ENVIRONMENTAL ASSESSMENT

Application for Non-Project Use of Project Lands and Waters

Dominion Energy South Carolina, Inc.

Saluda Hydroelectric Project

FERC Project No. 516-513

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, D.C. 20426

January 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

Advisory Council	Advisory Council on Historic Preservation
CEQ	Council on Environmental Quality
cfs	cubic feet per second
CZMA	Coastal Zone Management Act
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission (Commission)
FWS	U.S. Fish and Wildlife Service
HPMP	Historic Properties Management Plan
IPaC	Information for Planning and Consultation
kW	kilowatt
mg/L	milligrams per liter
MSA	Magnusson-Stevens Fishery Conservation Act
MSL	mean sea level
National Register	National Register of Historic Places
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NGVD29	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NTU	Nephelometric Turbidity Units
NWI	National Wetlands Inventory
OPP	Office of Public Participation (FERC)
SHPO	State Historic Preservation Officer
CORPS	U.S. Army Corps of Engineers
USGS	United States Geological Survey

WTP	Water Treatment Plant

1.0 INTRODUCTION

A. Application: Non-project use of project lands and water: water withdrawal from licensed project waters

B. Date filed: September 9, 2022

C: Applicant: Dominion Energy South Carolina, Inc.

D: Water body: Lake Murray, Saluda River

E: County and State: Lexington County, South Carolina

F: Federal Lands: None

2.0 BACKGROUND

2.1 Project Description

2.1.1 Existing Project Facilities

The Commission issued a license for the Saluda Project on June 1, 1984.[1] On November 18, 2003, the Commission extended the term of the license by three years based on activities related to the construction of the backup project dam downstream of the original dam, making the expiration date for the license August 21, 2010.[2] The project is currently undergoing relicensing and operates under an annual license. Commission staff issued an Environmental Assessment (EA) on July 20, 2010, that considers relicensing the project. The existing 207.3-megawatt Saluda Project consists of a single development with the following features: (1) a 7,800-foot-long, 213-foot-high earth-fill dam, with South Carolina State Highway 6 running along the top of the dam; (2) a dike that extends 2,550 feet from the north end of the dam, running parallel with Highway 6; (3) a 2,900-foot-long emergency spillway with six steel Tainter gates that is located 500 feet from the south end of Saluda Dam, and a spillway channel that reconnects with the Saluda River about 0.75 mile downstream from the Saluda Powerhouse; (4) a 2,300-foot-long, 213-foot-high roller compacted concrete backup dam located along the downstream toe of the Saluda dam, with (i) a crest elevation of 372.0 feet North American Vertical Datum of 1988 (NAVD88), and (ii) rock fill embankment

[1] Order Issuing New Major License (27 FERC ¶ 61,332).

[2] Order Extending Term of License (105 FERC ¶ 61,226).

sections on the north and south ends of the backup dam, having a combined length of 5,700 feet; (5) a 41-mile-long, 50,900-acre reservoir (Lake Murray) at a full pool elevation of 358.5 feet, with a total usable storage of about 635,000 acre-feet; (6) five 223-foot-high intake towers and associated penstocks; (7) a concrete and brick powerhouse containing four vertical Francis turbine generating units (three at 32.5 MW and one at 42.3 MW), and a fifth vertical Francis turbine generating unit (67.5 MW); (8) a 150-foot-long tailrace; (9) five 750-foot-long, 13.2-kilovolt primary transmission lines; and (10) appurtenant facilities. There is no transmission line or bypassed reach associated with the project.

2.1.2 Existing Project Operation

Saluda Dam impounds the Saluda River and forms the project reservoir, Lake Murray. Water from the reservoir enters five separate intake towers located in Lake Murray. Water enters each of the intake towers at various depths and then flows through a single penstock attached to each generating unit located at the powerhouse. The powerhouse units discharge directly back to the Saluda River downstream of the project powerhouse.

The Saluda Project currently operates as a reserve generation facility in the licensee's generating system. The Saluda powerhouse typically operates with one unit running at minimum gate all times to provide a downstream flow of at least 180 cubic feet per second (cfs) in the Saluda River.

The Saluda Project is operated to manage the reservoir elevation on a seasonal basis. Under the current license, the reservoir is managed using monthly target elevations, which may be modified by the licensee based primarily on climatic conditions, reservoir level at the time, and dam and reservoir maintenance requirements. Historically, the reservoir has been maintained between elevation 348.5 feet mean sea (msl) (winter) and 356.5 feet msl (summer). The current license allows a maximum operating water surface elevation of 358.5 feet msl (full pool).

2.1.3 Existing Water Withdrawals

Although Lake Murray is used primarily for power production, it is also approved to serve as a water supply for seven municipalities, four of which are actively withdrawing water, one of which has not yet been constructed, and two municipalities, the status is unknown at the time of this analysis.[3] However, for the purpose of this EA, the total quantity of withdrawal approved by the Commission is analyzed. Table C-1 in Appendix C, summarizes the existing approved water withdrawals.

[3] Personal Communication with Licensee January 2024.

2.2 Purpose and Need for Action

The Lake Murray Water Treatment Plant (WTP) provides potable water for three major service areas which include the City of West Columbia, South Carolina (City of West Columbia or City) as well as two wholesale customers, the Joint Municipal Water and Sewer Commission, and the Town of Lexington, South Carolina. In order to assess improvements and expansion needs for the WTP, the City of West Columbia prepared a Master Plan for a study period from 2016 to 2040 (Black & Veatch, 2016). Over the period of study, the Master Plan estimates that the population of the areas served by the West Columbia Lake Murray WTP could increase by more than double the estimated population in 2015 (from 90,000 to 190,000). Driven by population growth, the water demand from the Lake Murray WTP is projected to increase from an average daily demand of 11 million gallons per day (mgd) to 25 mgd, a peak monthly average daily demand of 17 mgd to 37 mgd, and a maximum daily demand of 22 mgd to 48 mgd.

The Lake Murry WTP was placed into operation in 1990 and some of its infrastructure is aging and in need of rehabilitation. In order to accommodate projected future water supply demands and water treatment requirements, the City of West Columbia's Lake Murry WTP is seeking to expand its raw water withdrawal rates and improve its raw water pumping infrastructure.

Article 413 of the project licensee in part, requires the licensee to obtain Commission approval to grant permission for water withdrawals that are greater than 1 mgd.

Commission staff's review of the application is being conducted to determine if any environmental, cultural, or recreational resources would be affected by the construction and increased water withdrawal by the proposed facility, and if environmental measures are necessary to mitigate any effect of the proposed action. The analysis in this EA provides a basis for Commission staff to make an informed decision on the licensee's September 9, 2022 application for non-project use of project lands and waters.

This EA is being prepared to satisfy the Commission's responsibilities under the National Environmental Policy Act of 1969 (NEPA),[4] the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 C.F.R. 1500-1508), and the Commission's implementing regulations under 18 C.F.R. 380.

[4] 42 U.S.C. §§ 4321 *et seq*.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Description of Proposal

3.1.1 Proposed Action

On September 9, 2022, the licensee filed an application requesting Commission authorization to allow the use of project lands and waters for non-project purposes. Specifically, the licensee is requesting approval to grant the City of West Columbia permission to increase its rate of raw water withdrawal from Lake Murray from the current maximum of 48 mgd to a maximum of 72 mgd, construct a new 42-inch raw water transmission main parallel to the existing main and potable water lines, and replace two pumps within the existing raw water building (the proposed action).[5] See Figure B-1 in Appendix B.

Approximately 1,650 square feet of soil disturbance created by the proposed action would be within the Saluda Hydroelectric Project boundary, along with the increase of the maximum daily water withdrawal from the project reservoir. This EA will primarily analyze the use of project lands and waters (those aspects of the facility that are located within the Saluda Hydroelectric Project boundary), however, analysis of actions taken adjacent to the project boundary (a portion of the raw water line between the pump station and the water treatment plant) must also be considered since they can potentially cause effects within the project boundary. For example, earth work adjacent to the project boundary can cause soil erosion that runs sediment into the lake if not properly contained. As such, it is necessary for staff to consider these potential effects on resources within the project boundary.

If approved, the proposed action, in addition to current permitted withdrawals, could amount to up to 258.5 mgd of water from seven different permitees being withdrawn from Lake Murray for consumptive use (see Table C-1 in Appendix C).

3.1.2 Proposed Environmental Protection Measures

The licensee's September 9, 2022 filing identifies environmental mitigation measures that the City would implement before, during, and after its proposed action. These measures are intended to address potential effects resulting from the installation of the proposed 42-inch raw water line and to protect aquatic resources from the increased withdrawal.

[5] The proposed action would occur on Lake Murray in Lexington County, South Carolina.

The trenching activities necessary for the installation of the proposed additional raw water conveyance line could create stormwater runoff, which could affect water quality in Lake Murray through an increase in turbidity. The City proposes to mitigate this potential by implementing an Erosion and Sediment Control Plan with best management practices. Further, the potential exists to disturb sediments within the area of the intake structure because of an increased withdrawal rate. However, the City determined that during operation of the intake at larger flow rates, any increases in turbidity from an increased area of influence around the intake are not expected to exceed the State of South Carolina water quality standard applicable to Lake Murray of 25 Nephelometric Turbidity Units (NTUs).

