article 29 required the licensee to conduct a minimum flow study to assess if an alternate minimum flow of 53 cfs would support sunfish and bass spawning habitat below the dam in the bypassed reach and downstream of the project. Pre- and post-construction studies were conducted in 1984 and 1988 to determine the impacts of project operation on aquatic resources in the Middle Oconee River. However, on August 20, 1990, the Commission found that the study results did not support an alternate continuous minimum flow of 53 cfs, or inflow, if less, as a reasonable continuous flow, as

release of an additional flow of 68 cfs either through the dam or from the powerhouse, to maintain a seasonal minimum flow of 138 cfs, or inflow to the reservoir, whichever is less, during the month of May downstream of the project tailrace to protect aquatic resources of the Middle Oconee River.

In addition to the operational environmental measures noted above, Article 30 of the current license requires Tallassee Shoals to provide public access to the project. Therefore, Tallassee Shoals provides a recreation parking area and access staircase to the bypassed reach.

2.2 APPLICANT'S PROPOSAL

2.2.1 Proposed Project Facilities

Tallassee Shoals proposes no changes to the project's generation facilities. Tallassee Shoals proposes to enhance recreation access at the project by constructing and maintaining a canoe portage on the western side of the dam and expanding the project's existing recreation parking area.

2.2.2 Proposed Project Boundary

Tallassee Shoals proposes changes to the project boundary by adding 22 acres to the boundary, to enclose the project works, the entire impoundment, the proposed portage, and lands necessary for project purposes. The proposed project boundary would enclose approximately 58 acres.

2.2.3 Proposed Project Operation

As described in the license application, Tallassee Shoals proposes to:

- Continue operating the project in a run-of-river mode such that outflow approximates inflow.[11]
- Continue to release a continuous minimum flow of 70 cfs, or inflow, whichever is less, to the 2,100-foot-long bypassed reach to protect aquatic resources.
- Continue to monitor the continuous minimum flow of 70 cfs to the bypassed reach by the use of: (a) a staff gage and electronic transducer upstream of the dam; and (b) a staff gage located in the bypassed reach.

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proposed by the licensee (*See* Oglethorpe Power Corporation's February 23, 1990 letter at 3). Therefore, the 70-cfs and 138-cfs minimum flows required by Article 29 of the current license remain in effect. See Oglethorpe Power Corporation, Accession No. 19900824-0132 (August 20, 1990) (delegated order).

[11] Tallassee Shoals estimates inflow about 1 mile upstream from the project dam, and about 500 feet downstream of the raw water intake for the Bear Creek Regional Reservoir. *See* Tallassee Shoals January 7, 2022, filing at Attachment E, at 2.

2.2.4 Proposed Environmental Measures

Tallassee Shoals proposes the following environmental measures:

- Construct a canoe portage around Tallassee Shoals Dam to include a take-out area upstream of the dam and a put-in area downstream of the dam, connected by a trail along the western side of the dam and add three parking spaces to the recreation parking area.

2.3 STAFF ALTERNATIVE

Under the staff alternative, a new license would include the applicant's proposed measures, noted above, with the following additional measures:

- To specify the methods that would be used to monitor and document project operation and minimum flows released to the bypassed reach and Oconee River, develop an operation compliance monitoring plan.

- To monitor project effects on birds and other wildlife, develop an Avian Protection Plan to: (1) periodically check the transmission line and substation for nests, or signs of adverse avian/wildlife interactions; (2) report any adverse interactions; (3) consult with agencies regarding installation of avian protection devices on project facilities if avian interactions are detected; and (4) file an implementation schedule.

- To protect the tricolored bat, seasonally avoid tree removal.[12]

- To improve public safety and ensure orderly construction, develop a Recreation Management Plan that includes provisions to install directional and safety signage for the proposed canoe/kayak portage and construct the recreation improvements during daylight hours and when recreation use is low, such as late fall or early spring so as to not conflict with the protection measures in Appendix F, Biological Assessment., and complete construction of the proposed recreation amenities within 2 years of license issuance.

- To protect undiscovered cultural resources, cease project activities and notify the Georgia SHPO and relevant tribes if archaeological or historic resources are discovered due to operational or other project-related activities.

- To protect cultural resources, notify and consult with the Georgia SHPO and relevant tribes prior to implementing any unforeseen project modifications, over the term of a license, that would have the potential to affect above-ground historic properties at the project.

[12] Tree removal is defined herein as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by the tricolored bat.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Certain alternatives to Tallassee Shoals' proposal were considered but eliminated from further analysis because they are not reasonable in this case. These alternatives are presented in Appendix C.

3.0 ENVIRONMENTAL ANALYSIS

This section includes a general description of the project vicinity, and our analysis of the proposed action and other recommended environmental measures. Sections are organized by resource area (aquatic, recreation, etc.). Historic and current conditions are described under each resource area. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures. Staff conclusions and recommended measures are discussed in section 5.1, *Comprehensive Development and Recommended Alternative*.[13]

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Tallassee Shoals Project is located 17.5 miles downstream from the headwaters of the Middle Oconee River, in the Middle Oconee River basin of the greater Altamaha River basin (figure E-1).[14] The Altamaha River Basin drains an area of 14,000 square miles, located entirely within the state of Georgia, and includes the Oconee, Ocmulgee, and Altamaha Rivers. The Middle Oconee and North Oconee Rivers originate in the Piedmont physiographic province (Edwards et al., 2013), and run for over 50 miles before joining at the southern border of Athens-Clark County, Georgia to form the main stem of the Oconee River. The Oconee River flows 220 miles to its confluence with the Ocmulgee River to form the Altamaha River. The Altamaha River flows 137 miles southeast to the Atlantic Ocean.

The Tallassee Shoals Project is the only dam on the Middle Oconee River. There are three dams located downstream from the project on the mainstem of the Oconee River. The two large dams on the mainstem of the Oconee River are the Wallace Dam (FERC Project No. 2413),[15] a 118-foot-high, 2,395-foot-long dam that is located about 70 river miles downstream of the Tallassee Shoals Project dam and the Sinclair Dam (FERC Project No. 1951),[16] a 104-foot-high, 2,988-foot-long dam that is located almost 100 river miles downstream from the project dam. These two downstream projects have no intervening or bypassed reaches between them and together impound about 70 miles of the mainstem Oconee River. In addition to the Wallace

[13] Unless otherwise indicated, the source of our information is the license application filed on September 15, 2021, and additional information filed by Tallassee Shoals on January 7, 2022, February 10, 2022, April 18, 2022, and April 28, 2022.

[14] The headwaters of the Middle Oconee River are at the confluence of Walnut Creek and Holders Creek, on the west end of Jefferson City, in Hall County, Georgia.

[15] Wallace Dam impounds the 19,050-acre Lake Oconee.

[16] Sinclair Dam impounds the 15,300-acre Lake Sinclair.

and Sinclair Dams, there is the privately owned, 50-foot-high, 825-foot-long Barnett Shoals Dam that is located almost 22 river miles downstream of Tallassee Shoals Project on the mainstem of the Oconee River. Georgia Power, who owns the dam, discontinued hydropower generation in 2010 (Hydropower Reform Coalition, 2023).[17]

The climate of the Middle Oconee River Basin is moist and temperate. Summers are long and hot, and winters are short and mild. Average annual air temperature ranges from 60 to 65 degrees Fahrenheit (ºF) (Georgia EPD, 1998). Average daily temperatures range from 40 to 45ºF in January to 75 to 80ºF in July. Average annual precipitation ranges from 47 inches in the lower basin to 56 inches in the upper basin, with March as the wettest month and September and October as the driest months.

3.2 SCOPE OF CUMMULATIVE EFFECTS ANALYSIS

According to the Council on Environmental Quality's regulations that implement NEPA, a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of the license application, as well as agency comments, we have identified water quality and migratory fish species as a resource that could be cumulatively affected by the continued operation and maintenance of the Tallassee Shoals Project, in combination with other hydroelectric projects, and other past, present, and foreseeable future activities in the Oconee River Basin. We discuss these cumulative effects in the section 3.3.1.2, *Environmental Effects – Cumulative Effects*.

3.2.1 Geographic Scope

The geographic scope of the cumulative effects analysis defines the physical limits or boundaries of the proposed action's effect on the resources and contributing effects from other hydropower and non-hydropower activities within the Middle Oconee River Basin. We have identified the geographic scope for water quality to include the Middle Oconee River Basin extending downstream about 4.5 river miles to the confluence of the Middle Oconee River with Turkey Creek. We chose this geographic scope because the collective operation and maintenance of hydroelectric projects, in combination with other, non-developmental uses of the Oconee River Basin may cumulatively affect water quality in the Middle Oconee River. For migratory fish species, the geographic scope includes the Middle Oconee River to the confluence with the North Oconee and the main stem Oconee Rivers. We chose this geographic scope

[17] In 1991, the Commission determined that the Barnett Shoals Project is not subject to the Commission's licensing jurisdiction because it is not located on a navigable water of the United States, does not occupy any public lands or reservations of the United States, and does not use surplus water or waterpower from a government dam. *See* 55 FERC ¶ 62,306 (1991).

because the presence and operation of the Tallassee Shoals Project, along with the downstream Barnett Shoals dam, could affect the movements of migratory fish species in the Middle Oconee River Basin.

3.2.2 Temporal Scope

The temporal scope of our cumulative effects analysis includes a discussion of past, present, and reasonably foreseeable future actions and their effects on each resource that could be cumulatively affected. Based on the potential term of a new license, the temporal scope looks 30 to 50 years into the future, concentrating on the effects on the resources from reasonably foreseeable future actions. The historical discussion is limited, by necessity, to the amount of available information. We identified the present resource conditions based on the license application, agency comments, and comprehensive plans.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the project-specific effects of the project alternatives on environmental resources. Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EA. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure project effects. We then discuss and analyze the environmental effects of the project alternatives. We present our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative* section.

3.3.1 Aquatic Resources

3.3.1.1 Affected Environment

Water Quantity

The Middle Oconee River has a drainage area of 354 square miles (Georgia EPD, 1998). The project dam creates a 23-acre impoundment with a maximum depth of about 10 feet. Table D-1, Appendix D, shows the average monthly flows at the project from 1988 to 2022. Daily average flows range from a low of 250 cfs in September to a high of 759 cfs in February, with a mean annual daily flow (MADF) at the project of 433 cfs.

As discussed in section 2.1.4, *Current Project Operation and Environmental Measures*, Tallassee Shoals is required under the amended Article 29 to release a continuous minimum flow of 70 cfs, or inflow from the project dam to the bypassed reach. Tallassee Shoals releases a continuous minimum flow of 70 cfs by maintaining a water surface elevation of 2.2- to 2.4-inches above the dam crest via a pressure transducer. Amended Article 29 also requires a seasonal minimum flow of 138 cfs, or inflow, whichever is less, downstream of the tailrace to support bass and sunfish spawning habitat. To satisfy the seasonal flow requirement, an additional 68 cfs is discharged through the turbine units into the tailrace.

Flows less than 250 cfs are discharged over the spillway into the 2,100-foot-long bypassed reach. When flows greater than 250 cfs are available, 180 cfs (the minimum operating hydraulic capacity of Unit 2) passes from a 1,400-foot headrace through the powerhouse to the

tailrace, with the remaining minimum flow of 70 cfs released over the spillway into the bypassed reach (figure 2-1). At 920 cfs the plant reaches the maximum hydraulic capacity of Unit 2 of 850 cfs, with the 70-cfs continuing to be released as minimum flow to the bypassed reach. Inflow above 920 cfs adds to the 70 cfs spilled into the bypassed reach. Flow in the Middle Oconee River equals or exceeds 920 cfs about 10% of the time, annually, based on the prorated gage flows in Arcade, Georgia. Based on the annual flow duration curve, flows in the bypassed reach equaled or exceeded the continuous minimum flow of 70 cfs 93% of the time, annually (Tallassee Shoals, 2021) (table D-1).[18] The seasonal minimum flow of 138 cfs, or inflow, whichever is less, during the month of May as measured immediately below the project tailrace, is met by a combination of the minimum hydraulic capacity of the powerhouse, the continuous minimum flow of 70 cfs to the bypassed reach via the spillway crest, and the project operating in run of river mode, such that outflow approximates inflow.[19] All generation flows are discharged to the mainstem of the Middle Oconee River at the powerhouse.

Unit 1 is a submersible unit, located within the dam with a minimum hydraulic capacity of 50 cfs and a maximum hydraulic capacity of 90 cfs. Although Unit 1's low hydraulic capacity enables it to operate when river flows are less than 250 cfs,[20] which is almost 50% of the time, it is rarely used.[21]

Water Withdrawals

There are two utilities that withdraw surface water from the reservoir within the project boundary. The Upper Oconee Basin Water Authority in Jackson County is permitted to withdraw a maximum of 60 million gallons per day (mgd) (111 cfs) through an intake located within the project reservoir about 1.1 miles upstream of the project dam to supply the 505-acre Bear Creek Regional Reservoir on Bear Creek, located about 0.7 mile west of the Tallassee Shoals Project. Athens-Clark County is permitted to withdraw a maximum of 16 mgd (30 cfs) from an intake located about 7.5 miles downstream of the project.

[18] Flows in table D-1 are derived from Middle Oconee River flows reported at USGS gage no. 02217475 located near Arcade, Georgia, by multiplying flow data from the USGS gage by the ratio of the drainage areas at the Tallassee Shoals project (354 mi^2) and the UGSS gage (332 mi^2). Table D-1 includes flow data from 1988 to 2022.

[19] The minimum hydraulic capacity of turbine Unit 2 (180 cfs) is equaled or exceeded 73% of the time, annually.

[20] Unit 2's minimum operating hydraulic capacity is 250 cfs, with a minimum hydraulic capacity of 180 cfs, plus the 70-cfs continuous minimum flow.

[21] Tallassee Shoals' January 7, 2022 filing at 6 clarifies that Unit 1 operates with 1 5/8-inch trashrack that is difficult to clean, and limits operation of the unit to an average of 4%, annually. Tallassee Shoals operated Unit 1 a total of 39 days from 2018 to 2021, with 30 days of operation in 2019, 9 days in 2020, and 0 days of operation in 2018 and 2021.

Treated Wastewater Discharges

In 2022, there were four wastewater treatment plants, five land application permits, and 14 National Pollutant Discharge Elimination System permitted discharge sites in Jefferson City and Jackson and Athens-Clark Counties, the nearest counties up- and downstream of the Tallassee Shoals Project impoundment (Georgia EPD, 2022a). None were located within the Tallassee Shoals project boundary.

Water Quality

Water Use Classifications

Georgia EPD (2023) classifies the waters of the Middle Oconee River in the vicinity of the project for drinking and fishing. In addition to the general criteria applicable to all waters, specific criteria applied to these water uses, include: (1) numeric criteria for fecal coliform bacteria; (2) dissolved oxygen (DO) concentration minima of 6.0 milligrams per liter (mg/L) as a daily average and 5.0 mg/L instantaneously (to support warm water fish species); (3) a water temperature increase of no more than 5 degrees Fahrenheit (^{o}F) above the intake temperature and not to exceed 90^{o}F; and (4) a pH within the range of 6.0 to 8.5 units.

Georgia EPD's 2022 Integrated Report (Georgia EPD, 2022b), which identifies impaired water bodies in the state, currently lists the Tallassee Shoals tailwater area as supporting its designated uses. However, fourteen miles of the Middle Oconee River upstream of the project and several of its tributaries are listed as not supporting their designated uses due to fecal coliform violations and impacts on the macroinvertebrate community (Georgia EPD, 2022b). Nonpoint sources, including urban runoff from upstream communities are likely causes of the impairments.

Water Quality Monitoring

Tallassee Shoals conducted water quality monitoring in the Middle Oconee River from July 27, 2019 through July 1, 2020, (Kleinschmidt, 2021).[22] Monitoring included measurements of water temperature, DO concentration, and pH, collected as surface samples, once a month at five monitoring locations, including during periods of low river flow and high air temperatures. The five locations monitored included sites: (1) above the impoundment, in the Middle Oconee River, about 1-river mile upstream of the dam and about 400 feet downstream of the water intake of the Bear Creek Regional Reserve; (2) in the impoundment about 300 feet upstream of the dam; (3) in the bypassed reach about 1,200 feet downstream from the dam; (4) at the confluence of the tailrace and the Middle Oconee River; and (5) downstream of the confluence of the tailrace and Middle Oconee River (figure E-2).

None of the DO measurements were below 5.0 mg/L. The lowest DO concentrations were observed in August and the highest in January. DO concentrations in the upstream reach above the dam, the impoundment, tailrace, and in the confluence of the tailrace and Middle Oconee River averaged 7 mg/L in August and 11 mg/L in January. Average DO concentrations

[22] *See* Final license application, Appendix B, section 4.0.

in the bypassed reach were slightly higher and ranged from 8 mg/L in August to 11 mg/L in January. Water temperatures averaged 63ºF for all five sampling locations and never exceeded 90ºF in any water quality monitoring event, with the highest water temperature of 78ºF in August and the lowest of 47ºF in January. All five sampling locations maintained a pH of 7.3 during monitoring, never decreasing below 6.0 or exceeding 8.5 pH units.

Aquatic Habitat

Impoundment

The Tallassee Shoals dam creates a narrow impoundment that extends about 1.1 miles upstream of the dam to a point about 730 feet east of the Route 330 bridge and has a surface area of approximately 23 acres at the normal maximum water surface elevation of 645 feet msl. The impoundment has a gross volume of 230 acre-feet, with no useable storage capacity under normal run-of-river operating conditions. Sediment accumulation has reduced the depth of the impoundment, limiting storage capacity and habitat diversity. The total shoreline length within the project boundary is about 3 miles. Near shore areas contain significant stretches of undeveloped, forested shoreline along the east and west banks of the Middle Oconee River and the two-lane Georgia State Route 330. Overhanging vegetation aligns the shoreline, but submerged aquatic vegetation is absent.

Bypassed Reach

The bypassed reach is a rocky shoal habitat this is 2,100 feet long, characterized predominantly by bedrock and slab boulders, with a moderate gradient and bedrock pools, runs, and riffles. The bypassed reach habitat is stable due to the presence of bedrock and the lack of gravel and sand. It is bordered by a densely forested riparian zone along the western shoreline, including rocky islands in the upstream portion, and a forested/shrub floodplain along the eastern shoreline.

Tailrace

The tailrace channel is about 750 feet long, varies from 30 to 35 feet wide, and is bordered by forested vegetation for most of its length. The tailrace channel bottom habitat consists of bedrock and silt. During generation, the channel is deep and swift. During non-generation, the entire channel length remains wetted.

Confluence with the Middle Oconee River

The river downstream of the tailrace is characterized by moderate gradient and rocky substrates for the first 300 feet, where it transitions to form long runs and pools with gravel, sand, and fine sediments. The riparian zone downstream of the project tailrace is densely forested for several miles.

Fishery Resources

The Oconee River Basin supports mainly warm-water fisheries, consisting of minnows, sunfish, catfish, and suckers. The Middle Oconee River and its tributaries in the vicinity of the project support about 40 species of fish (Straight *et al*., 2009; Georgia EPD, 1998; Lee et al., 1980). Sport fishes known to inhabit the Middle Oconee River and its tributaries include

largemouth bass, spotted bass, redbreast sunfish, bluegill, black crappie, Altamaha bass, and channel catfish (Straight *et al*. 2009; Envirosphere Company, 1988).

Based on electrofishing surveys conducted after project construction in 1988, at least 21 species of fish were found to inhabit the bypassed reach, the Oconee River, and its tributaries 0.5-miles downstream from the project (table D-2). The most common fish species inhabiting the Tallassee Shoals bypassed reach were the spottail shiner, redbreast sunfish, Altamaha shiner, Ocmulgee shiner, bluehead chub, snail bullhead, and turquoise darter (Envirosphere Company, 1988). Sport fishes in the bypassed reach included redbreast sunfish, snail bullhead, bluegill, largemouth bass, yellow bullhead, channel catfish, and warmouth.[23] The Georgia threatened Altamaha shiner was relatively abundant in the downstream riverine reach of the project and occurred in both the bypassed and downstream reaches of the Oconee River, suggesting movement between these reaches without impediment.

Migratory Fish Species

The Tallassee Shoals Project is about 375 river miles upstream of the Atlantic Ocean and more than 100 river miles upstream of the Fall Line Hills District between the Piedmont and Coastal Plain provinces. The Wallace and Sinclair dams are located above the Fall Line and pose as barriers that block the upstream migration of diadromous and other migratory riverine fishes from passing upstream into the project area.

Eight highly migratory or diadromous species are present in portions of the Altamaha River Basin.[24] However, they are not known to occur within the Tallassee Shoals Project boundary.

The catadromous American eel and the potamodromous robust redhorse are in the Oconee River Basin. American eels presently range in the Oconee River Basin as far upstream as Sinclair Dam. Although there is a known occurrence of American eels in Hard Labor Creek, located about 4 miles upstream of Lake Oconee on the mainstem of the Oconee River, there are no known records in the basin as far upstream as the Middle Oconee River (Georgia DNR, 2021).

Robust redhorse is a rare migratory riverine sucker restricted to large rivers of the southeastern U.S. Atlantic slope region, and is found in Georgia, South Carolina, and North Carolina (Freeman et al., 2016; Rhode et al., 2009). The robust redhorse is a Georgia

[23] The top ten numerically abundant species from the 1988 post-construction aquatic sampling results in descending order were Ocmulgee shiner, spottail shiner, redbreast sunfish, Altamaha shiner, snail bullhead, bluehead chub, blackbanded darter, turquoise darter, rosyface chub, and bluegill collectively totaling 96% of the total catch. Sport fish made up 26% of the total catch by number (Envirosphere Company, 1988).