No in-water work is expected to be necessary for this proposed action, as the facility would use the existing raw water intake that is currently used to withdraw water from the lake.

The approach velocity at the intake screen would not exceed 0.5 feet per second (fps) and the intake screen opening would not exceed one inch, as to reduce the potential for entrainment of aquatic organisms.[6]

Additionally, the City would comply with stormwater management and sediment control requirements set forth by South Carolina Department of Health and Environmental Control (South Carolina DHEC),[7] including the development of stormwater management and control plan(s), as well as any provisions of requirements set forth by the U.S. Army Corps of Engineers (Corps) pursuant to section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act.[8]

3.2 Proposed Action with Staff-Recommended Measures

Commission staff have not identified any additional recommended measures beyond those in the licensee's application.

---

[6] See discussion regarding intake screen bar spacing and intake velocities in Section 5.1, *Pre-filing Consultation.*

[7] South Carolina DHEC administers the state of South Carolina's stormwater management and sediment control program as defined under South Carolina Regulation 72-300- Standards for Stormwater Management and Sediment Reduction.

[8] At the time of its application, the City was waiting for the Corps to determine which permit(s) issued under its authority are applicable to the proposed action. The City commits to obtaining the necessary approvals regarding stormwater management and sediment controls as required by the South Carolina DHEC for the proposed action.

3.3 Alternatives to Proposed Action

No alternatives to the licensee's proposal have been identified by the licensee, Commission staff, or other stakeholders. Relative to the licensee's proposal (i.e., using an existing water withdrawal), other alternatives would create larger environmental effects and require additional construction activities, siting locations, and potential effects within the project boundary.

3.4 No-Action Alternative

Under the no-action alternative, the Commission would deny the licensee's non-project use of project lands and waters application. As a result, the licensee could not approve the City's request to construct the new larger water conveyance pipe between the existing raw water intake and the treatment plant. The licensee would be unable to replace existing raw water pumps, nor allow an increase in the City's previously approved withdrawal volume of 48 mgd. Under the no-action alternative, the City may be unable to meet projected future water supply demands.

4.0 STATUTORY AND REGULATORY COMPLIANCE

This amendment request for the project would be subject to numerous requirements under the Federal Power Act (FPA) and other applicable statutes. The major regulatory and statutory requirements are described in Appendix A.

5.0 AGENCY CONSULTATION AND PUBLIC INVOLVEMENT

5.1 Pre-filing Consultation

Prior to filing its amendment application with the Commission, the City, on behalf of the licensee, consulted with the Corps, FWS, National Marine Fisheries Service (NMFS), South Carolina DHEC, South Carolina Department of Natural Resources (South Carolina DNR), South Carolina State Historic Preservation Officer (SHPO), and Catawba Indian Nation.

On March 30, 2022, the City provided a description of the proposed action, along with an EA analyzing potential effects of the proposed action to the above-mentioned parties. By letter dated April 6, 2022, the SHPO concurred with the City's determination that the proposed action would not affect any historic properties. The SHPO reminded the City of its obligations to contact it immediately if any archaeological materials are encountered during construction. Section 6.3.6, *Cultural and Historic Resources*, contains details regarding the SHPO's April 6, 2022 letter.

By letter dated April 7, 2022, FWS had no objections to the proposed action and included comments regarding a timing restriction for in-water activities to avoid spring

fish spawning season (March-May), although the City's application does not propose any in-water work.

On April 29, 2022, both NMFS and South Carolina DNR provided comments regarding intake screening at the raw water intake. While the City's drawing included in the licensee's initial filing proposes an intake screen with 3/8-inch bars and 3.625-inch spacing (as is the current intake screen's configuration), both agencies recommend an intake screen opening of 0.1 inch. The agencies indicate that the current configuration is designed to exclude debris and adult fishes but is not adequate to exclude larval fish and eggs that could be fatally entrained through the intake. Both agencies cite the U.S. Environmental Protection Agency standard for limiting through-screen design in accordance with Section 316(b) of the Clean Water Act.

South Carolina DNR also recommended a lower intake velocity than is proposed. The City proposes intake velocities of 0.5 fps, or less. EPA through-screen intake velocity in accordance with Section 316(b) of the Clean Water Act is 0.5 fps, or less. South Carolina DNR, however, recommends an approach velocity of 0.25, or less. In NMFS' consultation, it notes that the City modeled various scenarios and calculated an intake velocity of 0.189 fps under the proposed increased withdrawal rate, which is below the recommended 0.25 by these agencies, and further below the EPA standard of 0.5 fps.

South Carolina DNR's April 29, 2022 letter, also recommended that the City allow for complete removal of the intake and associated equipment upon completion of withdrawals, and that the intakes be inspected and cleaned regularly to ensure proper function.[9]

Further, South Carolina DNR makes the following recommendations:

- All excavations should be backfilled with the excavated material after installation of the appropriate structures. Where practicable, side cast spoil material from trench excavation should be placed on the side of the trench opposite streams and wetlands. Spoil material from trench excavation should be placed on the side of the trench to be reused as back fill with the A horizon placed back in its original position. Excess spoil material must be removed to an approved upland disposal site.
- Pipeline construction must be accomplished in existing disturbance corridors where practicable. Upon completion, preconstruction contours must be restored along pipelines and all disturbed areas must be permanently stabilized with vegetative cover (preferable) and/or riprap, as appropriate. Right-of-ways should be no wider than that necessary for access and maintenance.

[9] Commission staff notes that maintenance of the intake would already be a part of the City's ongoing withdrawal protocols at the facility, and appropriate removal of the facility should be addressed if, and when, the facility is decommissioned.

- Prior to beginning any land disturbing activity, appropriate erosion and siltation control measures (i.e., silt fences or barriers) must be in place and maintained in a functioning capacity until the area is permanently stabilized.
- Materials used for erosion control (e.g., hay bales or straw mulch) will be certified as weed free by the supplier.
- Inspecting and ensuring the maintenance of temporary erosion control measures at least:
    a. on a daily basis in areas of active construction or equipment operation;
    b. on a weekly basis in areas with no construction or equipment operation; and
    c. within 24 hours of each 0.5 inch of rainfall;
- Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental effects.
- All necessary measures must be taken to prevent oil, tar, trash, and other pollutants from entering the adjacent offsite areas/wetlands/water.
- Once the project is initiated, it must be carried to completion in an expeditious manner to minimize the period of disturbance to the environment.
- Upon project completion, all disturbed areas must be permanently stabilized with vegetative cover (preferable), riprap or other erosion control methods as appropriate.
- The project must comply with any applicable floodplain, stormwater, land disturbance, shoreline management guidance or riparian buffer ordinances.

In further pre-filing consultation, in a letter dated June 2, 2022, the Corps replied to the City and provided directions for filling out pre-application forms for any necessary permits required by the Corps. At the time of its comments, the Corps stated that depending upon details of the final proposed work, its authorization for any new work may be required by the Corps either by a new permit, or modification to the previous permit.

No comments or recommendations were submitted by the Catawba Nation or South Carolina DHEC.

5.2 Public Notice and Comments

The Commission issued a public notice of the application on December 8, 2022, that set a deadline of 30-days for filing comments, protests, and motions to intervene. No comments, protests, or motions to intervene were filed.

6.0 ENVIRONMENTAL ANALYSIS

In this section of the EA, unless otherwise noted, the information in the following Affected Environment sections is derived from Section 3.0 - Environmental Analysis of the licensee's "Environmental Report for Lake Murray Water Treatment Plant Increased Water – August 2022" filed as part of its September 9, 2022 amendment application. Staff analysis of probable effects from the proposed action then follows in the second part of each resource section under Environmental Effects.

6.1 General Description

The project is located on the Saluda River in the Piedmont region of South Carolina. Steep to moderate slopes and rolling hills with well-drained valleys are predominant features of the regional landscape. The Saluda River originates in the Blue Ridge Mountains, flows southeast for about 200 miles to its confluence with the Congaree River, and has a total drainage area of approximately 3,210 square miles (Agerton and Baker, 2006; South Carolina DNR, 2013). The Congaree River flows into the Santee River, which empties into the Atlantic Ocean.

In general, the riverbanks and riparian zones are forested. There is a gradual shift in land use from rural to suburban and suburban to urban moving downstream towards the City of Columbia. Lake Murray and the downstream reach extending 10 miles from the Saluda Dam to the Congaree River are major recreational resources for the region. Richland and Lexington counties are among the most densely populated counties in the state. Lake Murray provides a primary source for recreation, primarily boating and fishing, to these surrounding communities.

The project area has a moderate climate year-round with long, hot summers and short, mild winters. July and August are typically the hottest months, with temperatures reaching above 90 degrees Fahrenheit (about 32 degrees Celsius) on an average of 40 days during those two months. Summer is typically the wettest season, with one-third of the total annual rainfall occurring during this time, because of the frequent occurrence of showers and thunderstorms throughout the season. Fall is characteristically the driest season. Typically, only 19 percent of the total annual rainfall occurs during this time. However, occasionally, tropical storms and hurricanes travel through the area during this season.

6.2 Scope of Cumulative Effects Analysis

According to the Council on Environmental Quality's (CEQ) regulations for implementing NEPA, a cumulative effect is the effect on the environment that results from the incremental effect 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 time, including hydropower

and other land and water development activities.