[24] Migratory species that presently occur in portions of the Altamaha River Basin include: six anadromous species (federally endangered shortnose sturgeon and Atlantic sturgeon, striped bass, American shad, Hickory shad, and blueback herring); one catadromous species (American eel); and the potamodromous robust redhorse.

endangered species currently under review for federal listing.[25] It has been documented to make extensive upstream migrations (e.g., greater than 62 river miles) to spawning habitat and downstream migrations to overwintering areas (Grabowski and Isely, 2006). Robust redhorse inhabit the Oconee River in pool habitats with low velocity during most of the year and migrate to shoals to spawn on gravel bars in April and May (Fisk et al., 2015). The Oconee and Ocmulgee rivers are occupied by one of three known genetically distinct populations of robust redhorse, collectively known as the Altamaha Evolutionarily Significant Unit (Wirgin et al., 2001, Wirgin, 2002). Robust redhorse has been found to inhabit the Oconee River downstream from Lake Sinclair and one of its tributaries,[26] but has not been found upstream of the Wallace Dam (Freeman et al., 2016). During the 2012 and 2013 spring electrofishing surveys upstream of Lake Oconee, robust redhorse was not collected or observed (Zelko; 2012, 2013). Additionally, in 2014 and 2015, focused survey efforts in the Wallace Dam tailrace did not detect robust redhorse (Robust Redhorse Conservation Committee's Oconee Technical Working Group, 2014, 2015).

Freshwater Mussels

The Altamaha River Basin is inhabited by 18 species of freshwater mussels, of which seven are endemic to the basin (Johnson et al., 2012; Wisniewski et al., 2005). Most of these species inhabit free-flowing streams and rivers in the Altamaha River and lower Oconee and Ocmulgee rivers. In the summer of 2016, Georgia Power conducted mussel surveys in Lake Oconee and the Wallace Dam tailrace (Dinkins, 2016a, 2016b).[27] The surveys documented the occurrence of four native freshwater mussel species of the family Unionidae, including: Altamaha slabshell (*Elliptio hopetonensis*), variable spike (*Elliptio* sp. cf. *icterina*), inflated floater (*Pyganodom gibbosa*), and paper pondshell (*Utterbackia imbecillis*), all of which tolerate impounded conditions. However, there are no available records of these species occurring near the Tallassee Shoals Project. Currently, there are no known federal or state listed mussel species present in the vicinity of the Project or in upstream tributaries of the Middle Oconee River (Georgia DNR, 2021).

3.3.1.2 Environmental Effects

Project Operation

As discussed in section 2.2.3, *Proposed Project Operation,* Tallassee Shoals proposes to operate the project in a run-of-river mode. Tallassee Shoals also proposes to maintain the impoundment water surface level at 645 feet msl and use an automated system that controls operations remotely.

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[25] 76 Fed. Reg. 59,836-59,862 (September 27, 2011).

[26] The occurrences of robust redhorse in the upper end of Lake Sinclair, about 80 river miles downstream of the Tallassee Shoals Project, and the Little River, a tributary to Lake Sinclair, are attributed to fish that escaped from a hatchery on the Little River (Zelko, 2012).

[27] 2016 mussel surveys were conducted throughout Lake Oconee and its tributaries, about 40 river miles downstream from the Tallassee Shoals Dam. The Wallace Dam tailrace is located almost 70 river miles downstream from the Tallassee Shoals Dam.

Our Analysis

Effects of Operation on Water Quantity in the Impoundment

Continuing to operate the project in a run-of-river mode and maintain an impoundment elevation of 645 feet, as proposed by Tallassee Shoals, would result in no change in the volume, schedule, or duration of flow released to the Middle Oconee River downstream of the project. This measure would limit fluctuating water levels, which influence the reproductive success of fish that spawn in near-shore areas of the impoundment (Sammons and Bettoli, 2000), including sport and pan fish, such as bluegills. The impoundment has a hydraulic residence time of less than 6.5 hours.[28] The quick flow through time under run-of-river operation would enable the reservoir to likely remain well mixed and continue to maintain good water quality. By continuing to operate the project such that outflows approximate inflows, Tallassee Shoals would continue to meet the 138 cfs seasonal minimum flow, or inflow, whichever is less, below the project tailrace, by default during the month of May. Habitat and water quality in the impoundment and in the Middle Oconee River downstream of the project would remain unchanged from current conditions for aquatic organisms, including fish, mussels, and macroinvertebrates.

Operation Compliance Monitoring

Tallassee Shoals currently maintains and monitors compliance with the operating pool of 645-feet msl and regulates turbine operation using an automated system but does not describe the details of its operational compliance methods. Compliance with the 70-cfs continuous minimum flow requirement released to the bypassed reach is maintained by a staff gage and an electronic transducer and based on flows as reported by the USGS gages located upstream and downstream from the project.[29] Compliance for the seasonal flow of 138 cfs during the month of May required downstream of the confluence of the tailrace and bypassed reach is assessed using the same staff gage and electronic transducer based on inflows. To maintain a continuous minimum flow of 70 cfs, an electronic transducer and control system maintains a volume of flow that rises to between 2.2 and 2.4 inches above the spillway crest, which corresponds to 70-cfs flow over the spillway. During the relicensing process, Tallassee Shoals calibrated the electronic transducer readings to flows released from the sluiceway to verify that the transducer trigger system was releasing a continuous minimum flow rate of 70 cfs to the bypassed reach.[30] Tallassee Shoals monitors compliance for maintaining a seasonal minimum flow of 138 cfs during the month of May based on flows reported by the downstream USGS gage located about 9 miles downstream of the project in Athens, Georgia.

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[28] The hydraulic residence time measures the average length of time the impoundment stores water, which can be years for larger reservoirs. At the Tallassee Shoals Project, the calculation for residence time is 6.4 hours using 233 acre-feet storage capacity divided by 433 cfs mean annual flow.

[29] USGS gage no. 02217475, Middle Oconee River near Arcade, Georgia, is located about 8 miles upstream of the project. Additionally, USGS gage no. 02217500, Middle Oconee River near Athens, Georgia, is located about 9 miles downstream of the Project.

[30] *See* Final license application filed September 15, 2021, at Appendix B, section 2.0.

Interior recommends that Tallassee Shoals curtail or suspend project operations for short periods of time as determined by Tallassee Shoals, FWS, and Georgia DNR (resource agencies).[31] Moreover, for operating emergencies beyond Tallassee Shoals' control, Interior recommends Tallassee Shoals curtail or suspend license requirements for a period necessary to rectify the operating emergency. Finally, Interior recommends Tallassee Shoals notify the resource agencies within 5 business days and the Commission within 10 days after any operating emergency.[32]

Our Analysis

Although compliance monitoring measures do not directly affect environmental resources, they allow the Commission to ensure that a licensee complies with the environmental requirements of a license. An operation compliance monitoring plan would help Tallassee Shoals document compliance with the operational provisions of any license for the project and provide a mechanism for reporting deviations. An operation compliance monitoring plan would also help the Commission facilitate administration of the license and assist with the protection of resources that are sensitive to deviations from normal operating conditions. The plan could be developed in consultation with FWS, and Georgia DNR.

Water Quality

Under current run-of-river operations, based on water monitoring results, DO concentrations in the impoundment, tailrace, power canal, and downstream confluence are maintained above the minimum instantaneous level of 5.0 mg/L at all times, established by the state standards. Similarly, increase in water temperature at the project is always below the state standard of 5ºF and temperatures do not to exceed the overall standard of 90ºF. DO concentrations below 4.0 mg/L generally causes stress associated with low DO concentrations for freshwater fishes and invertebrates (Davis, 1975). Further, DO concentrations of 5.0 mg/L or greater and water temperatures below 90°F are generally suitable for freshwater fish and invertebrate growth, reproduction, and survival (EPA, 1986). As stated above, within the Tallassee Shoals Project impoundment, the hydraulic water residence time is approximately 6.5 hours, indicating that the water in the impoundment is replaced quickly and is not likely to undergo water temperature and DO stratification. Tallassee Shoals proposes no changes to project operations and run-of-river operations would continue to provide water quality conditions that are protective of the warmwater fish and invertebrate species in the project area.

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[31] In their Section 10(a) recommendations, Interior includes a recommendation to curtail or suspend the requirements of the articles in the Tallassee Shoals license for short durations. Based on context, staff interprets Interior's recommendation to apply to project operations only.

[32] Interior also recommends, under section 10(a) of the FPA, that, prior to, or at the time of, filing with the Commission, Tallassee Shoals serve all representatives of Interior on the service list with a copy of any request for amendment of license, appeal of any fish and wildlife-related license conditions, or extension of time requests for project construction or implementation of license article provisions. Regarding this recommendation, existing processes and regulations would address this concern. *See* Appendix H, *Comprehensive Development – Measures Not Recommended by Staff*, for further discussion.

Migratory Fish Management Plan

Tallassee Shoals does not propose a migratory fish management plan. Under 10(j) of the FPA, Interior recommends that Tallassee Shoals develop a migratory fish management plan in consultation with the resource agencies within 2 years of establishing fish passage at the Sinclair, Wallace, and Barnett Shoals dams (e.g., dam removal, fish passage). The plan would include provisions to: (1) conduct periodic migratory fish monitoring in the reaches between the Tallassee Shoals Dam and the Barnett Shoals Dam, and between the Barnett Shoals and Wallace Dams[33] to identify which migratory species are present and which species are attempting to migrate upstream of the Tallassee Shoals Dam; and (2) assess where migratory fish congregate at the Tallassee Shoals Dam to determine where fish passage would be most effective. Interior and National Marine Fisheries Service (NMFS) are not prescribing fish passage for any species at this time.

Our Analysis

The Tallassee Shoals Project is the only dam on the Middle Oconee River. There are three hydropower dams located downstream from the Tallassee Shoals Project on the mainstem Oconee River. Barnett Shoals is a retired, privately owned facility located 22 river miles downstream from Tallassee Shoals. It remains in place and fish cannot pass the dam. Wallace Dam is located about 70 miles downstream from Tallassee Shoals and has no fish passage facilities at the project. Additionally, Lake Sinclair, located almost 100 miles downstream for the Tallassee Shoals Dam has no fish passage facilities.[34] Therefore, no migratory species that occupy the Oconee River have unimpeded access to the Tallassee Shoals Project.

The Oconee River mainstem supports several migratory fish species, including American eel, American shad, robust redhorse, Atlantic sturgeon, and striped bass. American shad and striped bass are stocked in Lake Oconee and are the only migratory species known to occur within Lake Oconee,[35] but their downstream migration movements are hindered by the downstream Sinclair Dam.[36] American eels, Atlantic sturgeon, and robust redhorse make migrations as far upstream as Sinclair Dam but are unable to pass the Fall Line and Sinclair Dam

[33] Interior does not specify where periodic monitoring would occur; however, based on the context of Interior's recommendation, we assume monitoring would occur in the reaches between Tallassee Shoals Dam and Barnett Shoals Dam, and between Barnett Shoals and Wallace Dams. There are no intervening or bypassed flowing reaches between the Wallace and Sinclair dams. Therefore, we assume monitoring between the projects would not be feasible.

[34] Interior has a reservation of authority for fish passage on the Wallace Project and NMFS and Interior have reservations of authority for fish passage on the Sinclair Project.

[35] Georgia DNR stocks Lake Oconee annually with striped bass and hybrid bass (Georgia DNR, 2017).

[36] American shad are present in Lake Oconee from on-going stocking efforts since 2015. Successful natural reproduction of American shad is not expected to occur upstream of Wallace Dam. Downstream in the river basin, American shad migrate upstream as far as Sinclair Dam, and likely spawn in portions of the lower Oconee River (Georgia Power, 2016).

(Georgia DNR, 2014). Thus, Sinclair Dam impedes the upstream migration of American eel, Atlantic sturgeon, and robust redhorse, and downstream migration of American shad and striped bass.

Currently, there are no plans to install upstream or downstream fish passage at the three downstream dams on the Oconee River. However, FWS is exploring options for installing fish passage at Barnett Shoals Dam or removing the dam.[37] Under Interior's recommendation, Tallassee Shoals would conduct periodic monitoring of migratory fish in the reach between the Tallassee Shoals and Barnett Shoals dams, and the reach between Barnett Shoals and Wallace dams after fish passage is available at the three downstream dams. Periodic monitoring would help Tallassee Shoals determine if robust redhorse are present, their abundance, and whether they are congregating in specific locations in an attempt to migrate upstream of Tallassee Shoals Dam. Information from monitoring would allow Tallassee Shoals and the resource agencies to identify whether fish passage is needed, and if so, the type of fish passage to install, when it should be installed, and where it should be located to maximize passage effectiveness.

The benefits of Interior's recommended monitoring, however, are contingent on upstream passage of fish at the Barnett Shoals Dam, Wallace Dam, and Sinclair Dam or the removal of the Barnett Shoals Dam. Currently these dams lack upstream fish passage. Further, the installation of fishways at the dams or removal of Barnett Shoals Dam represents an uncertain future action given the absence of specified plans to provide passage. Consequently, there is currently no certainty that migratory fish would have access to Tallassee Shoals Dam under any new license issued for the Tallassee Shoals Project

Habitat Enhancement Plan

Interior recommends under section 10(j) that Tallassee Shoals develop a habitat enhancement plan, in consultation with FWS, NMFS, and Georgia DNR, that includes monitoring, maintaining, and enhancing (as needed) spawning habitat for robust redhorse, other species listed in the Georgia State Wildlife Action Plan,[38] and migratory fishes. The habitat enhancement plan would include, but not be limited to: (1) monitoring gravel conditions; (2) maintaining gravel shoals through recruitment or augmentation; (3) protecting riparian habitat to minimize erosion and sedimentation along the tailrace; (4) reassessing minimum flows in the bypassed reach for robust redhorse and other migratory fish; and (5) assessing water quality issues in the shoals to reduce algae growth, embeddedness, and sedimentation. Tallassee Shoals does not propose a habitat enhancement plan.

Our Analysis

Robust redhorse is a fish species once believed to be extinct then "rediscovered" in the Oconee River during the FERC relicensing process of the Sinclair Project in August 1991. Although not required at the Tallassee Shoals Project, Article 404 of the Sinclair Project license

[37] *See* FWS's September 2, 2023, filing at 2.

[38] Interior indicates that a habitat enhancement plan could also benefit Altamaha shiner, Altamaha bass, and brassy jumprock. *See* Interior's September 2, 2022, filing at 8.

requires continuous monitoring of the robust redhorse population to determine if flows released from the Sinclair Project meet the needs of the species in the Oconee River.[39] As a part of these monitoring efforts, the current range of robust redhorse in the Oconee River has been found to include a 70-mile reach between Sinclair Dam and Dublin, Georgia, which is more than 75 river miles downstream from the Tallassee Shoals Project (Oconee River Technical Working Group, 2010). The Sinclair Dam excludes the robust redhorse from the Middle Oconee River watershed (Georgia DNR, 2023a).

Interior's recommended habitat enhancement plan would involve management actions aimed at monitoring and maintaining gravel shoals through gravel recruitment or augmentation and implementing erosion and sedimentation control measures in the area downstream of the tailrace where gravel substrate is found. Although Interior has indicated that hydropower dams can negatively affect gravel spawning habitat by altering sediment transport dynamics, there has been no evidence provided that documents the presence of robust redhorse upstream of Sinclair Dam, in the Tallassee Shoals project tailrace, bypassed reach, or impoundment. Thus, the lack of any confirmed presence of robust redhorse and the existence of substantial barriers to upstream migration suggests that habitat improvements and monitoring for robust redhorse directly downstream from Tallassee Shoals Dam would be futile.

The focus of Interior's recommended habitat enhancement plan is directed toward robust redhorse habitat. However, Interior also recommends management actions to monitor, maintain, and enhance spawning habitat for Georgia protected species, such as American shad, American eel, Atlantic sturgeon, striped bass, and several other redhorse species. Further, as discussed above, Tallassee Shoals proposed continuation of operating the project in run-of-river mode would continue to support aquatic biota and habitat downstream from the project and Interior's management action are unspecified. Interior also recommends that a habitat enhancement plan include management actions to monitor, maintain, and enhance spawning habitat of migratory fishes other than robust redhorse. In our discussion of Interior's recommended migratory fish management plan, we stated that Sinclair Dam impedes the upstream passage of all migratory fishes. While Atlantic sturgeon, eels, and robust redhorse all use the lower Oconee River, they are currently restricted to river reaches downstream from Sinclair Dam.[40] Moreover, we are not aware of any evidence that spawning habitat for any migratory species exists in the Oconee River between Tallassee Shoals and Sinclair Dams.

Fish Impingement, Entrainment, and Turbine Mortality

Water intake structures at hydropower projects can injure or kill fish that come into contact with intake screens, trash racks, or turbines. Fish that have body widths greater than the clear spacing between the trash rack bars, and/or have burst swim speeds lower than approach velocities or through-screen velocities, can become trapped against intake screens or bars of a trash rack. This process is known as impingement and can cause physical stress, suffocation, and death of some organisms (EPRI, 2003).

[39] *See* Georgia Power, 74 FERC ¶ 62,146 (1996).

[40] American shad and striped bass are stocked in the Wallace Project's reservoir, Lake Oconee with downstream migration hindered by Wallace Dam, as discussed above.

Entrainment into the intake structure occurs if fish are small enough to pass between trash rack bars, and are unable to overcome the approach velocity, or if they choose to pass downstream through the trash rack. Even if fish are small enough to fit through trash rack bars, they are likely to behaviorally avoid entrainment if their burst swim speeds exceed the approach velocity in front of the trash racks (Knapp et al., 1982). If entrainment occurs, fish injury or mortality can result from collisions with turbine blades, exposure to pressure changes, shear forces in turbulent flows, or water velocity accelerations created by turbines (Rochester et al., 1984). The number of fish entrained and at risk of turbine mortality is dependent upon site-specific factors, including physical characteristics of the project (e.g., head, approach velocity, turbine type, turbine speed, number of runner blades), and the size, age, and seasonal movement patterns of fish present within the impoundment (EPRI, 2003). Fish that are entrained and killed are removed from the river population and no longer available for recruitment to the fishery.

Tallassee Shoals proposes to continue using the existing trash racks with 3 5/8-inch clear bar spacing located in front of the intake for unit 2 and the 1 5/8-inch bar spacing located in front of unit 1.[41] Unit 2 has a maximum hydraulic capacity of 850 cfs, which results in an approach velocity of 2.53 feet per second (fps). The maximum hydraulic capacity of Unit 1 is 90 cfs, which results in an approach velocity of 1.6 fps. Tallassee Shoals proposes no additional measures to reduce fish mortality as a result of impingement or entrainment.

No entity provided recommendations on fish impingement, or fish entrainment and turbine mortality in response to the Commission's notice that the application was ready for environmental analysis.

Our Analysis

Impingement

Most of the fish species in the Oconee River that grow to a size large enough to become impinged on a trash rack with 3 5/8-inch bar spacing have sufficient burst swimming speeds to maintain their position upstream of the trash rack and avoid impingement. The swimming speed capability data presented in Bell (1991) and Electric Power Research Institute (EPRI, 2000) indicate that the fish species in the Middle Oconee River, including largemouth bass, and catfish species, are able to maintain swimming speeds of between 4 and 7 body lengths per second for 15 minutes or more, and are capable of higher burst speeds. Adult fish of these species commonly exceed 12 inches in length and should be able to overcome the maximum approach velocity of 2.53 fps at the trash racks. Smaller fish that do approach the trash rack are able to pass through the bars with little or no risk of impingement. As a result, impingement potential at the project is low.

[41] Tallassee Shoals' January 7, 2022, filing at 6 indicates that Unit 1 Tallassee Shoals' January 7, 2022 filing at 6 clarifies that Unit 1 operates with 1 5/8-inch trashrack that is difficult to clean, and limits operation of the unit to an average of 4% or less, annually.

Entrainment and Turbine Mortality

As discussed above, smaller fish would have the potential to pass between the trash rack bars and therefore may be subject to entrainment and potential turbine mortality. Studies at other projects have generally concluded that small fish (i.e., less than 4 inches) account for the majority of fish entrained (EPRI, 1997). The survival of these entrained smaller fish is expected to be relatively high compared to larger fish as they are less prone to mechanical injury from turbine passage (i.e., turbine blade strike), and less prone to injury resulting from shear stresses and rapid pressure changes created by spinning turbines. Based on estimated monthly entrainment rates as well as flow through the project turbines, the estimated total number of fish entrained at the Tallassee Shoals Project would approach 12,161 fish per year with the greatest entrainment rates occurring in the spring (39 percent) and summer (41 percent) and lowest in the fall (6 percent) (table D-3).

Applying the estimated entrainment rates for fish families likely to be present within the project area (table D-2) to the estimated number of fish entrained each month, staff estimated that Ictaluridae (catfishes) would experience the greatest amount of entrainment, followed by Centrarchidae (sunfishes) and Cyprinidae (minnows). Tallassee Shoals estimates an annual entrainment mortality of 534 fish based on applying the site conditions to the EPRI model.

Evaluating the entrainment analysis above, there is no evidence to suggest that entrainment and turbine related mortality caused by continued project operation would negatively affect fish populations in the project impoundment or the Oconee River more generally. Species most likely to be killed at the project (i.e., catfish) often exhibit high reproductive rates and may spawn multiple times during long spawning seasons in Georgia (Neuswanger et al., 2015). High reproductive rates provide a mechanism to buffer against instances of high mortality and associated population declines that could otherwise be caused by turbine mortality. For these reasons, it is unlikely that continued project operation would have an adverse effect on the fish community in the Tallassee Shoals Project impoundment or the Oconee River.

Cumulative Effects

Water Quality

Tallassee Shoals proposes to operate the project as a run-of-river facility where outflows approximate inflows at all times with minor reservoir fluctuations. Tallassee Shoals also proposes to release a continuous minimum flow of 70 cfs. As discussed in sections above, proposed operation would reduce the residency time of water in the impoundment and maintain good water quality and habitat conditions in the impoundment, bypassed reach, and downstream. By consistently operating the project in a run-of-river mode with a narrow range of reservoir elevations, operation of the project would maintain the existing benefits afforded to the public water supply intakes in the reservoir as well as the reservoir's designated recreation uses. Thus, the proposed project operation would contribute minimally to cumulative effects on water quality, habitat, and aquatic biota.

Migratory Fish

Eight migratory and/or diadromous species seasonally inhabit portions of the Altamaha River Basin, including shortnose sturgeon, Atlantic sturgeon, American shad, blueback herring, Hickory shad, striped bass, American eel, and robust redhorse. However, the construction of dams on the Oconee River, including Wallace, Sinclair, and Barnett Shoals Dams, fragmented and altered the riverine habitats, as well as reduced the connectivity of mainstem riverine habitats to larger tributary systems. This led to a decline of native and migratory species in the river. Moreover, mainstem impoundments may impede the ability of tributary populations of fish and mussels to recolonize from upstream and downstream tributary systems after local disturbances. Cumulative effects of these past actions combined with other anthropogenic disturbances within tributary watersheds (e.g., point and nonpoint sources) may threaten the persistence of native species like the robust redhorse, as well as fragmented and eliminated historic spawning habitat for American shad and American eel.

Tallassee Shoals Dam is the only dam on the Middle Oconee River. Barnett Shoals Dam, Wallace Dam and Sinclair Dam are the three dams on the main stem of the Oconee River. All four dams are situated upstream of the fall line with Sinclair Dam located the farthest downstream of the four projects is located over 65 miles above the fall line. The fall line posed a natural obstacle to the upstream migration of fish in the Oconee River and delimits the historic distribution of many species or life stages of fish and mussels preferring either Piedmont or Coastal Plan habitats. Barnett Shoals Dam, Wallace Dam, and Sinclair Dam would continue to impede fish migration and limit river connectivity irrespective of the continued operation of the Tallassee Shoals Project. American eel, American shad, and robust redhorse are the only species known to occur immediately downstream from Sinclair Dam.

The cumulative effects of Tallassee Shoal's licensing proposal on diadromous fish migrations would be negligible, if any. There are no fish passage facilities at Barnett Shoals Dam, Wallace Dam, or Sinclair Dam, and, to date, there are no plans or schedules to install upstream or downstream fish passage at the dams. The striped bass and American shad stocked in Oconee Lake, although part of conservation efforts for each species, are not expected to result in establishing reproducing populations upstream of Wallace Dam, due lack of sufficient length of free-flowing river upstream for drifting early life stages (Crance, 1984).

Cumulative effects to fishery resources as a result of injuries and mortality from turbine passage, the species most likely to be entrained and killed at the Tallassee Shoals Project (e.g., snail bullhead, yellow bullhead, channel catfish, yellowfin shiner) exhibit relatively high population growth rates, making them resilient to population declines. Thus, the project's contribution to cumulative effects on fish mortality in the Middle Oconee River Basin is expected to be minimal.

3.3.2 Terrestrial Resources

3.3.2.1 Affected Environment

Vegetation

The Tallassee Shoals Project is located within the Southern Outer Piedmont ecoregion and is characterized by loblolly-shortleaf pine forests, on red clay subsoils, over gneiss schist and granite rock (Griffith et al., 2001). In addition to loblolly and shortleaf pine, dominant canopy cover for the Georgia Piedmont includes mixtures of pignut and mockernut hickory. Common oak species include white oak, post oak, and southern red oak. Subcanopy species typically include winged elm, red maple, black gum, sourwood, and flowering dogwood (Edwards et al., 2013).

Studies conducted during the original licensing of the project identified six plant communities in the project area: hardwood, pine, mixed hardwood/pine, agricultural, disturbed, and urban (OPC, 1982). The dominant vegetation included river birch, sycamore, green ash, red maple, white oak, southern red oak, shortleaf pine, muscadine, Japanese honeysuckle, trumpet-creeper, poison ivy, flowering dogwood, and sweet gum.

Riparian habitat in the Middle Oconee River within the vicinity of the project is characterized by narrow floodplains. These floodplains contain trees that can grow to maturity on soils that are often saturated (Edwards et al., 2013). Forested stands found in the floodplains within the project vicinity are characterized by species such as river birch, sycamore, green ash, red maple, ironwood, water oak, tulip poplar, sweetgum, box elder, black gum, button-bush, smooth allspice, Chinese privet, and other moisture tolerant species (OPC, 1982). Forested vegetation and riparian habitat within the floodplains near the project are intact except for the area immediately adjacent to the project headrace (Tallassee Shoals, 2021).

Invasive Species

Numerous non-native, invasive trees, shrubs, vines, and herbaceous plants occur in Georgia Piedmont. The most problematic species include Chinese privet, kudzu, autumn olive, shrubby bushclover, Chinese wisteria, Japanese stiltgrass, and Japanese honeysuckle (Edwards et al., 2013). Approximately 59 % of the floodplains in the upper Oconee River are occupied by Chinese privet. Japanese honeysuckle and Japanese stiltgrass are also commonly found within the floodplains (Ward, 2002; Burton et al., 2005; Loewenstein and Loewenstein, 2005). The spread of invasive plants is often linked to anthropogenic disturbance, including urbanization and residential development.

Wetlands

Wetlands within the project area are primarily palustrine forest or shrub wetlands that are associated with the Middle Oconee River floodplains (FWS, 2023a). These wetlands are temporarily flooded with surface water ranging from a few days to a few weeks and have a variety of rooted hydrophytic vegetation dominated by woody trees and shrubs that adapted to growing in the low-oxygen conditions associated with prolonged saturation or flooding. Out of the 20.2 acres of wetland cover within the existing project boundary, approximately 8.0 acres (40%) are freshwater forested/shrub wetland habitat (table D-4). The riverbanks are stable and

mostly well vegetated throughout these areas. No submerged or emergent aquatic vegetation is present.

Tallassee Shoals' review of aerial photography of the project dating to 1993 (Google Earth) indicated little to no change in the pattern of forested floodplain habitat distribution along the bypass reach, whereas sediment deposition in the impoundment has resulted in an increase in wetland vegetation, which is now forest, on the lower west side of the impoundment above the dam (Tallassee Shoals, 2021). Wetlands are predominantly located on the west side of the impoundment upstream of the dam; along the east side of the bypassed reach for its entire length, including rocky islands in its upstream portion; and on the east side of the river downstream of the tailrace (figure E-3). The proposed project boundary encompasses approximately 37.3 acres of wetlands, of which 13.6 acres (36.5%) are freshwater forest/shrub habitat, 22.9 acres (61.3%) are riverine habitat, and 0.8 acres (2%) are pond habitat (table D-4, and figure E-3).

Wildlife

Wetlands and their associated riverine habitats near the project provide diverse habitat for wildlife, including birds, reptiles, amphibians, and small mammals. Terrestrial mammal species that are found in Georgia's Piedmont oak-pine hickory forests include white-tailed deer, gray fox, bobcat, eastern chipmunk, gray squirrel, southern flying squirrel, northern raccoon, Virginia opossum, striped skunk (eastern cottontail, white-footed mouse, woodland vole, southern short-tailed shrew, and cotton mouse (Edwards et al., 2013; Georgia MNH 2021a). Bat species can also be present in this area, including the big brown bat, tri-colored bat, evening bat, hoary bat, and eastern red bat (Edwards et al. 2013; Georgia MNH 2021a).[42]

Bird species known to use the wetland, upland, and open water habitats within the project vicinity are composed of both residential and migratory birds that include raptors, waterfowl, shorebirds, and songbirds. The location of two breeding bird surveys, conducted by the U.S. Geological Survey (USGS) (Sauer et al. 2017), are within the project vicinity, one in Athens, Georgia, and another in Candler, Georgia. Commonly observed species along these two survey routes include the eastern meadowlark, common grackle, mourning dove, American crow, European starling, northern mockingbird, northern cardinal, indigo bunting, blue jay, chipping sparrow, American robin, Carolina wren, chimney swift, and eastern towhee. In total, about 94 species of breeding birds have been documented along the Candler and Athens survey routes (Tallassee Shoals, 2021).

Many of the 45 reptile and amphibian species that occur in Georgia's Piedmont ecoregion (table D-5,) (Edwards et al., 2013; Jensen et al., 2008; Georgia MNH, 2021b) were documented in the project vicinity during studies previously conducted at the project (OPC, 1982). Reptiles found include the five-lined skink, ground skink, broadhead skink, southeastern five-lined skink, six-lined race runner, eastern box turtle, common snapping turtle, river cooter, painted turtle, and copperhead snake. Amphibians found include southern cricket frog, northern spring peeper,

[42] Federally listed bat species are discussed in section 3.3.3, *Threatened and Endangered Species*.

bullfrog, eastern narrow-mouthed toad, marbled salamander, spotted salamander, and red-spotted newt.

Special Status Species

Tallassee Shoals identified federal and state -listed species and other species of concern that may occur within the project vicinity (table D-6). Federal candidate, proposed, and listed species are discussed further in section 3.3.3, *Threatened and Endangered Species* and in Appendix F, *Biological Assessment*.

Plants

Seven Georgia protected plant species potentially occur in the project area (table D-6). Three of those species, sun-loving draba (*Draba aprica*), dwarf hatpins (*Eriocaulon koernickianum*), and granite stonecrop (*Sedum pusillum*), occur on or near granite outcrops and would not be expected to occur in the project area. There are no known or recent records of Ozark bunchflower (*Veratrum woodii*), Indian olive (*Olea europaea*), or Georgia aster (*Symphyotrichum georgianum*) near the project (Tallassee Shoals, 2021). The remaining state protected species, the mountain catchfly (*Silene campanulate*), a tall perennial herb, is known from relatively recent occurrence records near the Middle Oconee River downstream of the project. This species occurs in rich hardwood forests over limestone and is threatened by logging, vegetation clearing, land development, and over-browsing by deer (Chafin, 2020).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a Georgia state-listed threatened species that is known to occur in the project vicinity year-round. Bald eagles are protected under the Migratory Bird Treaty Act (40 Stat. 755;16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (54 Stat. 250 as amended; 16 U.S.C. 668 et seq.). Bald eagles inhabit areas with open and mature forests along the edges of lakes and large rivers, where there are abundant fish and large trees available for nesting. Georgia DNR surveys for nests in the Piedmont ecoregion in even years. Surveys conducted during 2020 identified 24 occupied nest territories, with 16 fledglings, at least one eaglet, plus 22 young fledged in east Georgia, the region where the Tallassee Shoals project is located (Georgia DNR, 2020). Survey results in 2022 showed that eagle nesting remains strong in the state, despite highly pathogenic avian influenza dropping nest success by about 30 percent on Georgia's coast (Georgia DNR, 2023b). There are no known eagle nests in the project area or the project boundary.

3.3.2.2 Environmental Effects

Project Operation and Maintenance

Hydropower project operation and maintenance can affect wetlands, riparian habitat, and associated wildlife by modifying the frequency and duration of downstream flows and the stability of impoundment water surface elevations. These modifications may alter the availability and quality of nearshore habitats for the species that rely on them. Vegetation management along transmission line corridors, recreation sites, and other project facilities can result in the permanent removal of terrestrial habitat or temporary disturbances to the suitability of terrestrial habitat (e.g., as a result of increased human activity). These activities may affect

species composition and density, as well as the structure and function of terrestrial habitats. Additionally, transmission lines can pose electrocution and collision risks for birds and other wildlife.

As described in section 2.2.3, *Proposed Project Operation*, Tallassee Shoals proposes to continue operating the project in a run-of-river mode while providing a continuous minimum flow of 70 cfs or inflow, whichever is less, to the bypass reach. There are no existing animal protection guards or electrical insulation on the energized components of the substation or project transmission line to prevent bird and wildlife mortality associated with project operation. Tallassee Shoals proposes to continue to manage vegetation at project facilities on the east side of the Middle Oconee River, and periodically monitor and manage vegetation on the west side of river along the proposed canoe/kayak pathway.[43]

No entity provided comments on the effects of continued project operation and maintenance on terrestrial resources in response to the Commission's public notice that the application was ready for environmental analysis.[44]

Our Analysis

Run-of-River Operation

As discussed in section 3.3.2.2, *Affected Environment*, about 37.3 acres of wetland cover would be within the proposed project boundary, including 13.6 acres of freshwater forested/shrub habitat as well as riverine and pond habitat. Continued run-of-river operation would maintain the existing frequency and duration of flow fluctuations at the project and would mimic the natural seasonal variation of flows in the Middle Oconee River. Given that no changes to the current project operation are proposed, continued run-of-river operation is expected to maintain current riparian habitat within the project boundary and surrounding area and is likely to support a variety of frogs, turtles, salamanders, birds, and snakes that are known to occur in the region. Continued run-of-river operation and release of the minimum flow to the bypass reach, along with preserving the forested vegetation within the project boundary, would continue to maintain riparian floodplain habitat conditions for vegetation, wetlands, and wildlife along the bypass reach and downstream river.

Vegetation Management

Currently, vegetative management at the project consists of periodic mowing and weed eating in open areas along roadsides, along the bypass channel, near buildings, and along the property boundary fences. Limb trimming is occasionally done along the boundary fences and in

[43] *See* Tallassee Shoals' Response to Commission staff's Additional Information Request for the Tallassee Shoals Project P-6951.

[44] In its June 24, 2022 comments on Scoping Document 1, FWS recommended that the potential impacts to the proposed endangered tricolored bat (*Perimyotis subflavus*) be considered in the analyses.

other areas to maintain access to buildings and equipment.[45] Tallassee Shoals indicated that it does not manage vegetation on the west side of the project area along the Middle Oconee River. The proposed canoe/kayak portage area is relatively clear of understory vegetation. Following portage construction (see section .3.3.4, *Recreation*), Tallassee Shoals proposes to do quarterly inspections of the west bank of the river, including the portage and takeout areas. Proposed vegetative management would include limb trimming and removal of woody growth extending onto the portage trail, removal of deadfall, and weed-eating of herbaceous growth at the takeout on an as-needed basis. Vegetation management along the eastern portion of the project area would remain unchanged.

The widening of the existing footpath would require the removal of less than a dozen ferns and buckeye plants, and the proposed takeout will require weed-eating of the minimal amount of herbaceous vegetation to achieve a 3-ft-wide portage trail.[46] Periodic tree trimming, and the removal of woody growth could disturb wildlife along the proposed canoe/kayak portage area. However, these effects are expected to be temporary and limited to the footprint of the proposed canoe/kayak path. Minimizing ground disturbance (e.g., use of hand tools) and vegetation removal, as proposed, for the expansion of the canoe portage would help minimize the spread of non-native, invasive vegetation. Additionally, avoiding tree removal during the active season of sensitive species for the expansion of recreation parking (see section 3.3.4, *Threatened and Endangered Species*) would help reduce project effects on wildlife. Given that mature trees provide beneficial habitat for wildlife, avoiding tree removal to the maximum extent practicable for the proposed parking expansion would minimize project-related effect on wildlife.

Transmission Facilities

Exposed energized components at hydropower facilities can electrocute birds and other wildlife during project operation. Powerlines with voltages less than 60 kV are known to have higher risk of avian electrocution than those with higher voltages (APLIC, 2006). Power lines located between feeding and roosting areas of flocking birds, especially lines near rivers, lakes, or wetlands where fog may be common, can make lines less visible and may present an increased collision risk, as can inclement weather (APLIC, 2012; APLIC and FWS, 2005). Human activity near lines may startle and flush birds towards power lines. Collisions most often occur with the overhead static wire, which may be less visible than energized conductors due to its smaller diameter. Most bird collisions involve waterfowl, and other heavy-bodied, less agile birds (APLIC, 2012).

The Tallassee Shoals Project facilities are not equipped with any avian protection devices. Project lines that connect to the substation are underground. Aerial wires at the project that connect the transformer to the transmission system, and cross the Middle Oconee River at the project, are owned by Georgia Transmission Corporation. While the effects of unprotected devices on birds and other wildlife are not currently monitored, Tallassee Shoals indicated it was

[45] Information provided in Tallassee Shoals Response to staff's November 8, 2021 Additional Information Requests Tallassee Shoals Hydroelectric Project FERC No. 6951-018 dated January 7, 2022.

[46] *Id.*

unaware of any avian interactions with the project substation and transmission line.[47] To ensure that avian species are protected during any new license term, Tallassee Shoals could develop an Avian Protection Plan with specific procedures that include provisions to: (1) periodically monitoring project facilities for nests, or signs of adverse avian interactions; (2) training personnel on avian/wildlife protection measures including reporting any adverse interactions; (3) consulting with agencies regarding installation of avian protection devices on project facilities, if avian interactions are detected; and (4) filing an implementation schedule. Implementing such a plan would allow Tallassee Shoals to identify and address impacts to birds and other wildlife at all the project transmission facilities in a timely manner.

Project Recreation Effects on Terrestrial Resources

Construction, operation, and maintenance of new recreational features, as well as informal recreation activities could affect wildlife by creating noise, habitat disturbances and deterioration, and an increased human presence within the project area. Additionally, areas disturbed by the construction and maintenance of recreational facilities could create suitable conditions for the establishment of non-native invasive plants which may reduce biodiversity and alter the composition of existing native plant and animal communities (Hobbs and Huenneke, 1992).

Tallassee Shoals proposes recreation enhancements that could affect terrestrial resources, including: (1) construction and maintenance of a new 265-foot-long canoe/kayak portage on the west bank of the Middle Oconee River, which follows an existing footpath through a forested corridor along the riverbank and would be expanded three to five feet (figure E-5); (2) installation of an aluminum bridge and an aluminum canoe slide that includes three, two-foot by five-foot concrete slabs which will serve as bases/anchors for the proposed canoe slide and bridge; and (3) expansion of recreation parking from three spaces to six spaces, requiring the removal of two trees.

No entity provided comments on the effects of recreation at the project on terrestrial resources in response to the Commission's public notice that the application was ready for environmental analysis.

Our Analysis

The project area near the exiting canoe portage path includes mature oak-hickory forest with a dense overstory, a midstory of red maple and hazel alder, and a shaded understory. The understory along the existing footpath is scattered with Christmas fern and painted buckeye along the hillslopes.[48] The path is primarily open consisting of a thick layer of duff and leaf litter. The proposed takeout is relatively flat, receives moderate sunlight and has an overstory of river birch, occasional black willow along the riverbank, and herbaceous ground cover along the

[47] Tallassee Shoals' April 18, 2022 Response to Further Deficiencies of License Application and Additional Information Request dated February 15, 2022.

[48] Information provided in Tallassee Shoals' January 7, 2022 Response to staff's November 8, 2021 Additional Information Requests Tallassee Shoals Hydroelectric Project FERC No. 6951-018. (*Id*. at 44)

sunny shoreline. Dominant herbaceous species include river oats, deer tongue grass, and ironweed. [49]

The widening of the existing footpath would require the removal of less than a dozen ferns and buckeye plants, and the proposed takeout will require weed-eating of the minimal amount of herbaceous vegetation to achieve a 3-ft-wide portage trail.[50] Soil disturbance will be limited to cut and fill grading along the forested hillslope via hand tools (i.e., shovels and picks). Disturbed areas will be stabilized following construction activities. The majority of the proposed portage will be cleared and allowed to return to the semi-naturalized state of the existing foot path. As discussed, vegetation management is expected to be minimal consisting of periodic removal of deadfall, limb trimming, and/or weed-eating herbaceous growth at the riverbank at the takeout point. Tallassee Shoals proposes to remove two large hardwood trees for expansion of the recreation parking area.

Due to the limited ground disturbance anticipated with the expansion of the existing portage trail, the use of the proposed canoe portage and associated facilities is not expected to significantly increase the spread of non-native invasive plants. Additionally, Tallassee Shoals indicated that they would use best management practices (BMPs; *e.g.,* silt fencing, avoiding construction during inclement weather) to minimize construction related erosion (see section 3.3.4.2 *Recreation, Environmental Effects*). Limiting tree removal for the proposed expansion of parking would help minimize project effects on wildlife (see section 3.3.3.1, *Threatened and Endangered Species* and Appendix F, *Biological Assessment*).

3.3.3 Threatened and Endangered Species

3.3.3.1 Affected Environment

On December 20, 2023, Commission staff used the FWS's ECOS-Information for Planning and Conservation (IPaC) website to generate the following list of threatened and endangered (T&E) species that may be found in the project area or be affected by the Tallassee Shoals Project: the endangered gray bat, the proposed endangered tricolored bat, and the candidate monarch butterfly. On September 14, 2022, FWS issued a proposed rule to list the tricolored bat as an endangered species under the ESA throughout its range, including Georgia.[51] No critical habitat for any federally listed, or proposed for federal listing, occurs on project-affected lands. Our analysis of the project's effects on the species with an ESA designation is presented in Appendix F, *Biological Assessment*.