Multiple water withdrawals from the project reservoir could potentially result in cumulative effects. Seven municipalities are approved to withdrawal water from Lake Murray: City of Columbia, City of West Columbia, City of Newberry, Newberry County Water and Sewer Authority, Saluda County Water and Sewer Authority, Town of Batesburg-Leesville, and Joint Municipal Water and Sewer Commission, which results in a combined consumptive maximum water withdrawal of 234.5 mgd (see Table C-1 in Appendix C); this is a small fraction of the total project flow. The volume of water withdrawal is negligible compared to the volume of water in the reservoir at normal pool elevation. With the additional 24 mgd proposed, the total authorized consumptive use of 258.5 mgd would not adversely affect project operations, lake levels, or flows through the project. At the time of this analysis, there are no other water withdrawals or project amendments before the Commission for review. There would also be no significant cumulative effects from the other water withdrawals on Lake Murray. There are no expected cumulative effects to any of the other resource areas analyzed in this EA.

6.3 Resource Area Descriptions and Analysis

6.3.1 Terrestrial Resources

Affected Environment

Vegetation and Wetlands

The upland habitat located above the 358.5-foot contour interval along the Lake Murray shoreline is characterized by vegetation typical of southern Piedmont hardwood forests. It is dominated by a combination of woody tree and shrub species, including both pioneer and climax species. The most common tree species is loblolly pine, which is a quick and dominating colonizer to disturbed, well-drained sites.

In areas not managed for pine, succession to deciduous tree species has occurred. Common species of deciduous forests include red maple, sweet gum, several oak species (i.e., white, red, southern red, black, chinquapin), and several hickory species (i.e., shagbark, mockernut, and pignut). Common mesic sub-canopy species found in these forested areas include flowering dogwood, American holly, black cherry, hop hornbeam, redbud, wax myrtle, and wild azalea.

The wetland habitats present within the project area represent several subsystems/classes, including palustrine forests, emergent and scrub-shrub wetlands, and lacustrine littoral wetlands; however, the proposed action area does not contain any

wetlands (USFWS, 2021).[10]

Soils

Soils within the Lake Murray area are derived from argillite (mudstone), a fine-grained sedimentary rock composed predominately of clay particles. These reddish or yellowish soils are gently sloping, deep, well to moderately drained, and have silt-loam topsoils over silty clay subsoils. The soils in the region are generally low in fertility and are best suited for forest or pasture use. While the soils are generally not susceptible to creep or slumping, soil erosion can be a problem in some lakeshore areas, particularly along exposed shorelines.

Wildlife

Shoreline habitats are typical of the Piedmont area of South Carolina and include pine plantations, bottomland and upland hardwood forests, mixed pine/hardwood forests, open fields, and sandhills. The majority of wildlife habitats in shoreline areas are found in the 75-foot setback zone around the reservoir, riparian buffer zones, designated environmentally sensitive areas, forest and game management areas, and undeveloped areas of the project. Forested and other terrestrial areas surrounding the project harbor typical woodland species such as wild turkey, white-tailed deer, raccoon, gray squirrel, opossum, and gray fox. Terrestrial areas also support a variety of resident and migratory birdlife including songbirds, woodpeckers, raptors, and upland game birds. Typical species include red-tailed and red-shouldered hawks, bobwhite quail, mourning dove, American robin, eastern bluebird, pileated woodpecker, and meadowlark. The project area also supports an abundance of terrestrial reptiles and amphibians such as eastern box turtle, green anole, broad-headed skink, gray rat snake, southern toad, green tree frog, and marbled salamander.

The abundant open and shallow-water habitats within the project area support a variety of aquatic and semi-aquatic wildlife such as beaver, river otter, muskrat, and possibly mink. Shallow, often vegetated areas in creek mouths, backwaters, and along reservoir shorelines are used for foraging and cover by migratory and resident waterfowl such as wood ducks, Canada geese, American coots, and black ducks, as well as wading birds such as great blue herons, great egrets, and green herons. In addition to providing important breeding habitat for most amphibian species, these shallow waters also provide year-round habitat for aquatic reptile and amphibian species including eastern newt, bullfrog, spring peepers, brown and red-bellied water snakes, and mud and musk turtles. Open water areas are often utilized by species including bald eagle, kingfisher, osprey, and various gulls for foraging.

[10] See page 3-15 of the City's September 9, 2022 filing, that confirms that no wetlands are located within the project boundary where construction or staging for construction would take place.

Environmental Effects

Ground disturbance within the project boundary due to proposed action would be limited to the area adjacent to the exiting conveyance pipe that provides water from the existing pumphouse along the shore of the lake to the Lake Murry Water Treatment Plant that is located outside of the project boundary. The proposed excavation alongside the existing pipe would occur within the area previously disturbed by the installation of that existing pipeline and would result in the disturbance of approximately 1,650 square feet of soil within the project boundary. During construction, ground-disturbing activities related to the installation of the conveyance pipe would not affect the shoreline of Lake Murry so long as standard construction best management practices are implemented, such as erosion control, as already proposed by the City in the licensee's application.

Overall, given the small footprint of the facility, if the City implements the proposed best management practices described in Section 3.1(b) - Proposed Environmental Protection Measures and the recommendations from South Carolina DNR described in Section 4.1 - Proposed Environmental Protection Measures, that aim to control and minimize erosion and sedimentation, control dust, and prevent any unnecessary tree removal during construction, effects to vegetation, soils, and wildlife resources would be minimal and short-term. Once constructed, operation of the facility would not have any additional effect to terrestrial resources.

6.3.2 Water Quantity

Affected Environment

Inflow to Lake Murray is supplied by the Saluda River and the Little Saluda River, as well as numerous streams entering the lake along its shoreline. Lake Murray is approximately 41 miles long, has a maximum width of 14 miles, and a maximum depth of 189 feet. The lake's surface area is approximately 50,900 acres at a full-pool elevation of 360 feet msl. At full-pool elevation, the lake holds approximately 2,000,000 acre-feet of water and has a retention time of about 417 days based on an average inflow of about 2,400 cfs. Inflow to Lake Murray is measured at U.S. Geological Survey (USGS) gage no. 02167000 Saluda River at Chappells, USGS gage no. 02167450 Little River near Silverstreet, and USGS gage no. 02167582 Bush River near Prosperity. The licensee operates the project to manage Lake Murray's water surface elevation on a seasonal basis. Historically, Lake Murray's water surface has been maintained between elevation 348.5 feet msl (winter) and 356.5 feet msl (summer).

As described in Section 2.1.3*, Existing Water Withdrawals*, there are several existing facilities which withdraw water from Lake Murray. The existing maximum consumptive water withdrawals from Lake Murray totals approximately 12.8 percent of the average inflow into Lake Murray (FERC, 2021).

Environmental Effects

Under the proposed action, the City would be authorized to withdraw up to 72 mgd from Lake Murray, which represents 0.035 percent of the 207 billion gallon usable storage volume in Lake Murray on a daily basis, not including inflow. With regard to inflow, if approved, cumulative consumptive water withdrawals on Lake Murray would account for 16.7 percent of the average inflow of the Saluda River into Lake Murray. With regard to potential effects on lake levels, the project's operation would continue to maintain water surface elevations between 348.5 feet msl (winter) and 356.5 feet msl (summer). The City performed calculations to determine whether the proposed withdrawal is within the safe yield of Lake Murray.[11] According to the City and the licensee's calculations, the proposed withdrawal increase of 24 mgd, from the previously approved 48 mgd to 72 mgd is within the safe yield of Lake Murray. No changes to water surface elevations are expected since the proposed increased withdrawal is within the safe yield.

Given the percentage of storage capacity in Lake Murray and minor increase in consumptive water withdrawals caused by the proposed action, the effect to water quantity in Lake Murray would be very minor. The proposed action is not affecting the licensee's ability to satisfy the operational requirements of the license, nor are any operation-related changes being proposed by the licensee as a result of the proposed action. Therefore, the proposed action would have no effect on water discharged from the project.

6.3.3 Water Quality

Affected Environment

South Carolina DHEC classifies Lake Murray and the Saluda River entering the lake as freshwater suitable for primary and secondary contact recreation, a source for drinking water after conventional treatment, suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora, and suitable for industrial and agricultural uses. Primary issues of concern are elevated total phosphorus and pathogen loading, algal growth, sediment buildup in the western part of Lake Murray near the inflow of the Saluda River, and low dissolved oxygen (DO) concentrations in the deeper parts of the lake which affect the project tailwater.

The most robust water quality data set in the vicinity of the West Columbia intake are from the Saluda Hydroelectric Project dam forebay and the raw water intake facility

[11]South Carolina DHEC considers the "safe yield" for withdrawals from a licensed or flow-controlled impoundment such as Lake Murray "the maximum amount of water that would not cause a reservoir level to drop below its minimum water level or to be able to release the lowest minimum flow specified in the license for that impoundment".

cove (DESC, 2021). These data are provided in the licensee's amendment application (see Table C-2 in Appendix C).

In June 2020, the City instituted a long-term water quality monitoring program in the cove where the intake is located to identify conditions that might cause the formation of compounds creating Taste and Odor issues (AECOM, 2021). In late August and early September 2019, concentrations of Taste and Odor causing compounds in the raw water at the intake spiked to levels beyond the ability of the Water Treatment Plant to remove with existing powdered activated carbon system. The long-term monitoring program includes field measurements and laboratory analysis of the parameters in on a biweekly basis, and continuous measures of field parameters at a site located at the WTP intake buoy.

Temperature and DO

Lake Murray is a monomictic lake (i.e., thermally stratified throughout part of the year). The density difference between the epilimnion (warm surface waters) and the hypolimnion (colder bottom waters) prevents the lake from mixing in the summer. Extensive DO monitoring conducted in Lake Murray in the 1990s showed that the lake stratifies each year starting in May or June and lasts until about October. The western part of Lake Murray has a higher DO demand as a result of a greater amount of decaying organic matter in the water column and the thermal stratification that prevents a resupply of oxygen from surface waters.

State water quality standards for DO concentrations are not always met in the Saluda River forebay and downstream of the dam as a result of the passage of water from the anaerobic hypolimnion through powerhouse unit nos. 1-4. The problem is most pronounced during September and October. In 1999, the licensee installed turbine vents and modified its operation. These changes increased the median DO concentrations from 2.7 milligrams per liter (mg/L) before 1999 to 7.2 mg/L after 1999. Occurrences of DO concentrations below 5.0 mg/L changed from 88 to about 12 percent of the time. Occurrences of DO concentrations below 3.0 mg/L changed from 55 to 3 percent of the time. Between 2005 and 2007, hub baffles were designed to further enhance the turbine aeration, head cover seals in units 2 and 3 were repaired, and improved operational controls were implemented. As a result, during the period from 2005 and 2007, DO concentrations in the Saluda dam tailwaters further improved to the point where DO concentrations below 5 mg/L occurred only 6 percent of the time.

pH

The pH in Lake Murray can be low, measuring between 5.3 and 9.1. The pH can decrease as a result of low DO concentrations and the production of carbon dioxide during decomposition of decaying organic matter, a common occurrence in lake waters with low alkalinity such as Lake Murray. Minor low pH excursions have minor effects

on aquatic life. The only practical mitigation consists of watershed reductions of man-made sources of nutrients and organic loads, and possibly, reductions in internal nutrient cycling by appropriate organic matter removal and management.

Sediments

Sediment deposition occurs in the inflow areas of the Saluda River and tributaries. In addition to particulate matter transported by the streams, the dissolved nutrient load in the water triggers algal growth in these areas which adds to sediment buildup. Drawdown of the reservoir mobilizes some of the deposited sediments, which are then transported further into the reservoir.

Environmental Effects

The only potential effect to water quality of Lake Murray from the proposed action is for a temporary increase in turbidity during construction. Stormwater discharge from the installation of the conveyance pipe has the potential to temporarily increase turbidity in the lake near the construction site; however, implementation of the Erosion and Sediment Control Plan with best management practices would mitigate this potential. During operation of the intake at larger flow rates, any increases in turbidity from an increased area of influence around the intake are not expected to exceed the water quality standard for lakes greater than 40 acres (25 NTUs).

Implementing the best management practices described in Section 3.1(b) - Proposed Environmental Protection Measures and the recommendations from South Carolina DNR described in Section 4.1 - Proposed Environmental Protection Measures, would result in no material adverse effects to water quality as a result of the proposed action resulting from the construction of a new raw water transmission main, replacement of two pumps within the existing raw water building and increased water withdrawal volume.

6.3.4 Aquatic Resources

Affected Environment

Lake Murray provides an abundance of aquatic habitat. Habitat can vary around the reservoir ranging from shallow water coves with littoral fringe habitat and wetlands to deep open water (up to 189 feet deep) with diverse underwater structure.

Resident Fish

Lake Murray supports a substantial warmwater fishery consisting of over 40 species that has produced state records for some game species. While none are state or federally listed as threatened or endangered species, three of these species are listed as moderate priority species for conservation in the South Carolina State Wildlife Action

Plan. These are snail bullhead, flat bullhead, and white catfish (South Carolina DNR, 2015).

Primary gamefish species include largemouth bass, bluegill, redear sunfish, and striped bass. Primary forage species include bluegill, threadfin shad, gizzard shad, and landlocked blueback herring (see Table C-3 in Appendix C). The striped bass fishery is considered the premier fishery in the lake, with an estimated one-third of the total fishing effort on the lake devoted to striped bass. The striped bass population, however, is not self-sustaining and is maintained by stocking. Striped bass have become the dominant pelagic predator fish species benefiting from the lake's diverse forage species. In addition to striped bass, Lake Murray has an exceptional population of other gamefish and panfish, including black crappie and white crappie. These species, and largemouth bass, typically spawn in shallow, nearshore areas (FERC, 2006). Lake Murray also contains yellow bullhead, brown bullhead, channel catfish, and various minnow species.

Freshwater Mussels

In 2006, the licensee sponsored a comprehensive mussel survey of Lake Murray and its tributaries, the lower Saluda River, the Broad River, and the Congaree River (Alderman, 2006). The following freshwater mussel species were collected and identified in Lake Murray: common elliptio, variable spike, Carolina lance, northern lance, Atlantic spike, Florida pondhorn, paper pondshell, eastern floater, eastern creekshell, rayed pink fatmucket, and Savannah Lilliput. Distribution of these mussel species varied according to habitat, with species tolerant of lacustrine habitat occurring within Lake Murray.

Aquatic Vegetation

In 2018, a drawdown of Lake Murray was scheduled to help control invasive aquatic plant species. A survey of the aquatic species present in the lake was conducted prior to the drawdown to provide baseline data for comparison to post-drawdown surveys (Aulbach, 2018). This survey conducted sampling at specific sites along the shoreline of Lake Murray, three of which are close to the existing raw water intake which is subject to the proposed action.

No aquatic plant species were observed in the vicinity of the water intake. At a sampling location on the opposite side of the cove, directly to the north of the intake, Naiad (*Naja minor*), an invasive species, was observed at this sampling point to 10-ft in depth. At another location along the shore to the east of the intake, no aquatic plants were identified in the shallow water, but Naiad again was prevalent in deeper waters to 10-foot depths.

Environmental Effects

When considering potential effects of the proposed action on aquatic species, primary concerns include the potential impingement and entrainment of fish and shellfish

(including eggs, larvae, juveniles, and adults) on and through the intake screen structure. To reduce effects to fish and shellfish from impingement and entrainment, the intakes should be screened, and through-screen velocities should be under 0.5 feet per second (fps).

The City calculated the intake velocity at the screens for a 72 mgd withdrawal rate with 20 percent clogging and unclogged, and operating levels of 345 feet and 356 feet (NGVD29). Under all scenarios the intake velocity was under 0.5 fps. Consequently, no adverse effects by intake impingement are expected. However, pre-filing consultation with the resource agencies as discussed in Section 5.1, *Pre-filing Consultation*, South Carolina DNR recommends an approach velocity of 0.25 fps, or less. In NMFS' consultation it notes that the City modeled various scenarios and calculated an intake velocity of 0.189 fps under the proposed increased withdrawal rate which is below the recommended 0.25 fps by these agencies, and further below the EPA standard of 0.5 fps. With velocities well under the recommended 0.5 fps, levels of entrainment are expected to be minor.

Regarding intake screen dimensions, the existing intake screen and the proposed drawing in the licensee's amendment application consists of an intake screen with 3/8 inch bars and 3.625 inch spacing; however, both NMFS and South Carolina DNR recommend an intake screen opening of 0.1 inch. The agencies indicate that the current configuration is designed to exclude debris and adult fishes but is not adequate to exclude larval fish and eggs that could be fatally entrained through the intake. Both agencies cite the U.S. Environmental Protection Agency standard for limiting through-screen design in accordance with Section 316(b) of the Clean Water Act.

The 3.625-inch bar spacing on the current intake is not adequate to exclude juvenile and larval fish as well as aquatic amphibians. However, the calculated approach velocities of 0.189 fps are well below the EPA standard of 0.5 fps, which should assist in limiting the draw of juvenile and larval fish into the intakes. Nevertheless, the Commission should require the licensee to consult with the NMFS and South Carolina DNR to determine an intake screen spacing that is adequate to limit entrainment, but also practical to the operation of the raw water intake facility, prior to construction of the facilities analyzed under this EA.

6.3.5 Threatened and Endangered Species

Affected Environment

The licensee's application included a report from the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) tool, and an Official Species List to identify rare, threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitats, in the vicinity of the Project (USFWS, 2021 and 2023). The report identifies four species that could potentially be affected by the proposed action: red-cockaded woodpecker (*Picoides Borealis*); smooth coneflower

(*Echinacea laevigata*); monarch butterfly (*Danaus plexippus*); and tricolored bat (*Perimyotis subflavus*).

The IPaC Official Species List also lists three migratory bird species protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. These species include the bald Eagle (*Haliaeetus leucocephalus*); the red-headed woodpecker (*Melanerpes erythrocephalus*); and the wood thrush (*Hylocichla mustelina*). The red-headed woodpecker and wood thrush are listed a species of conservation concern.