[49] *Id.*

[50] *Id.*

[51] 87 Fed. Reg. 56,381-56,393.

3.3.4 Recreation

3.3.4.1 Affected Environment

Regional Recreation

A variety of recreation resources surround the Tallassee Shoals Project. Nearby state parks include Fort Yargo, Watson Mill Bridge, and Hard Labor Creek. Fort Yargo State Park, located approximately 17 miles west of the project offers a variety of outdoor recreation opportunities including camping (tent, trailer, and cabins), a swimming beach, a fishing lake, hiking and mountain biking trails and boating. Watson Mill State Park, located approximately 30 miles west of the Project, offers camping (tent, trailer, and cabins), biking, fishing, equestrian trails, and is home to the longest covered bridge in Georgia. The nearby city of Athens is home to the University of Georgia. It has a robust tourism industry and features several parks.

Other regional attractions include the State Botanical Garden of Georgia, Sandy Creek Nature Center, the Birchmore Trail and Ben Burton Park. The Tallassee Shoals Project is also near Lake Oconee, which is operated by Georgia Power Company, and is the largest lake in central Georgia. Lake Oconee covers 19,050 acres and includes several public recreation areas and access areas, including picnic areas, swimming areas, camping opportunities, fishing and boating amenities, and other related recreation facilities. The Oconee National Forest is located adjacent to Lake Oconee and includes two wildlife management areas (WMA). The Redlands WMA and the Oconee WMA offer various outdoor recreation opportunities including fishing, hunting, and boating.

The Upper Oconee Water Trail (UOWT) is a recreational water trail under development on the North Oconee, Middle Oconee, and Oconee rivers for paddlers and anglers. The Altamaha Riverkeeper, Georgia River Network, Upper Oconee Watershed Network, and North Oconee Greenway Commission have created a plan for the UOWT, which includes the Middle Oconee River through the Tallassee Shoals Project. The UOWT is actively pursuing launch sites and portages around dams to provide safe access to the developing trail.

Land Use

The project boundary includes approximately 36 acres, of which 33 percent is the open water/shoals of the Middle Oconee River. The remainder of the area within the project boundary is primarily deciduous forest along the river and herbaceous vegetation between the river and headrace, representing 26 percent and 23 percent, respectively. About 13 percent of the project land is classified as either developed, low intensity[52] or open space. The developed lands are primarily associated with the project works.

Recreation Access at the Project

Tallassee Shoals provides a recreation parking area with space for three vehicles, which provides for bank access to the west side of the bypassed reach. The parking area is located on a separate 0.78-acre tract of licensee-owned land within the project boundary (Figure E-4). The

[52] Developed, low intensity lands are areas with a mixture of structures and vegetation.

parking area is located approximately 1,200 feet southwest of the bypassed reach along an existing transmission line right-of-way (ROW). Access to the river follows the ROW via an existing, public, gravel road used primarily by the local community. The ROW connects to a short pedestrian trail and a wooden staircase that leads down the steepest portion of the riverbank to the west bank of the bypassed reach. Tallassee Shoals maintains an easement with the landowners where the pedestrian trail is located. The bypassed reach is used for various recreation activities such as bank fishing, wading, swimming, paddling, tubing, and shoreline relaxation. The nearest public launch site to the Middle Oconee River is located at Ben Burton Park about 7.5 river miles downstream of the project.

Recreation Use

Tallassee Shoals conducted a recreation study during 2019-2020. Cameras were installed at five sites around the project, including the impoundment, the upper bypassed area, middle bypassed area, lower bypassed area, and downstream of the bypassed area. The cameras collected photographs continuously throughout the study in 10-minute intervals, documenting use and activities at the five sites. A total of 880 visitors were observed at the five monitoring locations over the one-year study period.

3.3.4.2 Environmental Effects

Recreation Use and Access

Tallassee Shoals proposes to continue to allow use of project lands and operate and maintain the existing recreation facilities at the projects. Tallassee Shoals, in response to stakeholder interest, also proposes to construct a new, water-accessible, 287-foot-long canoe portage with put-in and take-out amenities on the west bank of the Middle Oconee River adjacent to the dam (figure E-5).[53] Additionally, Tallassee Shoals proposes to expand the recreation parking area from 3 spaces to 6 spaces. The expansion would involve the removal of two trees and realigning fencing.

Georgia DNR recommended that the licensee conduct an annual evaluation and routine maintenance of the gravel footpath and wooden staircase to the shoreline and evaluate the need for expanded parking every five years.[54]

Our Analysis

Tallassee Shoals' proposed portage facilities would improve recreational boating access to the Middle Oconee River. The proposed parking expansion would address Georgia DNR's request for expanded parking and likely offset any additional use increase caused by the proposed portage. Additionally, Tallassee Shoals inspects the gravel terraces and wooden

[53] In pre-filing comments, Georgia DNR and the Upper Oconee Watershed Network expressed canoe/kayak portage interest. American Whitewater also submitted pre-filing comments and expressed a similar portage interest, with an additional interest in river access needs and opportunities.

[54] *See* Georgia DNR letter filed September 2, 2022.

staircase monthly and performs repairs as needed.[55] These measures would support the continued development of the Upper Oconee Water Trail by improving connectivity at the project. However, the proposal contains no construction schedule. To avoid conflicting with the protection measures in Appendix F, *Biological Assessment,* the recreation improvements would need to be constructed in early spring or late fall when recreation use is low. Establishing a deadline to complete construction of these facilities, within 2 years of license issuance, would ensure that the recreation facilities are constructed and opened to the public in a reasonable amount of time. Additionally, installing directional and safety signage for canoe portage users would inform users of the location of the take-out, portage trail, and put-in amenities. These provisions could be included in a Recreation Management Plan for the project.

Effects of Construction, Operation, and Maintenance on Recreation

Tallassee Shoals proposes to develop the canoe portage facility on the west side of the dam and maintain the existing and proposed project facilities to provide safe and effective recreation opportunities. Tallassee Shoals proposes to continue operating the project in a run-of-river mode so that outflow approximates inflow at any given point in time; continue to release a minimum flow of 70 cfs, or inflow, whichever is less, to protect aquatic resources in the 2,100-foot-long bypassed reach.

Our Analysis

Construction of the proposed project facilities may have temporary effects on anglers, canoeists, and kayakers that recreate at the project, including loss of recreation access, noise, and dust. Anglers could temporarily be displaced from the bypassed reach on an intermittent basis during construction of the canoe portage facilities. Boaters may also temporarily be affected during the construction activities due to access issues. For example, construction equipment may temporarily block sections of the portage path. Also, there could be times during construction that the put-in and take-out areas would be inaccessible. However, the proposed construction activities at the projects are small in scope, and any closures would be brief. Tallassee Shoals proposes erosion best management practices (BMPs), and these would lessen construction-related erosion and sedimentation.

Project Effects on Land Use and Modification of Project Boundary

Tallassee Shoals proposes changes to the existing project boundary due to both the use of new survey technology with improved precision and because the 1983 license was issued before the Tallassee Shoals Project was constructed and did not include the full impoundment. Tallassee Shoals proposes to add 22 acres to the project boundary, which would enclose the project works, impoundment, existing and proposed recreation amenities, and lands necessary for project purposes. The proposed project boundary would then enclose a total of approximately 58 acres.

[55] AIR response filed January 7, 2022.

Our Analysis

Adding 22 acres to the project boundary would allow for the upper reservoir to be included in the project boundary. Extending the project boundary would also allow for the proposed canoe/kayak portage to provide boating access to the full reservoir. The proposed addition of 22 acres would bring all areas needed to operate the project into the boundary while including only areas needed for project operations and maintenance. The extent of development that would be undertaken if a license was granted would be minimal, as no major construction is proposed. As discussed in section 3.3.4.1, *Affected Environment,* the proposed improvements would be consistent with recreational use of the Middle Oconee River.

3.3.5 Cultural Resources

3.3.5.1 Affected Environment

Section 106 of the NHPA requires that the Commission take into account the effects of its actions on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.[56] Historic properties are those that are listed or eligible for listing in the National Register. The regulations implementing Section 106 of the NHPA also require that the Commission seek concurrence with the SHPO on any finding involving effects or no effects on historic properties and consult with interested Indian tribes or Native Hawaiian organizations that attach religious or cultural significance to historic properties that may be affected by an undertaking. In this document, we also use the term "cultural resources" for properties that have not been determined eligible for listing in the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic under the NHPA.

Area of Potential Effects

Under section 106 of the NHPA of 1966, as amended, the Commission must take into account whether any historic property within the proposed project's area of potential effects (APE) could be affected by the issuance of a license for the project. The Advisory Council on Historic Preservation defines an APE as the geographic area, or areas, in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 C.F.R. § 800.16(d)). The APE is determined in consultation with the SHPO and is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE begins at the junction of Redstone Creek and the Middle Oconee River and extends 0.7-miles downstream of the project on both sides of the Middle Oconee River from

[56] An undertaking means "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval." 36 C.F.R. § 800.16(y) (2020). Here, the undertaking is the potential issuance of a new license for the project.

655-feet msl to the contour of the river. The Georgia SHPO concurred with the APE, by letter filed September 15, 2021.

Cultural History Overview

Prehistoric and Historic Background

The prehistoric and historic background in Georgia is generally spread among stages, or periods. The primary periods are (a) Paleo-Indian (10,000 to 8,000 BC), (b) Archaic (8,000 to 1,000 BC), (c) Woodland (1,000 BC to AD 1,000, and (d) Mississippian (1,000 to 1,600 AD).

The Paleo-Indian Period represents initial colonization, early hunting, and gathering. Population density was low during the Paleo-Indian Period, and social structure likely consisted of small mobile groups following a hunting and gathering subsistence pattern. The Archaic Period represents development of regional territories, a shift in hunting smaller prey (such as deer, and turkey), gathering, and use of cultivated plants. The Woodland Period represents agricultural communities and development of pottery. The Mississippian Period represents large villages, ceremonial mounds, and trade networks. Research has shown that each period or stage is marked by climate change and/or technological changes that are reflected in soils, pollen, and artifacts, including tools and pottery.

Construction of the Tallassee Shoals Hydroelectric Project took place in 1902 and was one of three plants to provide electricity to the city of Athens, Georgia. The original dam was 30 feet high and 366 feet long, made of dry rock masonry, timbered floor, and had a rock abutment. In 1908, Georgia Power Company (Georgia Power) was founded. Between 1926 to 1928, Georgia Power consolidated many hydroelectric facilities across the state. Georgia Power used the Project until 1960, at which point the Project was decommissioned and equipment was removed from the powerhouse. In 1964, the Tallassee Shoals Dam was breached. In 1982, Oglethorpe Power Company (Oglethorpe Power), the previous licensee, conducted a cultural resources study in the project area. OPC replaced the dam and powerhouse in 1985 and resumed operating the project in 1986.

Historic Properties

In the1982 historical and cultural investigation two aboriginal sites were found but no evidence of midden or subsurface features were located. In February 2021, based on recommendations from the Georgia SHPO, Tallassee Shoals updated the 1982 survey by developing an addendum to the original study with current information regarding the project, including current photographs and a review of the current condition of the powerhouse, dam and related structures.

Nutter & Associates, Inc. prepared the addendum, including a review of the Georgia Archaeological Site File, and found that one archaeological site is located within close proximity (<1 km) to the Tallassee Shoals Project. The site, identified as 9CA172, is a surface scatter of nineteenth century ceramics located in a heavily graded area within the existing transmission line corridor. Slightly more than one kilometer southwest of the project are two prehistoric lithic scatters, sites 9CA229 and 9CA230, both identified in 2019. None of the sites were recommended for listing on the National Register.

Traditional Cultural Properties

On November 2, 2017, Commission Staff invited the Alabama-Coushatta Tribe of Texas, Kialegee Tribal Town, Alabama-Quassarte Tribal Town, Muscogee (Creek) Nation, Cherokee Nation, Poarch Band of Creek Indians, Coushatta Tribe of Louisiana, Thlopthlocco Tribal Town, Eastern Band of Cherokee Indians, and United Keetoowah Band of Cherokee Indians in Oklahoma to participate in the relicensing process for the project. The Cherokee Nation filed a letter on November 27, 2017, requesting to be a consulting party to the project and requesting a cultural resources survey report. Tallassee Shoals provided cultural resources survey reports to the Cherokee Nation on March 23, 2021. No Tribe has reported any known traditional cultural properties within the project's APE to date.

3.3.5.2 Environmental Effects

Effects on Historic Properties

Tallassee Shoals proposes to continue operation and maintenance of the hydropower facilities at the Tallassee Shoals Project with no major modifications to project facilities or operations that would affect historic properties. The Georgia SHPO determined that no historic sites that are listed or eligible for listing on the National Register would be affected.[57] The Georgia SHPO requires to be consulted if changes to the project occur, to include any construction related to relicensing. In a letter filed November 27, 2017, the Cherokee Nation requested that the Commission conduct appropriate inquiries with other pertinent Tribal and historic preservation offices regarding historic and prehistoric resources not included in the Cherokee Nation databases or records.

Our Analysis

Continued operation of the Tallassee Shoals Project would ensure that the historic facilities at these projects would be used for the purpose for which they were originally designed and constructed. However, operating the projects under the protection afforded by section 106 does not ensure that there would be no adverse effects. Adverse effects may occur to historic project features as a result of repairs and modifications that, while necessary for the continued safe and efficient operation, are not in keeping with the project's historic character. Further, future maintenance or emergency situations may adversely affect the historic resources at the Tallassee Shoals Project. Consulting the Georgia SHPO prior to any modifications to above ground structures at the Tallassee Shoals Project would help avoid adverse effects to historic resources.

There may be unknown archaeological resources that could be adversely affected by future operation and maintenance of the projects. As described in the license applications, the project proposal does not contain significant construction and/or modifications to project facilities, as well as no substantial, proposed changes to project operations. Therefore, the SHPO states that the proposals are unlikely to affect historic properties. The SHPO notes that if the

[57] Letter dated April 27, 2021 and filed with the FLA on September 15, 2021.

project proposals change, consultation with the SHPO should take place under Section 106. Requiring that Tallassee Shoals contact the Georgia SHPO and relevant tribes upon proposal of any ground-disturbing activity that may have the potential to affect lands that have historic or cultural significance would ensure that any unanticipated discoveries are adequately addressed.

3.3.6 Environmental Justice

3.3.6.1 Affected Environment

According to the U.S. Environmental Protection Agency (EPA), "environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies (EPA, 2022). Meaningful involvement means:

1. people have an opportunity to participate in decisions about activities that may affect their environment and/or health;

2. the public's contributions can influence the regulatory agency's decision;

3. community concerns will be considered in the decision-making process; and

4. decision makers will seek out and facilitate the involvement of those potentially affected (EPA, 2022).

In conducting NEPA reviews of proposed hydropower projects, the Commission follows the instruction of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations,* which directs federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[58] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad,* also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[59] The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution.[60] Environmental justice

[58] Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses environmental justice in its analysis, in accordance with our statutory duties.

[59] Exec. Order No. 14008, 86 Fed. Reg. 7619 (Feb. 1, 2021).

[60] *Id*.

communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.[61]

Commission staff used the Federal Interagency Working Group on Environmental Justice & NEPA Committee's publication, *Promising Practices for EJ Methodologies in NEPA Reviews* (*Promising Practices*) (EPA, 2016), which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this project. Commission staff's use of these methodologies is described throughout this section.

Commission staff used EJScreen, EPA's environmental justice mapping and screening tool, as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors. EPA recommends that screening tools, such as EJScreen, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review.

Meaningful Engagement and Public Involvement

CEQ's *Environmental Justice Guidance Under the National Environmental Policy Act (CEQ Environmental Justice Guidance)* (CEQ, 1997) and *Promising Practices* recommend that federal agencies provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.[62] They also recommend using adaptive approaches to overcome linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decision-making processes of federal agencies. In addition, Section 8 of Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, strongly encourages independent agencies to "consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, federal policies and programs."[63]

There have been opportunities for public involvement during the Commission's review process. The Commission's communication and involvement with the surrounding communities began on November 29, 2018, with the public notice approving use of the traditional licensing process, followed by public notice of the relicense application on September 21, 2021. Issuance of the *Notice Soliciting Scoping Comments* on May 31, 2022, opened a 30-day formal scoping period to identify issues, concerns, and opportunities for enhancement or mitigation associated with the proposed action. We issued a *Notice of Application Accepted for Filing, Soliciting*

[61] See EPA, *EJ 2020 Glossary* (August. 18, 2022), https://www.epa.gov/environmentaljustice/ej-2020-glossary.

[62] CEQ, *Environmental Justice: Guidance Under the National Environmental Policy Act*, 4 (Dec. 1997) (CEQ's Environmental Justice Guidance), https://www.energy.gov/sites/default/files/nepapub/nepa_documents/RedDont/GCEQ-EJGuidance.pdf.

[63] Exec. Order No. 13985, 86 Fed. Reg. at 7009 (Jan. 20, 2021).

Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions on July 7, 2022, which established a 60-day comment period and intervention deadline. Finally, we issued a *Notice of Intent to Prepare an Environmental Assessment* on September 14, 2022. Each of these notices were published in the *Federal Register* and local newspapers. No comments regarding environmental justice concerns have been received.

All documents that form the administrative record for this proceeding, with the exclusion of privileged or critical energy infrastructure information, are available to the public electronically on the FERC's website (www.ferc.gov). We recognize that not everyone has internet access or is able to file electronic comments. Anyone may comment to FERC about the proceeding, either in writing or electronically.

In 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public, including environmental justice communities, landowners, Tribal citizens, and consumer advocates, with assistance in FERC proceedings – including navigating Commission processes and activities relating to the project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6592 or OPP@ferc.gov for further information.

Identification of Environmental Justice Communities

According to CEQ's *Environmental Justice Guidance* and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, FERC uses the **50 percent** and the **meaningfully greater analysis** methods to identify minority populations. Using this methodology, minority populations are defined in this EA where either: (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices'* **low-income threshold criteria** method, low-income populations are identified as census block groups where the percent low-income population in the identified block group is equal to or greater than that of the county. Here, Commission staff selected Clarke County, Georgia, in which the project action is located, as the comparable reference community to ensure that affected environmental justice communities are properly identified. A reference community may vary according to the characteristics of the particular project and the surrounding communities.

According to the current U.S. Census Bureau information, minority populations exist within the project area. Table D-7 identifies the minority populations by race and ethnicity populations within Georgia, the county affected by the relicense application (Clarke County,

Georgia), and U.S. census block groups[64] within vicinity of the project site. For this project, staff chose a 1-mile radius around the project boundary. Staff determined that a 1-mile radius is sufficient to encompass and address any potential impacts that may arise from the proposed action given the limited scope of the proposed relicensing, including limited construction activities and the concentration of project-related effects within the project boundary. To ensure we are using the most recent available data, we use U.S. Census American Community Survey File# B03002 for the race and ethnicity data and Survey File# B17017 for poverty data at the census block group level.[65]

As presented in table D-7, staff found that two of the five census block groups within the geographic scope of the project meet the definition of an environmental justice community. The two identified block groups have greater than 50% minority populations (Census Tract 130500, Block Group 1 and Census Tract 130400, Block Group 3, both in Clarke County). Figure E-6 provides a geographic representation of these communities relative to the project area.[66]

3.3.6.2 Environmental Effects

Consistent with *Promising Practices* and EO 12898, we reviewed the project to determine if its resulting impacts would be disproportionately high and adverse on minority and low-income populations and also whether impacts would be significant.[67] *Promising Practices* provides that agencies can consider any number of conditions for determining whether an action will cause a disproportionately high and adverse impact.[68] The presence of any of these factors could indicate a potential disproportionately high and adverse impact. For this project, a

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[64] Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people. U.S. Census Bureau. 2022. Glossary: Block Group. Available online at: https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4. Accessed October 2022.

[65] U.S. Census Bureau, American Community Survey 2021 ACS 5-Year Estimates Detailed Tables, File# B17017, *Poverty Status in the Past 12 Months by Household Type by Age of Householder*, https://data.census.gov/cedsci/table?q=B17017; File #B03002 *Hispanic or Latino Origin by Race*, https://data.census.gov/cedsci/table?q=b03002.

[66] Data from the 2021 U.S. Census American Community Survey File # B01017 and File # B03002, the most recently available data, were used as the source for race, ethnicity, and poverty data at the census block group level (U.S. Census Bureau, 2021).

[67] *See* Promising Practices at 33 (stating that "an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA" and in other circumstances "an agency may determine that an impact is both disproportionately high and adverse and significant within the meaning of NEPA").

[68] *See* Promising Practices at 45-46 (explaining that there are various approaches to determining whether an impact will cause a disproportionately high and adverse impact). We recognize that CEQ and EPA are in the process of updating their guidance regarding environmental justice and we will review and incorporate that anticipated guidance in our future analysis, as appropriate.

disproportionately high and adverse effect on an environmental justice community means the adverse effect is predominantly borne by such population. Relevant considerations include the location and natural physical environment of project facilities and the project's human health and environmental impacts, including associated social, economic, or cultural direct, indirect and cumulative impacts, on identified environmental justice communities.

As described in section 2.2.3, *Proposed Project Operation*, Tallassee Shoals proposes to continue operating the project in a run-of-river mode so that outflow approximates inflow at any given point in time; continue to release a minimum flow of 70 cfs, or inflow, whichever is less, to protect aquatic resources in the 2,100-foot-long bypassed reach; and discontinue releasing the 138-cfs minimum flow currently required in the month of May and instead release the 70 cfs minimum flow, which is currently required from June through April, through May as well (*i.e.,* through the entire year). As discussed in section 3.3.4, *Recreation*, Tallassee Shoals proposes to construct a canoe portage and add three parking spaces to the parking area.