Further, staff accessed National Marine Fisheries Service (NOAA) database regarding endangered species within South Carolina (NOAA, 2023). Shortnose sturgeon (*Acipenser brevirostrum*) were identified as potentially occurring within the vicinity of the proposed action, however, this listing is for the lower Saluda and Broad Rivers which converge to form the Congaree River. Since this area is downstream of the dam, it would not be affected by the proposed action. No critical habitats are designated nor have shortnose sturgeon been documented in Lake Murray.

Commission staff used the IPaC tool to confirm federally listed species in the vicinity of the proposed action. A report generated on December 12, 2023, confirmed that the red-cockaded woodpecker and the smooth coneflower are endangered species potentially existing in the action area, along with monarch butterfly, a candidate species.[12] Further, the more recent report generated by Commission staff identifies the tricolored bat (*Perimyotis subflavus*) as also potentially existing within or near the action area (USFWS, 2023) (see Table C-4 in Appendix C). The tricolored bat has been proposed to be listed as an endangered species.[13]

Environmental Effects

While the tricolored bat, red-cockaded woodpecker, monarch butterfly, and smooth coneflower are in various listing stages and occurring in Lexington County, South Carolina, the likelihood of these species residing in the proposed action area is low due to the fact that suitable habitat does not exist for these species and that the action area is a narrow strip of previously disturbed land where the current conveyance pipe is buried. Specifically, during the winter, tricolored bats are often found in caves and abandoned mines, although in the southern United States, where caves are sparse,

[12] A candidate species is any species that the FWS has sufficient information on its biological status and threats to propose a species as endangered or threatened.

[13] A proposed species is any species that the FWS has determined is in danger of extinction throughout all or a significant portion of its range and the FWS has proposed a draft rule to list as endangered.

tricolored bats are often found roosting in road-associated culverts where they exhibit shorter torpor bouts and forage during warm nights. During the spring, summer, and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. While the peninsula where the action area is located is forested, the proposed action to install a second conveyance pipe is not located in the wooded area and no tree disturbance is proposed as part of the proposed action. The action area contains one building containing the raw water pumps. The building is not proposed to be modified aside from the installation of a new pump, which would not affect the small potential for tricolored bats to roost on the building structure.

Regarding the monarch butterfly, individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period of time. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. There is little potential for monarch butterfly to use the action area for feeding because of the lack of flowering plants attributed to the maintenance of the facility makes it unlikely that monarch butterflies use the small action area; therefore, the proposed action would have no affect monarch butterflies.

The red-cockaded woodpecker prefers mature pine ecosystems with trees that are over 80 years old and the area surrounding the proposed intake facility lacks longleaf pine savannah habitat, making it unlikely that the species occurs there. Surveys performed at Lake Murray in 2015 further confirm this conclusion. Finally, there are no known occurrences of smooth coneflower in the project area, nor does suitable diabase glade habitat exist within the small action area.

The water withdrawal is submerged, and it is unlikely that the continued withdrawal of water from the lake would have any effect on bird or insect species. The licensee's filing also provides a list of state listed species. In any case, the continued operation of the raw water plant with the requested added withdrawal volume would not create any substantive disturbance to any natural habitat, and that no known effects to federal or state listed species are known to have occurred, nor would occur due to the operation of the intake. Given that the water treatment plant is in-place and has been operating, the addition of new pumps in the existing intake structure along with the construction of the proposed additional service line, would have no effect on listed species as the proposed action is in previously disturbed areas, with a lack of suitable habitat.

During the pre-filing stages of the proposed action and application, the FWS stated on April 7, 2022, that upon its review of the proposed action, they determined that there are no known species protected under the Endangered Species Act of 1973 within the

proposed action's boundaries. Further, the FWS has no objections to the proposed action and offered the following comments:

- Native vegetation removed must be replaced with native vegetation of a similar species or type in accordance with the Vegetation Management Requirements;
- The permittee must make every reasonable effort to minimize any adverse effects on fish, wildlife, and other natural resources.
- Coordinate construction activities with low lake levels to minimize sedimentation, turbidity, and disturbance to aquatic habitats (especially benthic habitats); and
- Construction activities, (especially in-water activities) should avoid the spring fish spawning season (March – May).

No discernable effects to federally listed species are known to occur as a result of the operation of the existing City of West Columbia's water intake facility. In our analysis of the proposed action, Commission staff determined that the proposed action would have no effect on any federally listed species.

6.3.6 Recreation Resources

Affected Environment

Lake Murray supports an array of passive and outdoor recreation opportunities, including scenic viewing, picnicking, boating, bird watching, fishing, wake boarding, waterskiing, parasailing, swimming, hunting, and camping. The lake is host to numerous fishing tournaments and is stocked with striped bass each spring, and host to multiple sailing regattas. In addition, the lake is used for special events such as the annual Lake Murray Poker Run and Independence Day celebrations.

There are 15 formal public access sites and 62 undeveloped islands owned by the licensee on Lake Murray. Of these public access sites, two are located in relatively close proximity to the proposed intake facility along with one private marina. Jakes Landing Marina is the closest to the action area with a linear and water travel distance of 1.5 miles. Next is the Lake Murry Public Park located on the southern end of the impoundments Dreher Shoals Dam, with a linear distance of 1.9 miles and a water travel distance of approximately 2.0 miles. The Lake Murray Dam North Recreation site lies at the northern end of the Dreher Shoals Dam and is approximately 3.5 miles from the City's raw water intake facility.

Environmental Effects

Construction activities associated with the proposed action would not be within the lake itself as the existing intake facility would only be modified through the replacement of two of the raw water intake pumps within the pump station building. The construction activities involving the placement of a new secondary conveyance pipe, which would convey water from the raw water intake facility to the City's water

treatment plant, would be conducted on land with the potential of some minor turbidity increase from stormwater runoff even with best management practices implemented.

The installation of a finer spaced intake screen as recommended by the National Marine Fisheries Service and the South Carolina Department of Natural Resources, would be based at the existing raw water pump station and would not affect Recreation Resources.

Water level fluctuation can affect recreation use in a variety of ways through changes in water depth and surface acreage. Changing water levels may positively or negatively affect factors such as water access, safety, aesthetics, and crowding (Platt, 2000). As described in Section 6.3.2, *Water Quantity, Environmental Effects*, the proposed action would not affect water levels in Lake Murray and as such, the proposed action would not affect recreational opportunities or quality of recreation on Lake Murray.

6.3.7 Cultural and Historic Resources

Affected Resources

Under the National Historic Preservation Act of 1966, the National Register of Historic Places (NRHP) houses the formal repository of information pertaining to historic structures and districts determined to be worth preservation. A review of data available from the South Carolina State Historic Preservation Office (South Carolina SHPO) website, Public View, and Subscriber View, identifies one eligible structure (Site 0995), which is a house located approximately one-third of a mile from the raw water intake facility (South Carolina DAH, 2022: Source: https://scdah.sc.gov/). Sites 1002 and 1003 are buildings that are not eligible (see Figure B-2 in Appendix B).

The City provided its findings to the South Carolina SHPO as part of consultation under section 106 of National Historic Preservation Act on March 30, 2022. Upon review, the South Carolina SHPO provided concurrence with the City's findings that none of the properties listed in or eligible for listing in the National Register of Historic Places would be affected by this proposed action.

Environmental Effects

There is one structure listed within a one-mile radius of the proposed action. This being Site 0995, circa 1889 house located at 434 Pilgrim Church Road. There is no indication that the proposed action would have any effect on this historic structure given that the raw water intake facility, an existing conveyance pipe, and the water treatment plant were previously constructed and currently operating at an intake volume previously approved. The proposed action would have no effect on this historic structure.

Concerning the potential to encounter new archeological materials during construction, it appears unlikely since the proposed larger conveyance line would be installed in the same previously disturbed route as the current conveyance line. The site has been previously disturbed, therefore no direct effects to archaeological resources are anticipated. However, the South Carolina SHPO's concurrence letter dated April 5, 2022, includes a standard discovery clause, which should be included in the Commission's approval of the proposed action. This clause exerts that if a previously undiscovered historic property is discovered during construction, operation, and/or maintenance of the proposed facilities within the project boundary, the applicant would cease all activity at the construction site immediately and contact the licensee, who would then follow the provisions of the Historic Properties Management Plan (HPMP) for the Saluda Hydroelectric Project.

No direct effects to resources of archaeological value are anticipated to result from the implementation of the proposed action. Additionally, no direct or indirect, permanent, or temporary effects to historic structures or districts are expected to occur as a result of the implementation of the proposed action.

6.3.8 Aesthetic Resources

Affected Environment

Lake Murray is the fifth largest lake in South Carolina at approximately 50,000 acres. It is located near South Carolina's capital city of Columbia and supports a large recreation industry. The proposed action would be located within the eastern half of the lake, where shoreline is mostly tree covered and interspersed with development. Development ranges from individual private docks and houses to marinas, landings, and park sites. In this area of the lake, the viewshed includes open water and a few inlets. Manmade structures are common throughout the lake.

Construction activity under the proposed action would be away from the lake shoreline within a narrow-wooded tract owned by the City, where its current water conveyance pipe delivers water from the raw water intake facility along the shoreline, to the existing water treatment plant that is located further from the lake.