No entity provided comments or recommendations regarding the effects of the project on environmental justice communities in response to the Commission's notice that the application was ready for environmental analysis.[69]

Our Analysis

Staff evaluated the effects of continued project operation on environmental justice communities as related to aquatic resources, terrestrial resources, threatened and endangered species, land use, recreation, aesthetics, and cultural resources in sections 3.3.1 through 3.3.5 above. Tallassee Shoals proposes no changes to project operation that would adversely affect water supply, water quality, or fisheries. We address resources with potential effects to environmental justice communities below.

Aquatic Resources

As discussed in section 3.3.1.2, *Aquatic Resources, Environmental Effects*, operating the project in a run-of-river mode would continue to maintain stable impoundment levels and minimize effects on environmental resources in the impoundment and the Middle Oconee River downstream of the project. Due to the maintenance of stable impoundment levels that would continue to allow for any subsistence fishing at the project, the effects of this proposed action would be less than significant on the identified environmental justice communities.

Recreation Resources and Land Use

Constructing a canoe portage would provide the ability for increased fishing opportunities. Additionally, providing three additional parking spaces would allow more access to the project. There could be inconveniences with construction of the canoe portage, such as noise, dust, and construction traffic, but these impacts would be temporary in nature. The

[69] Ms. Elizabeth Toombs, Cherokee Nation Tribal Historic Preservation Officer, filed a comment on October 24, 2018, and requested previous cultural resources survey reports, and copies of related correspondence, from the Georgia SHPO.

nearest residence would be 0.26 mile from the proposed portage area and 0.10 mile from the parking area. Noise levels would be highest in the immediate vicinity of construction and would lower in areas away from the work area. The canoe portage would be situated along an existing footpath and no laydown areas will be necessary. Soil disturbance would only involve hand tools. The aluminum components associated with the proposed portage [e.g., handrails, staircase, etc.] would be built off-site and installed on-site. The parking area expansion would only involve the removal of two trees and realigning a fence. The removal of the trees could result in noise levels above ambient levels associated with chain saws; however, the trees would likely be removed, and debris cleaned up over no more than two days. The construction would occur in months where recreation use is low and is expected to occur during daylight hours. Although the concentration of recreation use at the project could increase slightly with public access at the reservoir, the site is remote and unlikely to experience large increases in usage that would adversely affect the identified communities through increases in traffic or overfishing. The proposed recreation amenities would provide recreation access benefits to the identified environmental justice communities. Due to the proposed timing and temporary and minor effects of construction, the effects to identified environmental justice communities are not expected to be significant.

Aesthetic Resources

Construction activities associated with the portage would be performed with hand tools. There would be minimal effects to aesthetic resources from the proposed recreation enhancements. The proposed portage would be situated along an existing footpath and require little soil disturbance. Further, the canoe slide and bridge would not likely be visible from the recreation access area. Finally, while two trees would be removed, and the fence would be realigned at the recreation parking area, these effects are minimal because there are adjacent forested areas, and the fence realignment would involve only 75 linear feet of fencing. Additionally, the nearest home is in a forested area more than 500 feet away. Due to the short duration of the proposed construction activities and the limited use of loud construction machinery, the noise and other aesthetic effects of project construction on nearby residents within environmental justice communities would be less than significant.

In consideration of the included census data, the limited scope of the proposed project, the lack of a significant effect on environmental justice communities, and the environmental protection and enhancement measures for aquatic resources, threatened and endangered species, and cultural resources, the project would not result in a disproportionately high and adverse impact on the identified environmental justice communities.

NO-ACTION ALTERNATIVE

Under the no-action alternative, the Tallassee Shoals Project would continue to operate as it has in the past. None of Tallassee Shoals' proposed measures or the resource agencies' recommended measures would be required. None of the staff-recommended measures would be implemented.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the project's use of the Middle Oconee River for hydropower generation to see what effect various proposed or recommended environmental measures would have on the cost to operate and maintain the project and on the project's power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp*.,[70] the Commission compares the current cost to produce project power to an estimate of the cost to provide the same amount of energy and capacity[71] for the region using the most likely alternative source of power (cost of alternative power). In keeping with the policy described in *Mead Corp.*, our economic analysis is based on current electric power cost conditions and does not anticipate or estimate changes in fuel costs that could occur during a project's license term.

For each of the licensing alternatives, our analysis includes an estimate of: (1) the annualized cost of providing the individual measures considered in the EA; (2) the cost of the most likely alternative source of project power; (3) the total annual project cost (i.e., for construction, operation, maintenance, and environmental measures); and (4) the difference between the cost of the current alternative source of project power and the total annual project cost. If the difference between the cost to produce an equivalent amount of power from an alternative source and the total annual project cost is positive, the project produces power at a cost less than the cost of producing power from the most likely least-cost source of alternative power. If the difference between the alternative source of power's annual cost and the total annual project cost is negative, the project costs more to produce power than the cost to produce an equivalent amount of power from the most likely least-cost source of alternative power. This estimate helps support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

The power and economic benefits of the Tallassee Shoals Project, the comparison of the cost of each alternative for the project, and the cost of the environmental enhancement measures considered in our analysis for the Tallassee Shoals Project are discussed in Appendix G.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any

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[70] *See Mead Corp.*, 72 FERC ¶ 61,027 (July 13, 1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

[71] We use the term "capacity benefit" to describe the benefit a project receives for providing capacity to the grid, which may be in the form of a dependable capacity credit or credit for monthly capacity provided.

license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for licensing the Tallassee Shoals Project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on the project and our evaluation of the environmental and economic effects of the proposed project and project alternatives, we selected the staff alternative as the preferred alternative. We recommend this alternative because: (1) issuing a new license for the project would allow Tallassee Shoals to operate the project as a beneficial and dependable source of electrical energy; (2) the 2.3-MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution, including greenhouse gases; (3) the public benefits of the staff alternative would exceed those of the no-action alternative; and (4) the proposed and recommended measures would protect and enhance aquatic, terrestrial, and cultural resources, and improve recreation opportunities at the project.

In the following section, we make recommendations as to which environmental measures proposed by Tallassee Shoals or recommended by agencies or other entities (including staff) should be included in any new license issued for the project. For the reasons explained in Appendix H, *Measures Not Recommended by Staff*, the staff alternative does not include: (1) Interior's recommendations for a habitat enhancement plan; and (2) Interior's recommendation for a migratory fish management plan. The staff alternative also does not include Interior's 10(a) recommendation regarding the notification of future amendments or appeal of any fish and wildlife-related license conditions (Appendix H).

5.1.1 Environmental Measures Proposed by Tallassee Shoals

Based on our environmental analysis of Tallassee Shoals proposal in section 3, *Environmental Analysis* and the costs presented in section 4, *Developmental Analysis* and in Appendix H we conclude that the following environmental measures proposed by Tallassee Shoals would protect and enhance environmental resources and would be worth the cost. Therefore, we recommend including these measures in any license issued for the project.

- Continue to operate the project in a run-of-river mode.
- Continue to release a minimum of 70 cfs, or inflow, whichever is less, to the bypassed reach.
- Develop an operation compliance plan that specifies the methods that would be used to monitor and document project operation and minimum flow releases to the bypassed reach and Oconee River.

5.1.2 Additional Measures Recommended by Staff

Under the staff alternative, the project would be operated with Tallassee Shoals proposed measures, as identified above, and the following staff-recommended additions or modifications. We discuss the basis for the staff-recommended measures and the rationale for modifying Tallassee Shoals' proposal in Appendix H, *Additional Measures Recommended by Staff*.

- Develop an Avian Protection Plan for the project to identify and address project effects on birds and other wildlife.
- Avoid tree removal during the tricolored bat's non-volant pup season (May 1 - July 15) and during its winter torpor season (December 15 - February 15).
- Develop a Recreation Management Plan to include a construction schedule (complete construction of recreation amenities within 2 years of license issuance) and provisions for the development and installation of directional and safety signage for the proposed canoe portage.

5.1.3 Conclusion

Based on our review of the agency and public comments filed for the project and our independent analysis pursuant to sections 4(e), 10(a)(1), and 10(a)(2) of the FPA, we conclude that relicensing the Tallassee Shoals Project, as proposed by Tallassee Shoals, with the additional staff-recommended measures, would be best adapted to a plan for improving the Ocmulgee River Basin.

5.2 UNAVOIDABLE ADVERSE EFFECTS

Continued project operation would result in some unavoidable fish entrainment mortality. However, our analysis in section 3.3.1.2, *Environmental Effects, Fish Impingement, Entrainment, and Turbine Mortality,* indicates that the level of impingement and entrainment mortality would have minimal effects on fish populations in the Tallassee Shoals Project impoundment or Oconee River.

5.3 FISH AND WILDLIFE AGENCY RECOMMENDATIONS

Under the provisions of section 10(j) of the FPA, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. Section 10(j) of the FPA states that whenever the Commission finds that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency shall attempt to resolve such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of the agency.

In response to our July 7, 2022 notice accepting the application to relicense the project and soliciting motions to intervene, protests, comments, recommendations, preliminary terms, and conditions, and preliminary fishway prescriptions, Interior filed two section 10(j) recommendations on September 2, 2022.[72] Appendix I lists the recommendations filed pursuant

[72] Interior recommends that Tallassee Shoals develop a habitat enhancement plan to: (1) monitor, maintain, and enhance (as needed) robust redhorse spawning habitat, as well as state protected species and migratory fish, by (a) monitoring gravel conditions, (b) maintaining gravel

to section 10(j) and indicates whether the recommendations are included under the staff alternative, as well as the basis for our preliminary determinations concerning measures that we consider inconsistent with section 10(j). We have preliminarily determined that Interior's environmental recommendations that are outside the scope of section 10(j) and filed under section 10(a) of the FPA[73] are addressed in the specific resource sections of this document and discussed in Appendix I, *Measures Not Recommended by Staff*.

5.4 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA, 16 U.S.C., § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Appendix K lists the comprehensive plans that are applicable to the Tallassee Shoals Project. No inconsistencies were found.

6.0 FINDING OF NO SIGNIFICANT IMPACT

If the Tallassee Shoals Project is issued a new license as proposed with the additional staff-recommended measures, the project would continue to operate as it does today, while providing enhancements to fish and wildlife resources and recreational opportunities, protection of threatened and endangered species, and protection of cultural and historic resources in the project area.

Based on our independent analysis, we find that the issuance of a license for the Tallassee Shoals Project, with our recommended environmental measures, would not constitute a major federal action significantly affecting the quality of the human environment.

7.0 LITERATURE CITED

The literature cited in this EA is presented as Appendix J.

8.0 LIST OF PREPARERS

The list of preparers of this EA is presented as Appendix L.

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shoals through recruitment or augmentation, and (c) protecting riparian habitat in the tailrace, (d) assessing minimum flows in the bypassed reach for robust redhorse and migratory fish, and (e) assessing water quality issues in the shoals (e.g., algae growth, embeddedness, and sedimentation). Interior also recommends that Tallassee Shoals develop a migratory fish management plan that includes: (1) periodic monitoring of migratory fish presence at Tallassee Shoals Dam after passage is available at Sinclair, Wallace, and Barnette Shoals dams, and (2) a fish passage assessment study at Tallassee Shoals Dam.

[73] 16 U.S.C. § 803(a)(1).

APPENDIX A

Altamaha Evolutionarily Significant Unit: an isolated population that is genetically distinct.

Anadromous fish: Fish that are born in fresh water, spends most of life in saltwater, and returns to freshwater to spawn.

APE: Area of Potential Effects.

Approach Velocity: The average water velocity measured a few inches in front of the screen, taken in the same direction as the general flow, which is the velocity experienced by a fish as it swims freely near the front of the trashrack (EPRI, 2000). Approach velocity = (intake flow)/(intake cross-sectional area).

Burst Swimming Speed: The maximum swimming speed that fish can sustain for only a few seconds. Fish usually use burst swimming speed to avoid predators, capture prey, or negotiate high flow (Beamish, 1978).

Catadromous fish: A fish that spends most of its life in freshwater and migrates to saltwater to spawn.

Diadromous fish: Fish that migrate between fresh water and marine/estuarine environments to complete their life cycles.

Dissolved oxygen: One of the most commonly employed measures of water quality, DO is the amount of gaseous oxygen in a liquid. Low DO levels can adversely affect fish and other aquatic life. DO is generally expressed in units of parts per million (ppm) or milligrams per liter (mg/L).

Environmental justice: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA, 2022).

Environmental justice community: Disadvantaged communities that have been historically marginalized and overburdened by pollution. The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples (EPA, 2022).

Minority population: Block groups within the area of study where: (1) the aggregate minority population of the block group in the affected area exceeds 50%; or (2) the aggregate minority population in the block group affected is 10% higher than the aggregate minority population percentage in the county.

Non-volant period: Period when bat pups are unable to fly and still dependent on their mothers.

Potamodromous fish: Fish that make migrations entirely within freshwater to complete their life cycle.

Shear stress: Occurs when force acts parallel to a surface (Gordon *et al.*, 2004). Fish can experience shear stress as they pass between two water masses of different velocities, or

when a fish slides along a solid structure, such as a wall or turbine blade (commonly termed abrasion) (Neitzel *et al.*, 2000).

Swim speeds: Researchers use several metrics to quantify the swimming performance of fish: sustained swim speed, prolonged swim speed, critical swim speed, and burst swim speed. The sustained swim speed is the speed a fish can maintain indefinitely without becoming fatigued. The prolonged swim speed is the speed a fish can maintain for a specific period of time (*e.g.*, up to 200 minutes) that varies among studies. The critical swim speed is a subset of the prolonged swim speed: the duration researchers use to evaluate the critical speed also varies among studies. The burst swim speed is the fastest swimming speed, which can only be maintained for approximately 20 seconds.

Torpor: State of decreased physiological activity in an animal, usually marked by a reduced body temperature and metabolic rate.

Undertaking: A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with Federal financial assistance; and those requiring a federal permit, license, or approval. *See* 36 C.F.R. § 800.16. For purposes of this NEPA document, the undertaking is the potential issuance of a new license for the Tallassee Shoals Project.

APPENDIX B

STATUTORY AND REGULATORY REQUIREMENTS

Federal Power Act

Section 18 Fishway Prescriptions

Section 18 of the Federal Power Act (FPA), 16 U.S.C. § 811, states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of the U.S. Department of Commerce (Commerce) or the U.S. Department of the Interior (Interior).

On September 8, 2022, Interior requests that the Commission include a reservation of authority to prescribe fishways under section 18 be included in any license issued for the Tallassee Shoals Project.

Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j)(1), each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions in any new license, unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

In response to the Commission's July 7, 2022, Ready for Environmental Analysis notice, on September 2, 2022, Interior filed timely recommendations under section 10(j). Tallassee Shoals did not file reply comments. The agencies' recommendations are summarized in Appendix I, *Fish and Wildlife Agency Section 10(j) Recommendations*, and are discussed in section 5.1, *Comprehensive Development and Recommended Alternative,* and Appendix H, *Comprehensive Development*.

Clean Water Act

Under section 401(a)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (certification) from the appropriate state pollution control agency verifying that any discharge from the project would comply with applicable provisions of the CWA, or a waiver of such certification. A waiver occurs if the state agency does not act on a request for certification within a reasonable period of time, not to exceed one year after receipt of such request.

On August 3, 2022, Tallassee Shoals applied to the Georgia Department of Natural Resources – Environmental Protection Division (Georgia EPD) for section 401 certification for

the Tallassee Shoals Project. On August 19, 2022, Georgia EPD acknowledged receipt of the application request. By August 12, 2023, Georgia EPD did not act on the application for water quality certification. On August 31, 2023, staff issued a Notice of Waiver of Water Quality Certification declaring a waiver of the requirement.

Endangered Species Act

Section 7 of the Endangered Species Act (ESA)[74] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species On December 20 2023, Commission staff accessed U.S. Fish and Wildlife Service's (FWS) Information, Planning, and Conservation (IPaC) system to determine whether any federally listed species could occur in the project vicinity. According to the IPaC database, the endangered gray bat (*Myotis grisescens*), the proposed endangered tricolored bat (*Perimyotis subflavus*), and the candidate monarch butterfly (*Danaus plexippus*) may occur within the Tallassee Shoals Project proposed boundary or be affected by the project.[75] FWS proposed to list the tricolored bat as an endangered species under the Endangered Species Act on September 14, 2022,[76] and the range of the tricolored bat includes all of Georgia.[77] No designated critical habitat for any federally listed species occurs within the existing or proposed project boundary. Our analyses of project impacts on threatened and endangered species are presented in section 3.3.3, *Threatened and Endangered Species*, Appendix F, *Biological Assessment*, and our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative*.

Coastal Zone Management Act

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. § 1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.

On January 7, 2022, Tallassee Shoals filed Georgia DNR – Coastal Resources Division's response to its inquiry of CZMA consistency. Georgia DNR's Coastal Resource Division stated that relicensing the Tallassee Shoals Project would not result in reasonably foreseeable impacts to coastal uses and resources.[78] Therefore, CZMA consistency certification is not required.

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[74] 16 U.S.C. § 1536.

[75] The initial IPaC species list for the exiting project boundary was generated on October 19, 2021. Updated IPaC species lists were generated on May 13, 2022 and on, December 20, 2023. The December 20, 2023 species lists includes the proposed project boundary.

[76] *See* 87 Fed. Reg. 56,381-56,393 (September 14, 2022).

[77] *See* FWS's species profile for the tricolored bat, available at: https://ecos.fws.gov/ecp/species/10515. Accessed on November 30, 2023.

[78] Correspondence dated November 23, 2021.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA)[79] requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

In response to Tallassee Shoals' request filed on September 28, 2018, the Commission designated the applicant as non-federal representative for the purpose of conducting section 106 consultation under the NHPA on November 29, 2018. Pursuant to section 106, and as the Commission's designated non-federal representative, Tallassee Shoals consulted with the Georgia State Historic Preservation Officer (Georgia SHPO), and the affected tribes to locate, determine National Register eligibility, and assess potential adverse effects on historic properties associated with the project. In a letter dated April 27, 2021 and filed with the FLA on September 15, 2021, the Georgia SHPO determined that no historic sites that would be affected by relicensing the Tallassee Shoals Project.

Executive Orders 12898 and 14008

In conducting NEPA reviews of proposed hydropower projects, the Commission follows the instruction of Executive Order 12898, which directs federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[80] Executive Order 14008 also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[81] Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2021).

Staff identified two environmental justice communities within a 1-mile radius of the project boundary and considered how the communities may be affected by noise, visual, and traffic impacts of the construction of the recreation facilities, concentration of recreational activity, and the effect of project operation and recreation on subsistence fishing. Our analysis of

[79] 54 U.S.C. § 306108.

[80] Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses environmental justice in its analysis, in accordance with our governing regulations and guidance, and statutory duty to evaluate all factors bearing on the public interest.

[81] Exec. Order No. 14,008, 86 Fed. Reg. 7619 (Feb. 1, 2021). The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution. *Id.* § 219, 86 Fed. Reg. 7619, 7629. The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples (EPA, 2022).

the project's impacts on these communities are presented in section 3.3.6, *Environmental Justice*. We conclude that relicensing the project, as proposed with staff's recommended modifications, would not result in disproportionately high and adverse impacts on the identified environmental justice populations.

APPENDIX C

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Issuing a Non-Power License

A non-power license is a temporary license that the Commission would terminate when it determines that another governmental agency will assume regulatory authority and supervision over the land and facilities covered by the non-power license. No agency has suggested a willingness or ability to do so. No party has sought a non-power license for the project, and we have no basis for concluding that the project should no longer be used to produce power.

Federal Government Takeover of the Project

We do not consider federal takeover of the project to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested a federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

Decommissioning the Project

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing a project in most cases, when appropriate protection, mitigation, and enhancement measures are available.[82] The Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or there are serious resource concerns that cannot be addressed with appropriate license measures, making decommissioning a reasonable alternative to relicensing.[83] This is consistent with NEPA and the Commission's obligation under section 10(a) of the FPA to issue licenses that balance developmental and environmental interests.

Project decommissioning could be accomplished with or without dam removal.[84] Either alternative would involve denial of the relicense application and surrender or termination of the

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[82] See, e.g., *Eagle Crest Energy Co.*, 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc.*, 111 FERC ¶ 61,327, at PP 35-38 (2005).

[83] *See generally Project Decommissioning at Relicensing; Policy Statement*, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); *see also City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

[84] In the event that the Commission denies relicensing, a project or a licensee decides to surrender an existing project, the Commission must approve a surrender "upon such conditions with respect to the disposition of such works as may be determined by the Commission." 18 C.F.R. § 6.2 (2018). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

existing license with appropriate conditions. No participant has recommended decommissioning, and we have no basis for recommending it.

APPENDIX D

Section 3 Tables

Table D-1. Monthly flow data from 1988 through 2022 at U.S. Geological Survey gage 02217475 at the Middle Oconee River near Arcade, GA (Source: staff).

Month	90 percent exceedance	50 percent exceedance (Median)	Mean (cfs)	10 percent exceedance
January	194	429	641	1,200
February	215	519	759	1,379
March	268	527	752	1,290
April	234	446	581	1,003
May	151	314	416	708
June	86	242	343	595
July	56	191	297	580
August	40	174	262	473
September	43	162	250	431
October	65	175	324	555
November	82	237	402	705
December	138	353	548	1,050

Table D-2. Fish species known to occur in the vicinity of the Tallassee Shoals Project (Source: Tallassee Shoals, 2021).

Family / Scientific Name	Common name	Bypassed Reach downstream of the dam	Bypassed Reach upstream of tailrace confluence	Oconee River downstream of bypassed reach-tailrace confluence	Oconee River about 0.4 mile downstream of the tailrace
CYPRINIDAE:	**MINNOWS**				
Cyprinella callisema	Ocmulgee shiner	X	X	X	X
Cyprinella xaenurad	Altamaha shiner[b]	X	X	X	X
Hybopsis rubifrons	Rosyface chub	X	X	X	X
Nocomis leptocephalus	Bluehead chub	X	X	X	X
Notemigonus crysoleucas	Golden shiner	X		X	X
Notropis hudsonius	Spottail shiner	X	X	X	X
Notropis lutipinnis	yellowfin shiner	X		X	
Notropis spp	Unidentified shiner	X			
Semotilus atromaculatus	Creek chub		X		
CATOSTOMIDAE:	**SUCKERS**				
Hypentelium nigricans	Northern Hogsucker	X		X	
Moxostoma collapsume	Notchlip Redhorse	X	X	X	X
Moxostoma rupiscartes	Striped Jumprock	X		X	
ICTALURIDAE:	**CATFISHES**				
Ameiurus brunneus	Snail Bullhead	X	X	X	X

Family / Scientific Name	Common name	Bypassed Reach downstream of the dam	Bypassed Reach upstream of tailrace confluence	Oconee River downstream of bypassed reach-tailrace confluence	Oconee River about 0.4 mile downstream of the tailrace
Ameiurus natalis	Yellow Bullhead			X	
Ictalurus punctatus	Channel Catfish			X	X
Noturus insignis	Margined Madtom	X		X	
ESOCIDAE:	**PIKES**				
Esox americanus	Redfin Pickerel			X	X
POECILIIDAE:	**LIVEBEARERS**				
Gambusia affinis	Western Mosquitofish				X
CENTRARCHIDAE:	**SUNFISHES**				
Centrarchus macropterus	Flier			X	X
Lepomis auritus	Redbreast Sunfish	X	X	X	X
Lepomis cyanellus	Green Sunfish[a]	X	X	X	X
Lepomis gulosus	Warmouth	X		X	
Lepomis macrochirus	Bluegill	X	X	X	X
Micropterus salmoides	Largemouth Bass	X	X	X	X
PERCIDAE:	**PERCHES**				
Etheostoma inscriptum	Turquoise Darter	X	X	X	X
Percina nigrofasciata	Blackbanded Darter	X	X	X	X
Estimated Number of Taxa		20	14	23	18

[a] Introduced, non-native to the Altamaha River basin (Lee *et al*., 1980).

[b] Altamaha Shiner is Georgia state listed as threatened.

Table D-3. Estimated monthly entrainment rates at the Tallassee Shoals Project (Source: Tallassee Shoals, 2021; modified by staff).

Season (Percent of total entrainment)	Month	Average Generation Flow (cfs)[a]	Total Monthly Generation Flow (mcf)	Number of fish entrained per month
Winter 15%	December	241	645	188
	January	370	991	658
	February	374	905	938
Spring 39%	March	377	1,010	460
	April	351	910	3,435
	May	257	688	799
Summer 41%	June	156	404	2,281
	July	119	319	1,362
	August	117	313	1,339
Fall 6%	September	41	106	308
	October	80	214	333
	November	111	288	60
Total				12,161

[a] Average generation flow through the turbines from 2009-2018 (Source: Geosyntec, 2018).

Table D-4. Wetland Types Within the Existing and Proposed Project Boundary (Source: Tallassee Shoals; staff)

Type	**Existing Project Boundary**		**Proposed Project Boundary** [a]		
	Area (acres)	Percent of Total	Area (acres)	Percent of Total	
Freshwater Forested/Shrub Wetland	8.0	40%	13.6	36.5%	
Riverine	11.4	56%	22.9	61.3%	
Freshwater Pond	0.8	4%	0.8	2.1%	
Total Wetland Cover	20.2	100%	37.3	100%	

[a] Wetlands in proposed project boundary calculated by staff.

Table D-5. Reptiles and Amphibians of the Piedmont Ecoregion in Georgia (Source: Tallassee Shoals, 2021, modified by staff).

Common Name	Scientific Name
Skinks and Lizards	
Broadhead Skink	*Euneces laticeps*
Slender Glass Lizard	*Ophisaurus attenuatus*
Eastern Glass Lizard	*Ophisaurus ventralis*
Eastern Fence Lizard	*Sceloporus undulatus*
Ground Skink	*Scincella lateralis*
Frogs and Toads	
Northern Cricket Frog	*Acris crepitans*
American Toad	*Bufo americanus*
Fowler's Toad	*Bufo fowleri*
Eastern Narrow-mouthed Toad	*Gastrophryne carolinensis*
Bird-voiced Treefrog	*Hyla avivoca*
Cope's Gray Treefrog	*Hyla chrysoscelis*
Green Treefrog	*Hyla cinerea*
Barking Treefrog	*Hyla gratiosa*
Squirrel Treefrog	*Hyla squirella*
Spring Peeper	*Pseudacris crucifer*
Upland Chorus Frog	*Pseudacris feriarum*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans*
Pickerel Frog	*Rana palustris*
Southern Leopard Frog	*Rana sphenocephala*
Eastern Spadefoot	*Scaphiophus holbrooki*
Turtles	
Spiny Softshell Turtle	*Apalone spinifera*
Common Snapping Turtle	*Chelydra serpentina*
Painted Turtle	*Chrysemys picta*
Striped Mud Turtle	*Kinosternon baurii*
Eastern Mud Turtle	*Kinosternon subrubrum*
River Cooter	*Pseudemys concinna*
Loggerhead Musk Turtle	*Sternotherus minor*
Common Musk Turtle	*Sternotherus odoratus*
Eastern Box Turtle	*Terrapene carolina*
Pond Slider	*Trachemys scripta*

Common Name	Scientific Name
Salamanders	
Spotted Salamander	*Ambystoma maculatum*
Marbled Salamander	*Ambystoma opacum*
Mole Salamander	*Ambystoma talpoideum*
Spotted Dusky Salamander	*Desmognathus conanti*
Southern Two-lined Salamander	*Eurycea bislineata*
Three-lined Salamander	*Eurycea guttolineata*
Spring Salamander	*Gyrinophilus porphyriticus*
Four-toed Salamander	*Hemidactylium scutatum*
Red eft (Red-spotted Newt)	*Noyophthalmus viridescens*
Atlantic Coast Slimy Salamander	*Plethodon chlorobryonis*
Slimy Salamander	*Plethodon glutinosus*
Mud Salamander	*Pseudotriton montanus*
Red Salamander	*Pseudotriton ruber*

Table D-6. Rare, Threatened, and Endangered Species with Known Records of Occurrence in Athens-Clarke and Jackson Counties (Source: Tallassee Shoals, 2021 as modified by staff).

Common Name	Scientific Name	Federal Status[a]	Georgia Status[b]	Habitat[c]	County
Insects					
Rusty-patched bumblebee	*Bombus affinis*	LE	E	Grasslands, prairies, and other habitats that include flowing plants; Sometimes observed in gardens around urban areas	Athens-Clarke
Grisatra underwing moth	*Catocala grisatra*			Sandhills, scrub habitat, and sandy pine-oak woodlands	Athens-Clarke
Edward's hairstreak	*Satyrium edwardsii*			Woodland edges, savannah, and hedgerows that include oaks	Athens-Clarke
Diana fritillary	*Speyeria diana*			Forests and forest edges with abundant nectar sources	Athens-Clarke
Fish					
Altamaha shiner	*Cyprinella xaenura*		T	Small tributaries and rivers; often found in small pools with rocky to sandy substrates	Athens-Clarke, Jackson
Altamaha bass	*Micropterus sp. "Altamaha"*			Rocky riffles and pools in creeks and small to medium rivers; shoals	Athens-Clarke, Jackson
Brassy jumprock	*Moxostoma sp.*			Silty to rocky pools and slow runs of large creeks; small to medium rivers; impoundments	Athens-Clarke
Amphibians					
Four-toed salamander	*Hemidacylium scutatum*			Under objects or among mosses in swamps, boggy streams, and wet areas	Jackson

Common Name	Scientific Name	Federal Status[a]	Georgia Status[b]	Habitat[c]	County
Mammals					
Star-nosed mole	Condylura cristata			Moist meadows, woods, and swamps	Athens-Clarke, Jackson
Tri-colored bat	*Perimyotis subflavus*	UR		Forested landscapes and along waterways; foraging occurs in riparian areas and roosting occurs near openings	Athens-Clarke, Jackson
Eastern spotted skunk	*Spilogale putorius*			Brushy, rocky, wooded habitats; prefers dense cover like fencerows, embankments, and gullies	Athens-Clarke, Jackson
Southeastern bat	*Myotis austroriparius*			Buildings and other structures, mines, and hollow trees for spring and summer roosts; also found in small number of Georgia caves	Athens-Clarke
Gray bat	*Myotis grisescens*	LE	E	Cave habitats in close proximity to river and reservoir habitat	Athens-Clarke
Reptiles					
Mole kingsnake	*Lampropeltis calligaster rhombomaculata*			Areas of soft soil, including abandoned or cultivated fields; rarely encountered above ground	Athens-Clarke, Jackson
Slender glass lizard	*Ophisaurus attenuatus*			Swamps; boggy streams and ponds; hardwood forests	Jackson
Birds					
Barn owl	*Tyto alba*			Nests in large hollow trees or old barns in areas with pasture, grassland, or open marsh	Athens-Clarke

Common Name	Scientific Name	Federal Status[a]	Georgia Status[b]	Habitat[c]	County
Plants					
Little Amphianthus (or Pool sprite)	*Gratiola amphiantha*	LT	T	Shallow, flat bottomed depressions on granite outcrops, with thin gravelly soils	Jackson
Black-spored quillwort	*Isoetes melanospora*	LE	E	Shallow, temporarily flooded, flat-bottomed pools formed by natural erosion	Jackson
Mat-forming quillwort	*Isoetes tegetiformans*	LE	E	Shallow pools formed by natural erosion on granite outcrops	Jackson
Ozark bunchflower	*Veratrum woodii*		R	Slopes and stream terraces in moist hardwood forests	Jackson
Glade windflower	*Anemone berlandieri*			Edges of Piedmont granite outcrops and openings in upland forests	Athens-Clarke

[a] This list is for rare species with known element of occurrence records in Athens-Clark and Jackson Counties
[b] Federal status: LE = listed endangered; LT = listed threatened; UR = under review to determine if listing may be warranted.
[c] Georgia state status: E = Georgia endangered; T = Georgia threatened; R = Georgia Rare; U = Georgia unusual
[d] Habitat descriptions from Georgia DNR, 2021

Table D-7. Minority and low-income populations within one mile of the project boundary (Source: U.S. Census Bureau, 2022, as modified by staff).

	Race and Ethnicity									Low-Income
State/County/Census Tract/Block Group	**Percent White Alone Not Hispanic**	**Percent Black or African American**	**Percent American Indian and Alaska Native**	**Percent Asian**	**Percent Native Hawaiian and Other Pacific Islander**	**Percent Some Other Race**	**Percent Two or More Races**	**Percent Hispanic or Latino**	**Percent Total Minority**	**Percent Below Poverty Level**
Georgia	**51.4**	**31.1**	**0.1**	**4.2**	**>0.1**	**0.4**	**2.8**	**9.9**	**48.6**	**13.4**
Jackson County	**79.7**	**7.3**	**>0.1**	**1.8**	**>0.1**	**0.3**	**2.1**	**8.6**	**20.3**	**10.0**
Census Tract 10602, Block Group 1	86.9	6.6	0.0	0.0	0.0	0.0	6.5	0.0	13.1	0.0
Census Tract 10602, Block Group 2	89.9	3.8	0.0	0.0	0.0	0.0	>0.1	6.2	10.1	3.9
Clarke County	**54.8**	**27.5**	**>0.1**	**3.9**	**>0.1**	**0.2**	**2.6**	**11.0**	**45.2**	**24.3**
Census Tract 1305, Block Group 1	49.3	26.2	0.0	2.6	1.4	0.0	1.8	18.7	50.7	12.4
Census Tract 1305, Block Group 3	90.1	4.0	0.0	0.0	0.0	0.0	2.5	3.3	9.9	10.6
Census Tract 1304, Block Group 3	38.4	44.7	0.0	1.7	0.0	1.6	0.0	13.7	61.6	7.9

Note: Gray shading indicates an environmental justice community.

APPENDIX E

Section 3 Figures

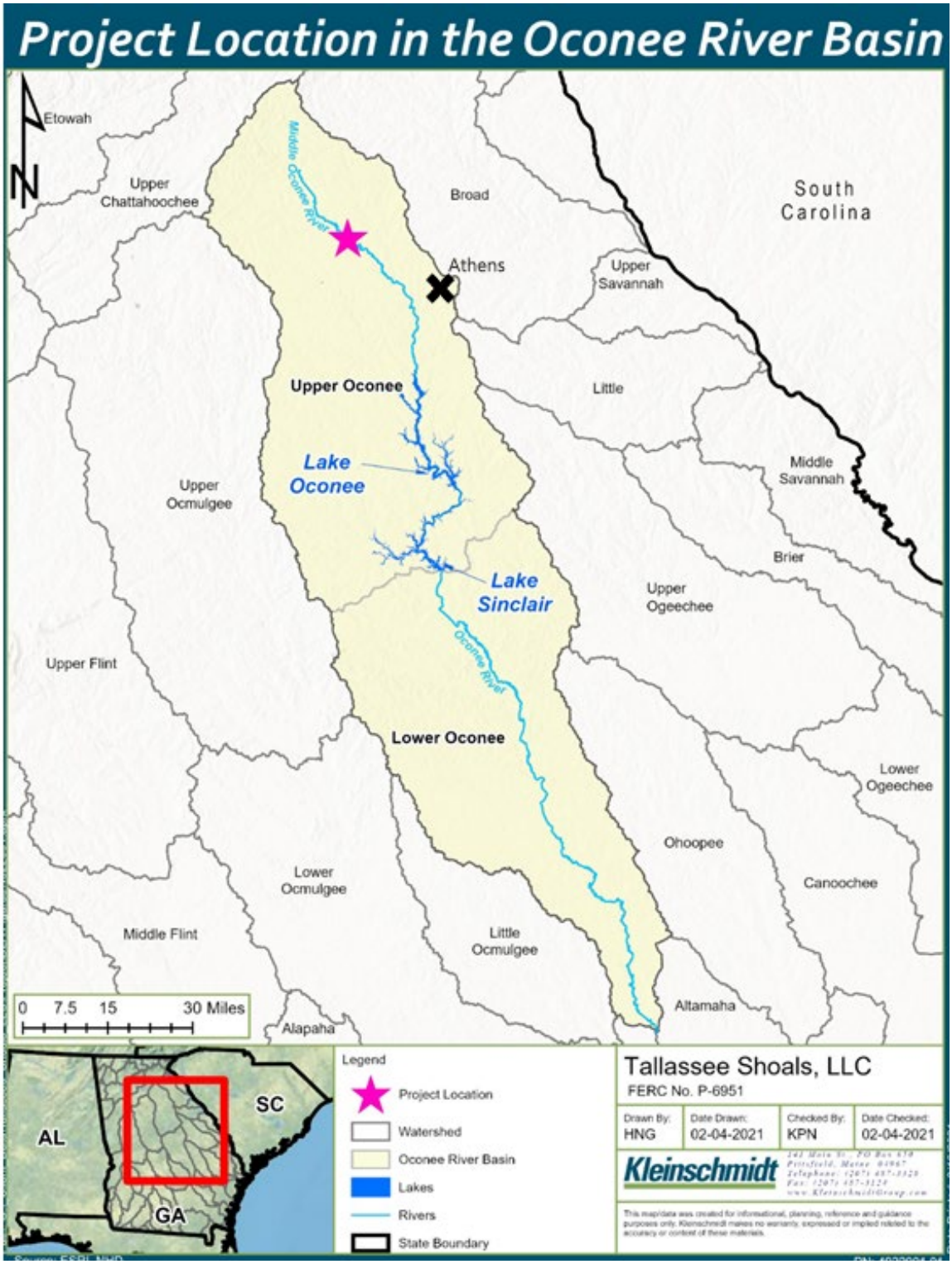

Figure E-1. Project location in the Oconee River Basin (Source: Tallassee Shoals, 2021)

Figure E-2. Water Quality monitoring locations (Source: Tallassee Shoals, 2021)

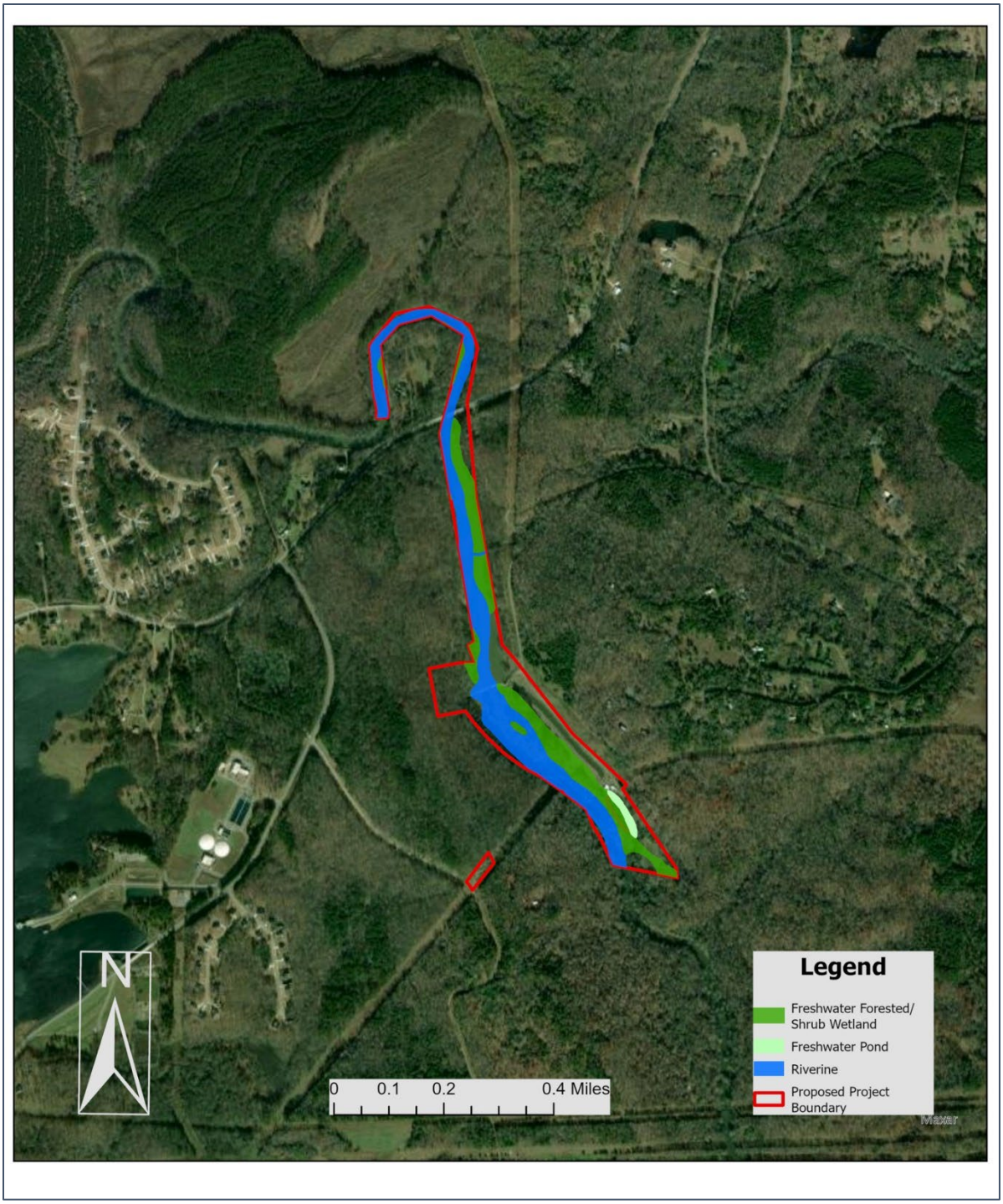

Figure E-3. Wetlands Within the Proposed Project Boundary (Source: National Wetlands Inventory (NWI), Tallassee Shoals for project boundary data, as modified by staff).