The proposed raw water pump replacement would take place within the existing raw water pump station located along the shoreline at a secondary land point within a large cove. The project operates under an approved Land Use and Shoreline Management Plan.[14] The purpose of the shoreline plan is to permit, upgrade, and

[14] Order Approving Land Use and Shoreline Management Plan with Modifications and Amending Exhibit R (107 FERC ¶ 62,273), issued June 23, 2004.

properly maintain structures and facilities to protect Lake Murray's shoreline resources. Permits are required for boat docks, ramps, marine railways, boat lifts, water withdrawals, riprap, shoreline vegetation removal, and retaining walls. The shoreline plan's permitting policy requires an applicant to obtain a permit from the licensee's Lake Management Department prior to beginning any shoreline construction or activity.

Environmental Effects

The City currently operates its existing raw water pump station at a lower withdrawal volume then is requested by its current application. The current application would approve an increase from a maximum of 48 mgd to 72 mgd. Changes to the existing raw water intake facility located on the shore of Lake Murray would only include the replacement of an upgraded pump within the existing building. Further, as required by the NMFS and South Carolina DNR, the screened intake may need to be modified by installing a secondary screen of 0.10 inch spacing to reduce the entrainment of larval fish and eggs. These activities would have no effect on aesthetic resources.

The majority of the work involved with the proposed action would be the proposed installation of a second conveyance pipe that would lay alongside the existing pipe. Installation of this pipe would require the City to excavate a trench from the raw water intake facility to the existing water treatment plant located west of the raw water facility. Excavation for the proposed pipe would lay directly beside the existing pipe and therefore would take place in the previously disturbed area during the installation of the existing pipe. The proposed installation would require excavating approximately 1,650 square feet of soil within the Saluda Hydroelectric Project boundary. Aesthetic effects would most likely occur during the construction of the revised intake screen at the pumpstation and during the excavation of the proposed conveyance pipe. The trench for the pipe is located in a wooded area that would obscure the visual aesthetics of the construction process. Noise related to the pipe installation would be partially muted by the wooded landscape but would still likely be heard by nearby homes. These aesthetic effects would be minor and temporary, and only expected to occur during the trenching of the conveyance pipe and installation of the secondary intake screens. No long-term aesthetic effects are anticipated.

6.3.9 Environmental Justice

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).[15] 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 effects on disadvantaged communities, as well as the accompanying economic challenges of such impacts." The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution.[16] Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.[17]

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

[15] Exec. Order No. 12,898, 59 Fed. Reg. 7629, at 7629, 7632 (Feb. 11, 1994).

[16] *Id.*

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

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

The CEQ 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.[18] 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."

As discussed in section 5.0, *Pre-filing Consultation and Public Involvement* of this EA, there have been opportunities for public involvement during the Commission's environmental review process, although the record does not demonstrate that these opportunities were targeted at engaging environmental justice communities. The Commission's communication and involvement with the surrounding communities began when the Notice of Application for Amendment of License, Soliciting Comments, Motions to Intervene, and Protests was issued on December 8, 2022, which established a 30-day comment period and intervention deadline.

All documents that form the administrative record for these proceedings are available to the public electronically through the Internet on FERC's website (www.ferc.gov). Anyone may comment to FERC about the proceeding, either in writing or electronically. Commission staff has consistently emphasized to the public that all comments receive equal weight by Commission staff for consideration in the EA.

[18] 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/GCEQEJGuidance.pdf.

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 exist when 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 aforementioned 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 percentage of low-income population in the identified block group is equal to or greater than that of the county.

For this project, Commission staff selected Lexington County, South Carolina, 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. Staff chose a 1-mile buffer around the area affected by the proposed action. The proposed action is limited to the disturbance of 1,650 square feet within the project boundary to excavate a trench along the same area as an existing and currently operating conveyance pipe. Replacement of two raw water pumps within the the existing raw water pumpstation would also be a part of the proposed action. Due to the limited disturbance and extent of the proposed action, Commission staff found that a 1-mile buffer around the work area is the appropriate unit of geographic analysis given the limited scope of the proposed amendment and the concentration of project-related effects near the proposed action. For this project Commission staff used 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.

Table C-5 identifies the minority populations (by race and ethnicity) and low-income populations present within Lexington County, South Carolina, the county affected by the proposed action, and census block group[19] within vicinity of the site. According to the current U.S. Census Bureau information and consistent with the 50 percent, meaningfully greater analysis, and low-income threshold criteria described above, no minority or low-income populations are present within the geographic area considered.

6.4 Effects of No-Action Alternative

Under the no-action alternative, the licensee would not allow the City to increase its withdrawal of water from Lake Murry. No-action would be a continuation of today's status quo whereby the City would be limited to the withdrawal of 48 mgd and likely not be able to meet the water demand of the projected population growth of the supported area. Alternative water sources or increases to other withdrawal facilities on the lake could be explored, but at a similar effect on the lake's water supply.

7.0 CONCLUSIONS AND STAFF RECOMMENDATIONS

7.1 Conclusion

Based on our independent review of the licensee's application, comments we received, and our review of the environmental effects of the proposed action, we find that the proposed action would not result in any significant adverse effect on water quantity, water quality, aquatic resources, terrestrial resources, geology and soils, species listed under the Endangered Species Act, recreation resources, cultural resources, aesthetic resources, or environmental justice communities. Localized water quality may experience minor, short-term effects during the construction process, but this would be mitigated by implementation of best management practices. In summary, the licensee's proposal would increase the withdrawal volume at the City's existing raw water intake facility by 24 mgd, and the increased volume would not affect the elevation of Lake Murray nor release of minimum flow from the project. The proposed action would not have any adverse environmental or cumulative effects. The proposed action would not affect the operation of the Saluda Project.

[19] 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.

7.2 Staff Recommendations

Staff recommends that the Commission approve the licensee's application for non-project use of project lands and waters for the proposed increase and associated pump replacement and installation of an additional conveyance pipe, with the following staff recommended measures:

(a) Should any archaeological or historical artifacts be discovered during construction, we recommend that the licensee be required to cease construction activities immediately, implement the HPMP, and consult with the SHPO and Tribes.

(b) Prior to implementing the increased water withdrawal, the licensee should consult with the NMFS and South Carolina DNR regarding the recommended 0.10 inch secondary intake screen installation.

Approval and implementation of the proposed action with these staff recommended measures would have no significant adverse effects on any environmental resources analyzed in this EA. Also, the proposed action would not produce or significantly add to any existing cumulative environmental effects. Based on our analysis, we recommend that the proposed action be approved.

7.3 Finding of No Significant Impact

In conclusion, we find the proposed action would not create any new significant adverse effects on any resource analyzed in this EA and, would not constitute a major federal action significantly affecting the quality of the human environment.

8. LITERATURE CITED

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

9. LIST OF PREPARERS

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

APPENDIX A: STATUTORY AND REGULATORY REQUIREMENTS

Endangered Species Act

Section 7 of the Endangered Species Act of 1973[20] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed endangered or threatened species or result in the destruction or adverse modification of the designated critical habitat of such species. At the Saluda Project, the U.S. Fish and Wildlife Service (FWS) is responsible for consulting on terrestrial species and freshwater aquatic species. The National Marine Fisheries Service (NMFS) is responsible for consulting on anadromous fish species.

FWS's Information for Planning and Consultation (IPaC) report and Official Species List were generated to identify rare, threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitats, in the vicinity of the project.[21] The IPaC report identifies three species that could potentially be affected by the proposed action, two listed as endangered: red-cockaded woodpecker (*Picoides Borealis*), and smooth coneflower (*Echinacea laevigata*); and one candidate species: monarch butterfly (*Danaus plexippus*).

The IPaC Official Species List also lists three migratory bird species protected under the Migratory Bird Treaty Act: Red-headed woodpecker and wood thrush; and the bald eagle which is protected by the Bald and Golden Eagle Protection Act.

Federally listed species under NMFS jurisdiction in South Carolina is the shortnose sturgeon (*Acipenser brevirostrum*) (NOAA, 2020). No critical habitats are designated for this species near the project and shortnose sturgeon has not been documented in Lake Murray.

The licensee's pre-filing consultation provides correspondence from the FWS regarding the amendment to approve the existing water withdrawal facilities. On April 7, 2022, FWS indicated that it had no objection to the proposed action.

---

[20] 16 U.S.C. § 1536(a).

[21] IPaC report dated December 3, 2021, and included as Appendix B of the licensee's September 9, 2022 filing.

Commission staff determined in the EA that no effect to ESA species would result from the proposed action.

National Historic Preservation Act

Under section 106 of the National Historic Preservation Act,[22] and its implementing regulations,[23] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (defined as historic properties or National Register) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

The licensee's filing provides that it conducted a search of the National Register of Historic Places database for potentially affected cultural resources, including buildings, structures, objects, landscapes, archaeological sites, and traditional cultural properties included in, or eligible for inclusion in, the National Register of Historic Places. The licensee's review of data available from the South Carolina SHPO website, Public View, and Subscriber View, indicates the only eligible structure in the vicinity of the intake (within a one-mile radius) is a house (c. 1889) at 434 Pilgrim Church Road (Site 0995) approximately one-third of a mile from the intake. Two additional identified sites in the search are buildings that are not eligible for listing (South Carolina DAH, 2022). Commission staff further searched the database to confirm this finding (South Carolina DAH, 2023). The licensee's filing includes an April 5, 2022 letter from South Carolina Department of Archives and History stating that the SHPO conducted a review of the proposed action and no properties listed in or eligible for listing in the National Register of Historic Places would be affected by the proposed project. The SHPO states that if archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply.[24] Given the above information, we have determined that Commission action on the proposed water withdrawal would have no adverse effect on any historic properties.

---

[22] 54 U.S.C. §§ 306108 et seq..

[23] 36 C.F.R. Part 800.

[24] Commission staff notes that the project's approved HPMP would be implemented as required by the project license.

Tribal Consultation

Under the Commission's Tribal Consultation Policy,[25] consultation with the Catawba Nation was initiated by the licensee's pre-filing consultation. No response from the Tribe was received.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the Magnuson-Steven's Fishery Conservation and Management Act (MSA)[26] requires federal agencies to consult with the Secretary of Commerce regarding action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. Under section 305(b)(4)(A) of the Magnuson-Stevens Act, the National Marine Fisheries Service (NMFS) is required to provide EFH conservation recommendations for actions that would adversely affect EFH.[27] Under section 305(b)(4)(B) of the Act, an agency must within 30 days after receiving recommended conservation measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on EFH.[28] The project does not include any EFH areas and is excluded from further analysis under the MSA.

Wild and Scenic Rivers Act

Section 7(a) of the Wild and Scenic Rivers Act[29] provides that the Commission "shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works on or directly affecting any river which is designated" as a component of the wild and scenic rivers system. The Saluda River is not

---

[25] https://www.ferc.gov/tribalrelations

[26] 16 U.S.C. § 1855(b)(2).

[27] *Id.* § 1855(b)(4)(A).

[28] *Id.* § 1855(b)(4)(B). These measures recommended by the Secretary of Commerce are advisory, not prescriptive. However, if the federal agency does not agree with the recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

[29] 16 U.S.C. § 1278(a).

designated as a wild and scenic river, however a ten-mile section of the Saluda River in Lexington and Richland counties, from below the Lake Murray Dam to the confluence with the Broad River, was designated a State Scenic River in 1991. The proposed action is not within this portion of the river and therefore is excluded from further analysis.

Coastal Zone Management Act

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),[30] the Commission cannot issue a permit for activities within or affecting a state's coastal zone unless the state CZMA program or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification. The project area does not occur within a coastal zone and is therefore excluded from further analysis.

Executive Orders 12898 and 14008

The Commission follows 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).[31] 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."[32]

Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the

---

[30] 16 U.S.C. § 1456(c)(3)(A).

[31] 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 statutory duties.

[32] 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, 2021a).

development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2022).

Commission staff's analysis did not identify any environmental justice communities within a one-mile radius of the proposed action site; as such, Commission staff concludes that approving the water withdrawal would not result in disproportionately high or adverse impacts on any environmental justice communities.

APPENDIX B: FIGURES

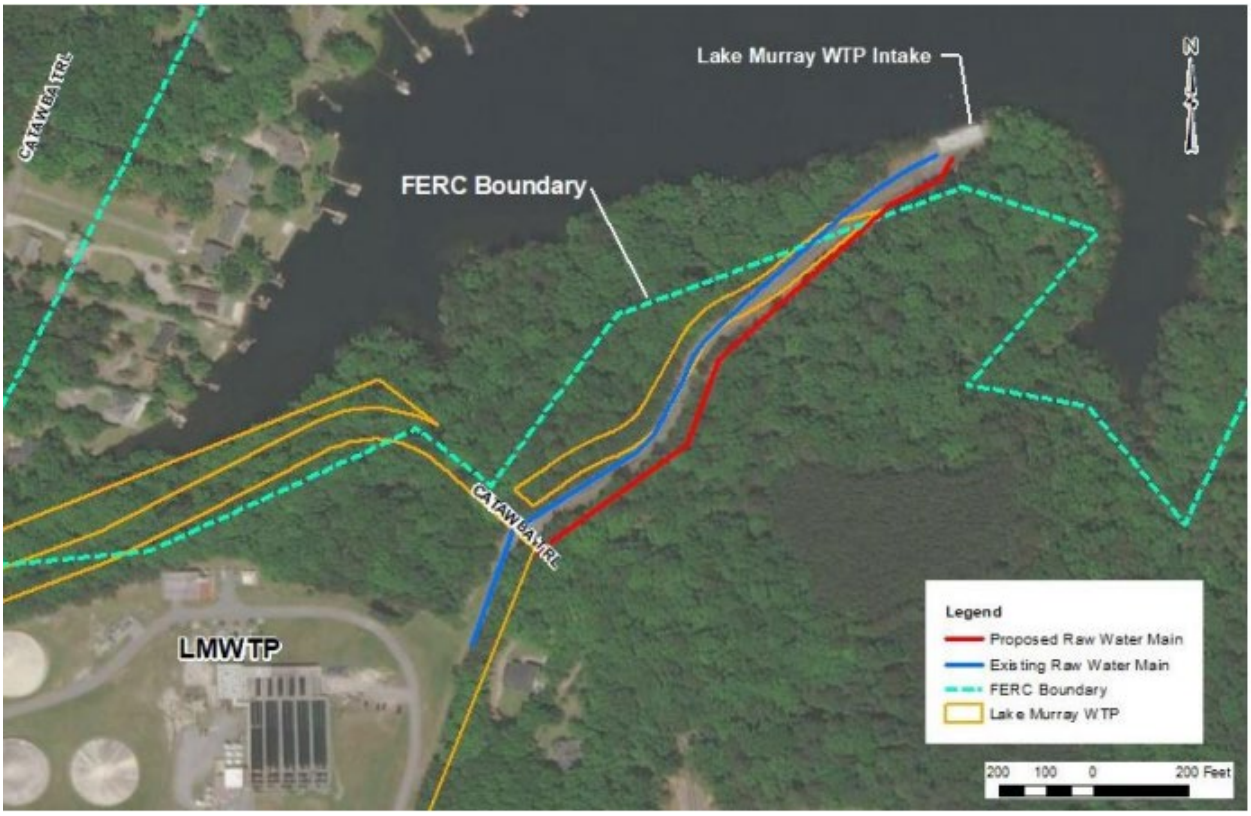

Figure B-1. Location of the City of West Columbia's raw water pump station, existing and proposed pipeline, and water treatment plant on Lake Murray

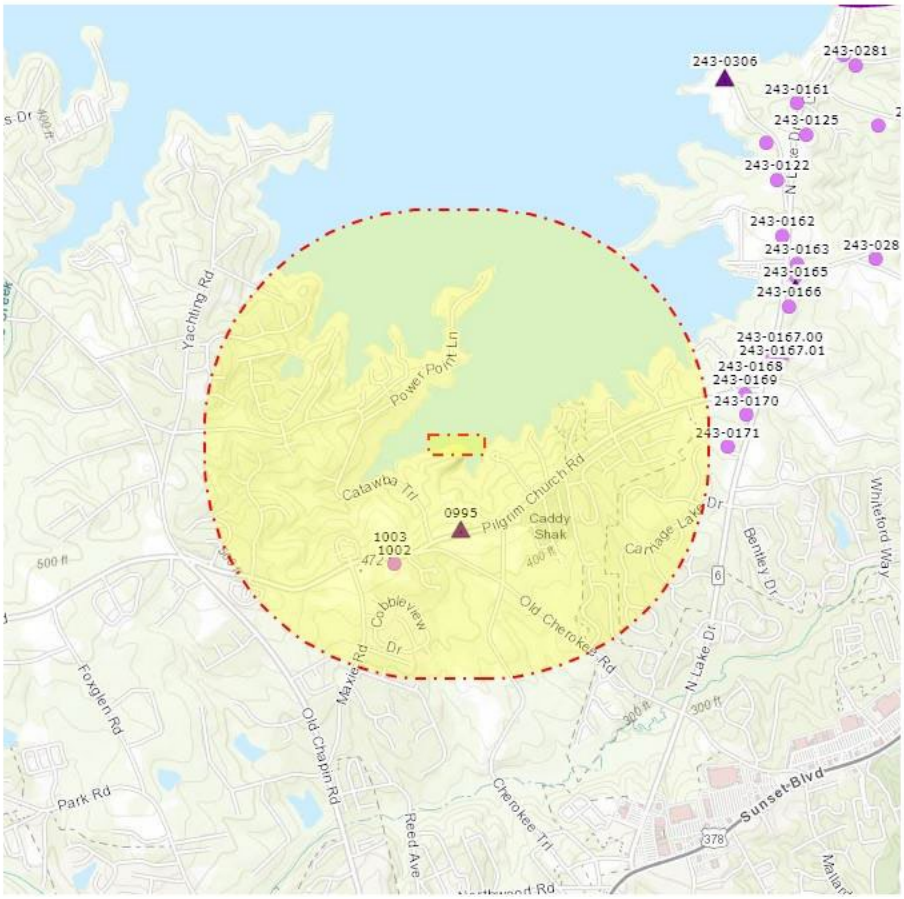

Figure B-2. Cultural Resources Within 1-mile of the Proposed Action

APPENDIX C: TABLES

Table C-1. Summary of existing water withdrawals associated with the Saluda Project reservoir (Source: FERC, 2021 and Dominion Energy South Carolina, 2022).