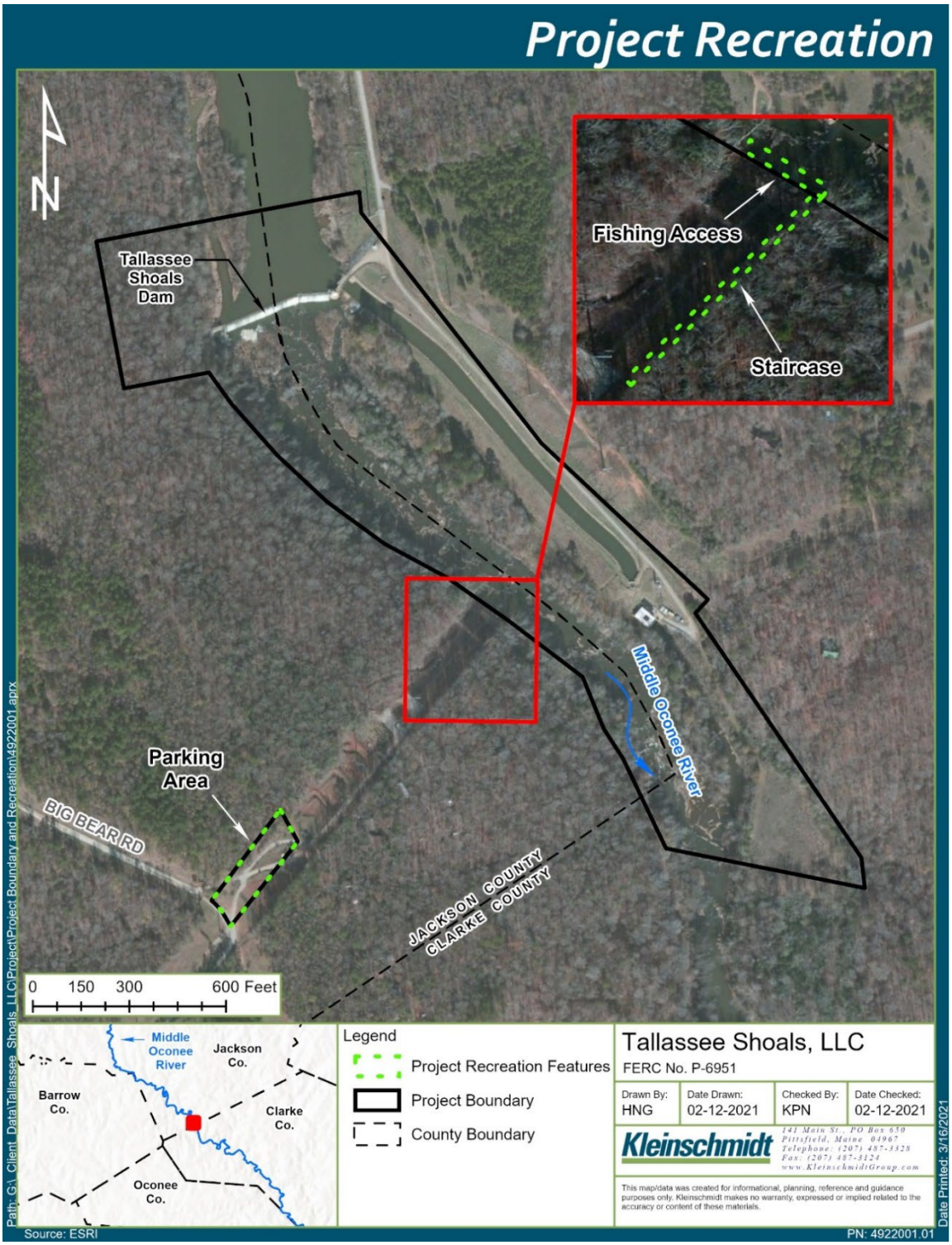

Figure E-4. Project Recreation Facilities (Source: Tallassee Shoals).

Figure E-5. Proposed Canoe Portage (Source: Tallassee Shoals).

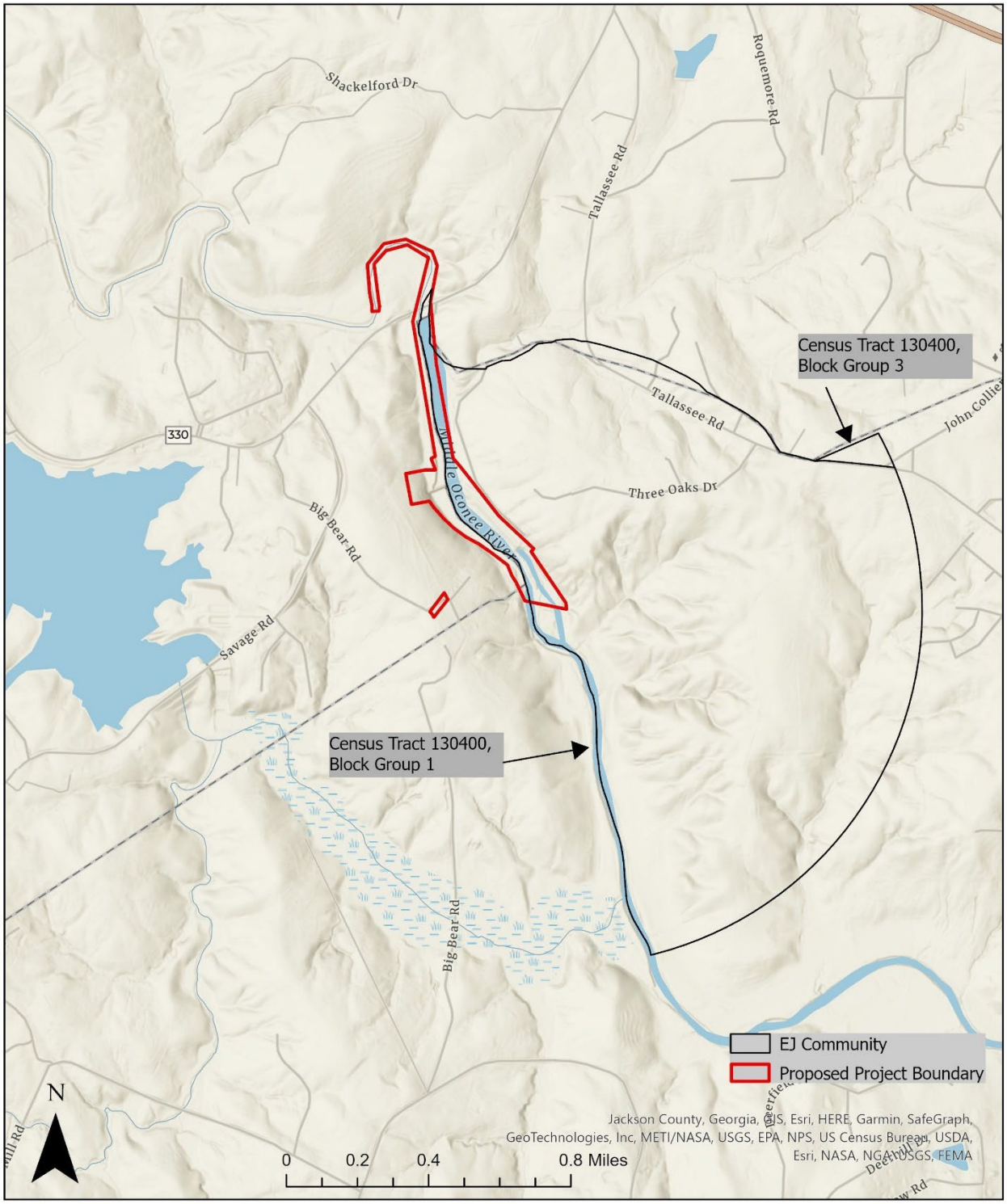

Figure E-6 Environmental Justice Communities (Source: Staff).

APPENDIX F

BIOLOGICAL ASSESSMENT

According to the Fish and Wildlife Service's (FWS) Information for Planning and Consultation (IPaC) database, the endangered gray bat (*Myotis grisescens*), the proposed endangered tricolored bat (*Perimyotis subflavus*), and the candidate monarch butterfly (*Danaus plexippus*) may occur within the Tallassee Shoals Project proposed boundary or be affected by the project.[85] FWS proposed to list the tricolored bat as an endangered species under the Endangered Species Act on September 14, 2022,[86] and the range of the tricolored bat includes all of Georgia.[87] Tallassee Shoals also included three plant species and one insect in its review of federally listed species: the endangered black-spored quillwort (*Isoetes melanospora*), mat-forming quillwort (*Isoetes tegetiformans*) and rusty-patched bumblebee (*Bomba affinis*), and the threatened little amphianthus (*Gratiola amphiantha*). However, these species are not included on the official IPaC species list, are not known to occur at the project, and there is no suitable habitat for them within the project boundary. Given that there would be no effect on these three species, they are not discussed further in this document. No designated critical habitat for any federally listed species occurs within project-affected lands.

In response to the Commission's July 7, 2022, Ready for Environmental Analysis notice, Interior determined that there are no federally listed species or critical habitat that would be affected by operation of the Tallassee Shoals Project.[88]

Affected Environment

Gray Bat

The endangered gray bat is a small migratory species that roosts, breeds, rears young, and hibernates in caves. Its range extends from southern Illinois and Indiana, south to north-western Florida, and from the Appalachians to eastern Oklahoma. Gray bats are highly colonial and gather by the hundreds of thousands into only a few known caves in the southeastern U.S. to hibernate during the winter; nine caves are believed to house about 95 % of the entire population each winter, with one cave sheltering from 50 - 66% of this total (Georgia DNR, 2023c). Gray bat wintering caves are deep and vertical. Cold, but not sub-freezing, temperatures (43 - 52 °F) are required for the bats to remain in hibernation. Warmer temperatures are needed in summer caves, particularly at maternity colonies where females are raising young (57 - 77 °F) (Georgia DNR, 2023c).

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[85] The initial IPaC species list for the exiting project boundary was generated on October 19, 2021. Updated IPaC species lists were generated on May 13, 2022 and on, December 20, 2023. The December 20, 2023 species lists was generated using the proposed project boundary.

[86] *See* 87 Fed. Reg. 56,381-56,393 (September 14, 2022).

[87] *See* FWS's species profile for the tricolored bat, available at: https://ecos.fws.gov/ecp/species/10515. Accessed on November 30, 2023.

[88] *See* Interior's September 2, 2022 letter.

Gray bats eat a variety of flying insects. Most foraging occurs within 16 feet of the surface of open water near a forested shoreline. Females in maternity colonies may forage 12 miles or more from their roost. However, summer caves, especially those used by maternity colonies, are nearly always located within about a half a mile of (and rarely more than 2.5 miles from) a river or reservoir/lake. Gray bats are known to migrate from 11 - 326 miles between suitable summer and winter caves. In Georgia, gray bats regularly occupy three caves during the summer in Chattooga, Walker, and Catoosa counties. However, it is likely that additional roost caves in the northwest part of the state have yet to be discovered (Georgia DNR, 2023c). Critical habitat has not been designated for this species (FWS, 2023b).

Upon arrival at winter caves (September through early November), gray bats begin to swarm and mate. Females immediately begin hibernation, while males continue to forage for several weeks to replenish fat reserves that must last for six to seven months during hibernation (NatureServe, 2023a). Most juveniles and adult males are in hibernation by early November and leave hibernacula between mid-April and mid-May. Adult females become pregnant soon after emerging from hibernation in late March or early April. Each summer colony occupies a home range that often contains several roosting caves scattered along river, reservoir, or lake borders. The gray bat is loyal to its colony home range but tend to disperse among several different caves within that area. In late May or early June, reproductively active females congregate in a maternity cave to give birth to one pup. Most pups begin to fly within 20 to 25 days after birth. Males and non-reproductive females congregate in smaller groups in nearby caves.

Ongoing threats identified within the gray bat's range include human disturbances to preferred caves, white-nose syndrome, reduction in prey species and potential poisoning associated with insecticide and pesticide use near riparian areas where bats forage, deforestation, and impoundments that flood caves (NatureServe, 2023a). Given their strong fidelity to particular caves, gray bats are very susceptible to disturbance. Arousing bats during hibernation can deplete their energy stores before food becomes available and human disturbance of maternity colonies in June and July can lead to mortality if fleeing females drop their flightless young (FWS, 2023c).

Tricolored Bat

On September 14, 2022, FWS issued a proposed rule for listing the tricolored bat as an endangered species under the ESA.[89] In the proposed rule, FWS found that designating critical habitat for this species is not prudent. The range of tricolored bats includes southeastern Canada, most of Central America, and all, or portions of, 39 states and the District of Columbia, including all of Georgia.

Tricolored bats are active from spring to fall, using a combination of summer and winter habitats from mid-March to mid-April and August through October and summer habitats from mid-April through July.[90] The pup-rearing season for tricolored bat occurs from May through

[89] 87 Fed. Reg. 56,381-56,393 (September 14, 2022).

[90] 87 Fed. Reg. 56,381 (Sept. 14, 2022). Although proposed species are provided no special protection under the ESA, Commission staff nevertheless provide an analysis of the

July, with pups achieving adult-like flight and foraging ability four weeks after birth. During the summer, tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees, but they have also been observed within artificial roosts (*e.g.*, in culverts and barns, and under roofs and bridges), and rarely in caves. During the winter, tricolored bats typically hibernate in caves and mines, and exhibit high interannual fidelity to their hibernacula.[91]

The tri-colored bat is one of the most commonly encountered cave-dwelling species seen in winter (Georgia DNR, 2023d). In the southern portion of its range, where the project is located, tricolored bats exhibit shorter torpor (decreasing body temperature and metabolic rate) periods and remain active and feed year-round. Tree cavities and foliage are important for the winter roosting ecology of tricolored bats in the southeast region that lack subterranean roosts (Newman *et al*. 2021). The stable microclimates of live trees with a closed canopy could be important for winter torpor in tricolored bats. No targeted surveys were conducted for this species in the project boundary. However, tricolored bats are assumed to occur in the project area due to their wide distribution, use of forested and riparian areas, and occasional use of human-made structures by maternity colonies (NatureServe, 2023b).

White-nose syndrome is the primary threat to the tricolored bat.[92] Forest removal or conversion and the disturbance or destruction of caves can result in the loss of suitable summer roosting and foraging habitat, as well as winter hibernacula.[93] The loss or disturbance of habitat may compound the effects of white-nose syndrome. Forest management practices that retain live trees near streams with multiple roosting structures and foster cavity formation in hardwood forests will likely benefit tricolored bat populations (Newman *et al*. 2021).

Monarch Butterfly

The monarch butterfly is a candidate for listing as a threatened or endangered species under the ESA.[94] Monarch butterflies have bright orange wings with black veins and a black border with a double row of white spots. During the breeding season, monarchs lay their eggs on milkweed plants (primarily *Asclepias* spp.),[95] and the larvae (i.e., caterpillars) emerge after two to five days. Caterpillars are initially green with black heads, and then gradually develop vivid black, yellow, and white bands as they grow by feeding on milkweed leaves and molting over a period of 9 to 18 days before pupating into a chrysalis.[96] Adult monarch butterflies emerge from their chrysalises in 6 to 14 days. Monarchs breed year-round in many regions where they are present, and multiple generations are produced during the breeding season. Most adult

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action on tricolored bat because the species may become federally listed during the term of a new license.

[91] *Id*.

[92] *Id*.

[93] *Id*.

[94] 85 Fed. Reg. 81,813 (2020).

[95] Monarch butterfly larvae are obligate milkweed feeders. Individuals always lay their eggs on a milkweed plant, and the larvae only develop on various milkweed species.

[96] Pupating into a chrysalis is the process of transforming between the larval and adult life stages for butterflies.

butterflies live approximately two to five weeks; however, adults that migrate to overwintering sites enter into reproductive diapause (suspended reproduction) and live from six to nine months (FWS, 2023d).

During the fall, both the eastern and western North American monarch populations begin migrating to their overwintering sites in Mexico and California, respectively. This migration can last for over two months, during which monarchs may travel over 1,800 miles. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again (FWS, 2023d).

Populations have been declining over the past several decades, and the species is no longer considered secure (FWS, 2020; 2023d). Primary threats include the loss and degradation of habitat from conversion of grasslands to agriculture, widespread use of herbicides, exposure to insecticides, land-clearing activities in overwintering sites, urban development, and general loss of milkweed and nectar sources across the species' range from various land development activities (FWS, 2020).

The Tallassee Shoals Project is within the breeding range of the eastern North American migratory monarch population. Summer habitat requirements include the existence of milkweed plants for egg laying and larval feeding and development, and a variety of flowering plants for adults to feed on nectar. Given its dependence on milkweed and diverse nectar-rich plants, the loss of these plants due to herbicide use and habitat loss have been identified as contributing factors in the decline of the monarch butterfly (Fallon *et. al*., 2016; FWS, 2023d).

Environmental Effects

The continued operation and maintenance of the Tallassee Shoals Project, and the proposed recreation enhancements could affect federally listed species within the project area if they are present. Hydropower operation can affect impoundment level fluctuations, leading to changes in littoral (nearshore) habitat in the impoundment, retention time of water in the impoundment, water temperatures and DO concentrations, and flow fluctuations downstream of the dam. Vegetation clearing could result in the removal of suitable maternity roost trees and/or disturbance of bats, and loss of adults and young if roost trees are occupied. Removal or disturbance of riparian vegetation could also increase downstream sedimentation by altering shoreline stability, which can alter water quality and aquatic habitat.

Tallassee Shoals does not propose any specific measures to protect federally listed species. However, as described in section 2.2.3, *Proposed Project Operation*, Tallassee Shoals proposes to continue operating the project in run-of-river mode, maintaining the impoundment water surface level at 645 feet msl. Tallassee Shoals also proposes to construct and maintain a canoe portage and put-in and take-out amenities on the west bank of the bypassed reach adjacent to the dam, as well as continue to manage vegetation at project works. As part of the recreation improvements, Tallassee Shoals proposes to expand the recreation parking area from three to six spaces that would involve the removal of two trees and fencing alignment.

Our Analysis

Gray Bat and Tricolored Bat

The endangered gray bat and the proposed endangered tricolored bat potentially occur in the project area. While there are no known caves in the proposed project boundary, the gray bat typically forages in riparian and stream corridors and could potentially use the project area for foraging and traveling to and from cave roosts. Additionally, the riparian zone of the Middle Oconee River within the project boundary and surrounding areas provides suitable roosting habitat for the tricolored bat. Any loss of trees, or tree trimming at the project could remove potential habitat for roosting, travelling, or foraging bats.

Tallassee Shoals proposes to construct a canoe portage and put-in and take-out that would require minimal disturbance of vegetation and expand recreation parking. As discussed in section 3.3.2, *Terrestrial Resources, Environmental Effects*, the canoe portage would be constructed on an existing trail, requiring the selective removal of some understory vegetation (e.g., ferns and buckeye). The proposed expanded recreation parking would require the removal of two mature hardwood trees. Additionally, proposed vegetative management would include limb trimming and removal of woody growth extending onto the portage trail.

The removal of mature trees proposed for the expansion of recreation parking, the proposed vegetation management at recreation facilities on the east side of the river once the improvements are completed, and the continued vegetation management (e.g., tree trimming) on the west side for the river at public works would have minimal disturbance to suitable travel or foraging corridors for the gray bat given that there are no known caves in the proposed project boundary, and the limited vegetation disturbance required for the recreation parking and access improvements. Therefore, we conclude that relicensing the project, as proposed, is not likely to adversely affect the gray bat.

The proposed tree removal and ongoing vegetation management, discussed above, could affect habitat for the tricolored bat by disturbing suitable roost trees. Such effects could be avoided or minimized by avoiding tree removal or trimming during the tricolored bat's non-volant pup season (May 1 - July 15) and during its winter torpor season (December 15 - February 15). By limiting tree removal and vegetation trimming activities within the project boundary to outside the tricolored bat's non-volant pup season and winter torpor season, we conclude that relicensing the project would not jeopardize the continued existence of the species. Moreover, implementation of the time-of-year restrictions would adequately protect the species at the project such that it would be unlikely that the proposed project would adversely affect the species. We are requesting FWS concurrence with these findings.

Monarch Butterfly

The monarch butterfly is a candidate for listing as a threatened or endangered species under the ESA. Although candidate species have no protection under the ESA, we include an analysis of potential project effects on the monarch butterfly here in the biological assessment because the species could become listed in the future. The Tallassee Shoals Project is within the breeding range of the eastern North American migratory monarch population.

Vegetation management activities can affect milkweeds and other native nectar-rich plants upon which monarchs depend for survival. Milkweeds and nectar-rich plants that occur throughout the southeast region include butterfly, whorled, and swamp milkweeds, and eastern smooth beardtongue, smooth oxeye, slender mountain mint, black-eyed Susan, blue mistflower, dense blazing star, field thistle, showy goldenrod, spotted beebalm, and wingstem (Xerces Society, 2021). The four most common milkweed species occurring throughout most of Georgia in dry to moist sunny areas, woodland edges, and roadsides that are frequently used by monarch butterfly include whorled milkweed, clasping milkweed, butterfly milkweed, and red-wing milkweed (State Botanical Garden of Georgia, 2018).

Tallassee Shoals proposes to continue vegetation management around project works on the east side of the river (e.g., routine mowing, weed-eating/edging), but not conduct other activities that could affect potential monarch butterfly summer breeding habitat (i.e., disturbance to milkweed plants or nectar-rich flowers). Tallassee Shoals indicated that widening of the existing footpath for the proposed canoe portage on the west side of the river would require the removal of less than a dozen ferns and buckeye plants. The proposed takeout would require weed-eating of the minimal amount of herbaceous vegetation to achieve a 3-ft-wide portage trail. Periodic tree trimming and the removal of woody growth could disturb wildlife along the proposed canoe portage area. However, maintenance would be limited to the footprint of the path, thereby minimizing the disturbance to vegetation. Due to the small area of routine mowing, and the ongoing nature of these management practices, and the limited vegetation disturbance required to construct and maintain the proposed recreation facilities, any project effects to monarch butterflies and their habitat would likely be insignificant.

APPENDIX G

DEVELOPMENTAL ANALYSIS

Power and Economic Benefits

Table G-1 summarizes the assumptions and economic information used in the analysis. Most of this information is provided by the applicant in its license application. Some is developed by Commission staff. The values provided by the applicant are typically reasonable for the purposes of our analysis. If they are not, it is noted below. Cost items common to all alternatives include taxes and insurance; estimated capital investment required to develop the project or major modifications for relicensing; licensing costs; and normal operation and maintenance cost. All costs are adjusted to 2023 dollars**.**

Table G-1. Parameters for economic analysis of the Tallassee Shoals Project (Source: Applicant and staff)

Parameter	Value[a]
Installed Capacity	2.3 MW
Average annual generation (under no action alternative)	6,100 MWh
Period of analysis	30 years
Local tax rate	Included in the Operation and Maintenance cost
Federal tax rate	Included in the Operation and Maintenance cost
Insurance rate	Included in the Operation and Maintenance cost
Interest rate	8%[b]
Application cost	$164,000
Net investment	$720,211
Operation and maintenance (O&M)	$192,567/year
Estimated Commission annual charges[a]	Included in the Operation and Maintenance cost
Alternative source of power's cost[bc]	
1) Energy cost	$ 52.71 /MWh
2) Capacity benefit cost	$ 179.08 /kW-year

[a] The Commission collects an annual administration charge for all licensed projects which is based on the authorized installed capacity of the project and amount of federal land occupied by the project.

[b] The alternative source of power's cost is based on the current cost of providing the same amount of generation and capacity benefit from a natural gas-fired combined cycle plant, as reported by The U.S. Energy Information Administration (EIA), Annual Energy Outlook 2023, for the South Atlantic Region. The alternative source of power's cost is reported in Table G-1 and is a combination of the cost of energy and capacity benefit.

[c] The applicant provided the value of power based the purchase price. This rate is $58.32/MWh. In keeping with Commission policy as articulated in Mead, staff does not use a project's contract rates in its analysis, rather, as described above, staff uses the most likely alternative source of power's cost.

COMPARISON OF ALTERNATIVES

Table G-2 summarizes the installed capacity, annual generation, capacity benefit, alternative source of power's cost, estimated total project cost, and difference between the alternative source of power's cost and total project cost for each of the alternatives considered in this EA: no-action, the applicant's proposal, and the staff alternative.

Table G-1. Summary of the annual cost of alternative power and annual project cost for three alternatives for the Tallassee Shoals Project (Source: staff).

	No Action	Applicant's Proposal	Staff Alternative
Installed capacity	2.3 MW	2.3 MW	2.3 MW
Annual generation	6,100 MWh	6,100 MWh	6,100 MWh
Capacity benefit [a]	0.51 MW	0.51 MW	0.51 MW
Current alternative source of power's cost [b]	$412,792	$412,792	$412,792
Total annual project cost (2021) [c]	$271,109	$273,949	$279,869
Difference between the alternative source of power's cost and total annual project cost [d]	$141,682	$138,842	$132,922

[a] Staff estimated the capacity benefit based on the ratio of the mean annual flow available for generation for each of 12 months, and the hydraulic capacity of the project.

[b] The alternative source of power's cost is based on the alternative source of power in the South Atlantic Region, as identified in table G-1 above.

[c] Project costs include the cost of environmental measures listed in Appendix E with the exception of minimum flow release opportunity costs, and the costs identified in Table G-3. All project costs were adjusted to 2023 dollars.

[d] A number in parentheses denotes that the difference between the alternative source of power's cost and the total project cost is negative; thus, the project's cost to produce power is greater than the alternative source of power cost.

No-Action Alternative

Under the no-action alternative, the project has an installed capacity of 2.3 MW, a capacity benefit of 0.51 MW, and an average annual generation of 6,100 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit is $412,792. The total annual project cost is $271,109. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity is $141,682 less than that of the alternative source of power's cost.

Tallassee Shoals' Proposal

Under Tallassee Shoals' proposal, the project would have a total installed capacity of 2.3 MW, a capacity benefit of 0.51 MW, and an average annual generation of 6,100 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $412,792. The total annual project cost would be $273,949. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity would be $138,842 less than that of the alternative source of power's cost.

Staff Alternative

The staff alternative includes the same developmental components as the applicant's proposal and therefore, would have the same capacity and energy values described above for the applicant's proposal. Table G-3 shows the applicant's proposed environmental protection and enhancement measures, staff-recommended additions, deletions, and modifications to these measures, and the estimated cost of each.

Under the recommended staff alternative, the alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $412,941. The total annual project cost would be $279,869. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity would be $132,922 less than that of the alternative source of power's cost.

COST OF ENVIRONMENTAL MEASURES

Table G-3

Enhancement/ Mitigation Measure	Entity	Capital Cost [a] (2023$)	Annual Cost [b] (2023$)	Levelized Annual Cost [c] (2023$)
General Measure				
1. Notification of Future License Amendments, Appeal of Any Fish and Wildlife-Related License Conditions, or Extension	Interior [d]	$0	$0	$0
Project Operation				
2. Continue to operate in Run-of-River mode	Applicant, Staff	$0	$0	$0
3. Continue to release a continuous minimum flow of 70 cfs, or inflow, whichever is less, into the project's bypassed reach.	Applicant, Staff	$0	$0	$0
4. Develop an Operation Compliance Monitoring Plan that includes a description of the existing monitoring system, and provisions for reporting water level data, minimum downstream flow, generation data, and deviations from run-of-river operation.	Interior, Staff	$5,000	$5,000	$5,440
5. Suspend the requirements of the articles in this license for short periods upon prior	Interior [d]	$0	$0	$0

Enhancement/ Mitigation Measure	Entity	Capital Cost [a] (2023$)	Annual Cost [b] (2023$)	Levelized Annual Cost [c] (2023$)
mutual agreement between the Tallassee Shoals, FWS, NMFS, and Georgia DNR. For operating emergencies beyond the control of Tallassee Shoals, the license requirements may be curtailed or suspended for period necessary to rectify the operating emergency. Notify the resource agencies, no later than five business days after the operating emergency and notify the Commission within 10 days of the operating emergency.				
Aquatic Resources				
(a) Develop a habitat enhancement plan that includes monitor, maintain, and enhance (as needed) robust redhorse spawning habitat, other Georgia State Wildlife Action Plan species, and migratory fish.	Interior	$10,000 [h]	$0	$890
(a) Develop a migratory fish management plan that includes provisions for: (1) periodic monitoring of migratory fish presence in the Oconee River downstream from Tallassee Shoals Dam; and (2) a fish passage sighting assessment at Tallassee Shoals Dam.	Interior	$10,000 [h]	$0	$890

Enhancement/ Mitigation Measure	Entity	Capital Cost [a] (2023$)	Annual Cost [b] (2023$)	Levelized Annual Cost [c] (2023$)
Terrestrial Resources				
6. Develop an Avian Protection Plan to identify and address potential project effects on birds and other wildlife that includes: (1) periodically check project facilities for nests, or signs of adverse avian interactions; (2) report any adverse interactions; (3) consult with agencies regarding installation of avian protection devices on project facilities if avian interactions are detected; and (4) file an implementation schedule.	Staff	$5,000[h]	$0	$480
Threatened and Endangered Species				
7. Avoid tree removal/trimming during the tricolored bat's non-volant pup season (May 1 - July 15) and during its winter torpor season (December 15 - February 15).	Staff	$0	$0	$0
Recreation				
8. Constructing the portage trail and developing a Recreation Management Plan (to include installing signage and increasing parking capacity).	Applicant, Staff	$14,270[e]	$1,570[f]	$2,840

Enhancement/ Mitigation Measure	Entity	Capital Cost [a] (2023$)	Annual Cost [b] (2023$)	Levelized Annual Cost [c] (2023$)
9. Complete construction of recreation facilities within 2 years of license issuance.	Staff	$0	$0	$0
Cultural Resources				
10. Cease project activities and notify the Georgia SHPO if any unknown archaeological or historic resources are discovered during project operation or other project-related activities.	Staff	$0	$0	$0
11. Consult with the Georgia SHPO prior to implementing any unforeseen project modifications, over the term of a license, that have the potential to affect above-ground historic properties.	Staff	$0	$0	$0

[a] Capital costs include all construction and one-time costs.
[b] Annual costs typically include operational and maintenance costs and any other costs which occur on a yearly basis.
[c] All capital and annual costs are converted to equal annual costs over a 30-year period to give a uniform basis for comparing costs.
[d] Section 10(a) recommendation as denoted by Interior.
[e] Cost ($11,000) provided by Tallassee Shoals in its September 15, 2021 license application; Staff estimated remainder for signage and increasing parking spaces and escalation to $2023.
[f] Cost ($1,000) provided by Tallassee Shoals in its September 15, 2021 license application; Staff estimated remainder for parking area fencing and signage maintenance and escalation to $2023.
[g] Staff estimated the cost of developing the plan at $10,000. Because the specific measures in the plans are vague and the resource agencies did not provide costs for the plans, staff did not estimate the costs to implement the plans.
[h] Staff estimated cost to develop the plan.

APPENDIX H

COMPREHENSIVE DEVELOPMENT

This appendix discusses the basis for the staff-recommended measures presented in section 5.1.2, *Additional Measures Recommended by Staff*, and the rational for modifying Tallassee Shoals' proposal.

Additional Measures Recommended by Staff

Project Operations Compliance and Monitoring Plan

Tallassee Shoals proposes to operate the project in run-of-river mode, and to release a continuous 70-cfs minimum flow in the bypassed reach. Interior recommends that Tallassee Shoals: (1) curtail or suspend license requirements for short periods upon prior mutual agreement among Tallassee Shoals, FWS, and Georgia DNR; (2) curtail or suspend license requirements for a period necessary to rectify an operating emergency; and (3) notify the resource agencies within 5 business days and the Commission within 10 days after any operating emergency.

As noted earlier in this section, we recommend adopting Interior's recommendation to notify the agencies and the Commission of any planned or unplanned deviations from normal project operation as it would allow Tallassee Shoals to address planned maintenance activities, as well as other emergency conditions that arise at the project. However, project operation curtailment or project suspension would require Commission notification. Additionally, filing reports describing the nature of the deviation, any associated environmental effects, and, for unplanned deviations, the actions taken to correct the cause of the deviation would help ensure that effects on environmental resources are minimized. We estimate the cost of developing a Project Operations Compliance and Monitoring Plan to be $5,000, with a cost of $5,000, annually, to implement the plan. We conclude that the benefits of implementing the plan would be worth the cost.

Recreation Management Plan

Constructing the portage trail and increasing the parking spaces would improve recreation access and support development of the Upper Oconee Water Trail through the construction of a formalized portage trail, including an aluminum canoe slide and bridge that would allow safe access to the river for both boaters and anglers, and an enlarged parking area to accommodate visiting swimmers, anglers, or boaters. However, the proposal does not include a schedule for constructing the canoe portage, increasing the parking spaces, or associated signage. The recreation improvements would likely be constructed during daylight hours and when recreation use is low, such as late fall or early spring so as to not conflict with the protection measures in Appendix F, Biological Assessment. We also recommend that construction of the

recreation amenities be completed within 2 years of license issuance. Installing directional signage for the portage at the project would allow for recreationists to easily know where to portage their boats and therefore limit potential confusion. Finally, we recommend that these provisions be included in a Recreation Management Plan for the project. We estimate the cost for the plan to be $1,570 and the other costs to be negligible.

Avian Protection Plan

The project's substation is not equipped with avian protection devices, and the effects of these project facilities on birds or other wildlife are not currently monitored. Therefore, we recommend that Tallassee Shoals develop an Avian Protection Plan, in coordination with FWS and Georgia WRD, that describes a plan for implementing avian protection measures at the project. We recommend that the plan include: (1) periodically check project facilities for nests, or signs of adverse avian interactions; (2) report any adverse interactions; (3) consult with agencies regarding installation of avian protection devices on project facilities if avian interactions are detected; and (4) file an implementation schedule. We conclude that the plan would help minimize potential project effects on birds/wildlife at the project. We estimate the cost of developing an Avian Protection Plan to be $5,000. We conclude that the benefits of implementing the plan would be worth the cost. The levelized annual cost of developing a species protection plan would be $480. Therefore, we conclude that the benefits of the measure outweigh the cost.

Bat Protection

The endangered gray bat and the proposed endangered tricolored bat, also listed as a high-priority species in Georgia, potentially occur at the project. Vegetation management and construction activities have the potential to disturb these sensitive bat species if tree cutting or thinning occur during roosting or other critical phases in their reproductive life cycle. The removal of two mature hardwood trees proposed for the expansion of recreation parking, the limited vegetation management at recreation facilities on the east side of the river following the completion of the proposed improvements, and the continued vegetation management (e.g., tree trimming) on the west side for the river at public works would have minimal disturbance to suitable travel or foraging corridors for the gray bat. However, it could affect habitat for the tricolored bat by disturbing suitable roost trees. We recommend that Tallassee Shoals avoid any regular, non-emergency, tree maintenance (tree removal) at the project, including during construction of the proposed recreation enhancements, during the tricolored bat's non-volant pup season (May 1 - July 15) and during its winter torpor season (December 15 - February 15). This measure would ensure the protection of the tricolored bat during project-related activities at no additional cost to Tallassee Shoals.

Measures Not Recommended by Staff

Migratory Fish Management Plan

The Tallassee Shoals Project is the only dam on the Middle Oconee River. There are three hydropower dams located downstream from the Tallassee Shoals Project on the mainstem Oconee River, including Barnette Shoals Dam located 22 miles downstream from Tallassee Shoals Dam, Wallace Dam, located about 70 miles downstream from Tallassee Shoals, and

Sinclair Dam, located about 100 miles downstream from Tallassee Shoals Dam. Due to the lack of dedicated fish passage facilities, all the downstream dams are impediments to fish movement in the Oconee River. To address fish passage needs at the Tallassee Shoals Project, Interior recommends that Tallassee Shoals develop a migratory fish management plan in consultation with the resource agencies within 2 years of establishing fish passage at the downstream dams. As described in section 3.3.1.2, *Aquatic Resources – Environmental Analysis*, the plan would include provisions to: (1) conduct periodic migratory fish monitoring in the reaches between Tallassee Shoals Dam and Barnett Shoals Dam, and between Barnett Shoals and Wallace Dams to identify which migratory species are present and which species are attempting to migrate upstream of Tallassee Shoals Dam; and (2) assess where migratory fishes congregate at Tallassee Shoals Dam for siting fish passage facilities.

As discussed in section 3.3.1.2, *Aquatic Resources – Environmental Analysis*, no migratory species that occupy the Oconee River have unimpeded access to the Tallassee Shoals Project. Barnett Shoals, Wallace, and Sinclair Dams currently impede the upstream migration of American eel, Atlantic sturgeon, and robust redhorse. Moreover, although Interior says that it expects fish passage at the downstream Barnett Shoals dam will occur at some point during the Tallassee Shoals Project license term, there are currently no plans or schedules to install fish passage at Barnett Shoals, Wallace, or Sinclair Dams.

As we indicate in section 3.3.1.2, the benefits of periodic monitoring of migratory fish in the reaches downstream of the Tallassee Shoals Dam, as recommended by Interior, is contingent on upstream passage of fish at Wallace Dam, and Sinclair Dam and the removal of, or addition of upstream fish passage to, Barnett Shoals Dam.[97] Because these are uncertain future actions given the absence of specified plans to provide passage at the dams, there is no certainty that migratory fish would have unimpeded access to the Tallassee Shoals Project during a new license term. For these reasons, there is no basis for requiring Tallassee Shoals to develop a migratory fish management plan at this time, and we do not recommend including this measure as part of any new license issued for the project.

Habitat Enhancement Plan

As described in section 3.3.1.2, *Aquatic Resources – Environmental Effects*, the current range of robust redhorse have been found within the 70-mile reach between Sinclair Dam and Dublin, Georgia. In the Oconee River, Robust Redhorse are excluded from the Middle Oconee River watershed by the Sinclair Dam and spawns on unstable gravel bars in the lower Oconee River below the Sinclair Project. The closest robust redhorse spawning activity in the Oconee River that has been documented to take place is more than 75 river miles downstream from the Tallassee Shoals Project located at the lower end of a short meander section of the Oconee River below state highway 95. Additional spawning sites on the Oconee River are between Toomsboro and Milledgeville, Georgia and below the mouth of Commissioner Creek.

Interior recommends that Tallassee Shoals develop a habitat enhancement plan, in consultation with FWS, NMFS, and Georgia DNR, that includes: (1) monitoring gravel

[97] On June 18, 2020, the Wallace Dam Pumped Storage Project P-2413 was relicensed for a of 40-year term of operation (*See* 171 FERC ¶ 62,414 [2020]).

conditions; (2) maintaining gravel shoals through recruitment or augmentation; (3) protecting riparian habitat to minimize erosion and sedimentation along the tailrace; (4) reassessing minimum flows in the bypassed reach for robust redhorse and migratory fish; and (5) assessing water quality issues in the shoals to reduce algae growth, embeddedness, and sedimentation. Tallassee Shoals does not propose to develop the agencies' recommended habitat enhancement plan.

Within the Oconee and Ocmulgee Rivers there is a single, genetically distinct population of robust redhorse.[98] As discussed in section 3.3.1.2, *Aquatic Resources – Environmental Effects*, there has been no documentation of the presence of robust redhorse in the project tailrace, bypassed reach, or impoundment. Given this fact and the fact that there are three dams (without fish passage) between the project and the nearest observed population, there is no evidence of robust redhorse in the Middle Oconee River basin upstream of the Wallace Dam, Sinclair Dam, and Barnett Shoals Dam to benefit from local habitat improvements.

Interior also recommends unspecified management actions to monitor, maintain, and enhance spawning habitat for Georgia protected species, as well as management actions to monitor, maintain, and enhance spawning habitat of migratory fishes other than robust redhorse. However, as discussed in section 3.3.1.2, Sinclair Dam impedes the upstream passage of all migratory fishes. While Atlantic sturgeon, eels, and robust redhorse all use the lower Oconee River, they are currently restricted to river reaches downstream from Sinclair Dam. Moreover, we are not aware of any evidence that spawning habitat for any migratory species exists in the Oconee River between the Tallassee Shoals and Sinclair Dams.

For the reasons described above, and discussed in section 3.3.1.2, *Aquatic Resources – Environmental Analysis*, we have not identified a benefit to, and a project-related basis for, requiring a habitat enhancement plan that includes provisions for: (1) monitoring gravel conditions; (2) maintaining gravel shoals through recruitment or augmentation; (3) protecting riparian habitat to minimize erosion and sedimentation along the tailrace; (4) reassessing minimum flows in the bypassed reach for robust redhorse and migratory fish; and (5) assessing water quality issues in the shoals to reduce algae growth, embeddedness, and sedimentation. Therefore, we do not recommend including such a plan as part of any new license issued for the project.

Notification of Future License Amendments, Appeal of Any Fish and Wildlife-Related License Conditions, or Extension

Interior recommends, under section 10(a) of the FPA, that Tallassee Sholas, prior to, or at the time of, filing with the Commission for any: (1) amendment of license, (2) appeal of any fish and wildlife-related license conditions, or (3) extension of time request for project construction or implementation of license article provisions, serve all representatives of Interior on the Commission's service list with a copy of any such request. If the need for a license amendment arises during the license term, a licensee must file an application to amend the license and receive Commission authorization before substantially modifying project works or operation.

[98] Interior's December 15, 2022 filing at 2.

Before filing an amendment application, the licensee must consult with any resource agency whose interests would be affected by the amendment (*see* 18 C.F.R. 4.38 and 4.201). Moreover, any appeal of a license condition or extension of time to implement a license condition would be subject to agency and public comment as part of the Commission's review process. Because there are procedures in place to address Interior's concerns, there is no need for, and we do not recommend adopting, Interior's recommendation.

APPENDIX I

FISH AND WILDLIFE AGENCY SECTION 10(J) RECOMMENDATIONS

Analysis of Fish and Wildlife Agency Recommendations for the Tallassee Shoals Project				
Recommendation	**Agency**	**Within Scope of Section 10(j)**	**Levelized Annual Cost**	**Recommend Adopting?**
1. Develop a habitat enhancement plan within 5 years of the establishment of fish passage at the Sinclair, Wallace, and Barnett Shoals dams, or the establishment of passage at Barnett Shoals and reintroduction of Robust Redhorse into the upper Oconee River, that includes the following: (a) monitor, maintain, and enhance (as needed) robust redhorse spawning habitat, other Georgia State Wildlife Action Plan species, and migratory fish, including (i) monitoring gravel conditions, (ii) maintaining gravel shoals through recruitment or augmentation, (iii) protecting riparian habitat to minimize erosion and sedimentation along the tailrace, (iv) reassessing minimum flows in the bypassed reach for robust redhorse and migratory fish, and (v) assessing water quality issues in the shoals to reduce algae growth, embeddedness, and sedimentation.	Interior	No [a]	$10,000	No [b]
2. Develop a migratory fish management plan within 2 years of establishing fish passage at Sinclair, Wallace, and Barnett Dams that	Interior	No [a]	$10,000	No [b]

Analysis of Fish and Wildlife Agency Recommendations for the Tallassee Shoals Project				
Recommendation	**Agency**	**Within Scope of Section 10(j)**	**Levelized Annual Cost**	**Recommend Adopting?**
includes provisions for: (a) periodically monitoring migratory fish presence in the Oconee River downstream from Tallassee Shoals Dam; and (b) a fish passage sighting assessment at Tallassee Shoals Dam.				

[a] The measure is conditional in that its implementation is contingent on an uncertain, future event.

[b] *See* Appendix H, *Comprehensive Development – Measures Not Recommended by Staff.*

APPENDIX J

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APPENDIX K

COMPREHENSIVE PLANS

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APPENDIX L

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