Permittee	**FERC Approved Withdrawal**	**Current Actual Withdrawal**	**Approved**
City of Columbia	100 mgd	60 mgd	May 12, 1980
City of West Columbia	48 mgd	22.5 mgd	January 23, 1989
City of Newberry	10 mgd	8.1 mgd	October 28, 1998
Newberry County Water and Sewer Authority	6 mgd	2.0 mgd	August 30, 2016
Saluda County Water and Sewer Authority	15 mgd	0 mgd	March 22, 2007
Town of Batesburg-Leesville	5.5 mgd	0 mgd	May 27, 2016 (not yet constructed)
Joint Municipal Water and Sewer Commission	50 mgd	0 mgd	July 20, 2021 (not yet constructed)
Total	**234.5 mgd**	**92.6 mgd**	

Table C-2. Water Quality Monitoring Program for Lake Murray

Parameter	
Field	**Laboratory**
Secchi Depth	Phosphorus, Total (low level)
Temperature	Phosphorus, Orthophosphate (low level)
Dissolved Oxygen	Chlorophyll a
Specific Conductance (@25 0 C)	Total Microcystins & Nodularins
pH	Geosmin
Turbidity	2-methylisoborneol (2-MIB)
Oxididation Reduction Potential (ORP)	Phytoplankton Taxonomy and Biovolume (by flow cytometry)
Chlorophyll a (by fluorometer)	
Phycocyanin (by fluorometer)	

Table C-3. Fish Species Found in Lake Murray (Kleinschmidt, 2020 from Kleinschmidt 2008b)

Family	Species
Amiidae	Bowfin (*Amia calva*)
Atherinidae	Brook Silverside (*Labidesthes sicculus*)
Catastomidae	Spotted Sucker (*Minytrema melanops*), Shorthead Redhorse (*Moxostoma macorlepidotum*), River Carpsucker (*Carpiodes carpio*)
Centrarchidae	Black Crappie (*Pomoxis migromaculatus*), White Crappie (*Pomoxis annularis*), Bluegill (*Lepomis macrochirus*), Dollar Sunfish (*Lepomis marginatus*), Pumpkinseed (*Lepomis gibbosus*), Green Sunfish (*Lepomis cyanellus*), *Lepomis* hybrid (*Lepolmis sp.),* Redbreast Sunfish (*Lepomis microlophus*), Redear Sunfish (*Lepomis microlophus*), Warmouth (*Lepomis qulosus*), Largemouth Bass (*Micropterus salmoides*)
Clupeidae	Gizzard Shad (*Dorosoma cepedianum*), Threadfin Shad (*Dorosoma petenense*), Blueback Herring (*Alosa aestivalis*)
Cyprinidae	Spottail Shiner (*Notropis hudsonius*), Swallowtail Shiner (*Notropis procne*), Coastal Shiner (*Notropis petersoni*), Eastern Silvery Minnow (*Hybognathus regius*), Golden Shiner (*Notemigonus crysoleucas*), Common Carp (*Cyprinus carpio*)
Esocidae	Chain Pickerel (*Esox niger*)
Ictaluridae	Snail Bullhead (*Ameiurus brunneus*), Flatt Bullhead (*Ameiurus platycephalus*), Brown Bullhead (*Ameiurus nebulosus*), Yellow Bullhead (*Ameiurus natalis*), White Catfish (*Ameiurus catus*), Channel Catfish (*Ictalurus punctatus*)
Lepisosteidae	Longnose Gar (*Lepisosteus osseus*)
Moronidae	White Bass (*Morone chrysops*), Striped Bass (*Morone saxatilis*), White Perch (*Morone Americana*)
Percidae	Tessellated Darter (*Etheostoma olmstedi*), Yellow Perch (*Perca flavescens*), Swamp Darter (*Etheostoma fusiforme*)
Poeciliidae	Eastern Mosquitofish (*Gambusia holbrooki*)

Table C-4. USFWS IPaC Endangered Species Act Report List

Name	Species	Status	Designated Critical Habitat
Tricolored bat	*Perimyotis subflavus*	Proposed	No
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No
Monarch Butterfly	*Danaus plexippus*	Candidate	No
Smooth Coneflower	*Echinacea laevigata*	Endangered	No

Table C-5. Minority populations by race and ethnicity and low-income population within one mile of the proposed action

State/County/Census Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW INCOME COLUMN
	Total Population	White Alone, not Hispanic or Latino[a] (%)	Black or African-American[a] (%)	American Indian and Alaska Native[a] (%)	Asian[a] (%)	Native Hawaiian and Other Pacific Islander[a] (%)	Some Other Race[a] (%)	Two or More Races[a] (%)	Hispanic or Latino(any race)[a] (%)	Total Minority Population[c] (%)	Total Households Below Poverty Level[b] (%)
State of South Carolina	**5078903**	**63.1**	**26.0**	**0.2**	**1.6**	**>0.1**	**0.3**	**2.6**	**6.0**	**36.9**	**14.4**
Lexington County	**291723**	**73.4**	**14.9**	**0.2**	**2.0**	**>0.1**	**0.4**	**2.9**	**6.3**	**26.6**	**11.4**
Census Tract 021025, Block Group 1	**1846**	**94.4**	**0.0**	**0.0**	**2.2**	**0.0**	**0.0**	**2.5**	**0.9**	**5.6**	**4.1**
Census Tract 021049, Block Group 1	**2267**	**79.5**	**2.3**	**0.0**	**14.0**	**0.0**	**0.0**	**2.3**	**1.9**	**20.5**	**9.2**
Census Tract 021050, Block Group 1	**2413**	**81.5**	**5.7**	**0.5**	**2.2**	**0.0**	**0.0**	**3.7**	**6.5**	**18.5**	**2.1**

Note: Low-income or minority populations exceeding the established thresholds are indicated in red bold type and blue shading.

a U.S. Census Bureau, 2021a.

b U.S. Census Bureau, 2021b.

c Total Minority Population is the percent of the population that is not categorized as “White Alone (not Hispanic or Latino).

APPENDIX D: LITERATURE CITED

AECOM 2021. Preliminary Engineering Report for Lake Murray Water Treatment Plant Upgrades. October 2021.

Agerton, K.W. and S.E. Baker. 2006. Water Resources of Lexington County, South Carolina. SCDNR Water Resources Report 38.

Alderman, J.M. October 2006. Reconnaissance Survey of the Freshwater Mussel Fauna of the Lower Saluda and Congaree Rivers, Lake Murray, and Selected Tributaries. October 2006.

Aulbach, C.A. December 2018. Survey of Aquatic Plants Lake Murray, SC 2018. December 2018.

Black & Veatch. 2016. Lake Murray Water Treatment Plant Master Plan. Final Report. November 2016.

Council on Environmental Quality (CEQ). 1997. Environmental Justice - Guidance Under the National Environmental Policy Act. Issued December 10, 1997.

Dominion Energy South Carolina (DESC). 2021. 2020 Annual Report on Water Quality and Aeration Operations at the Saluda Project. March 2021.

Dominion Energy South Carolinas, Inc. 2022. Application for Non-Project Use of Project Lands and Waters. Filed on September 9, 2022.

Environmental Protection Agency (EPA). 2022. EJ Action Plan – Building Up Environmental Justice in EPA's Land Protection and Cleanup Programs. EP 502/P-21/001. September 2022.

Environmental Protection Agency (EPA). 2016. Promising Practices for EJ Methodologies in NEPA Reviews - Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee. Issued March 2016.

Federal Energy Regulatory Commission (FERC). 2021. Environmental Assessment for Application for Non- Project Use of Project Lands and Waters. Saluda Hydroelectric Project (FERC Project No. 516-505. July 2021.

Federal Energy Regulatory Commission. 2006. Environmental Assessment for Application for Non-Project Use of Project Lands and Waters. Saluda Hydroelectric Project, FERC No. 516-418. Issued June 9, 2006.

Kleinschmidt Associates (Kleinschmidt). 2020. Environmental Assessment. Dominion Energy South Carolinas, LLC. Application for Non-Project Use of Project Lands and Waters. Saluda Hydroelectric Project (FERC Project No. 516). April 2020.

Kleinschmidt. 2008b. Environmental Report. Saluda Hydroelectric Project (FERC Project No. 516) Environmental Report Exhibit E. August 2008.

National Oceanic and Atmospheric Administration (NOAA). 2023. South Carolina Threatened and Endangered Species and Critical Habitats Under NOAA Fisheries Jurisdiction Threatened and Endangered Species List South Carolina | NOAA Fisheries Accessed December 3, 2021 and December 15, 2023.

South Carolina Department or Archives and History (South Carolina DAH). 2023. Cultural Resources within one mile of the proposed action. Source: https://scdah.sc.gov/about-us

South Carolina Department or Archives and History (South Carolina DAH). 2022. Cultural Resources within one mile of the proposed action. Source: https://scdah.sc.gov/about-us

South Carolina Department of Natural Resources (South Carolina DNR). 2015. State Wildlife Action Plan. https://www.dnr.sc.gov/swap/index.html. Accessed 12/2/2021.

South Carolina Department of Natural Resources (South Carolina DNR). 2013. An Overview of the Eight Major River Basins of South Carolina.

Platt, Jonathan. 2000. Impact of Fluctuating Reservoir Elevation on Recreation Use and Value. U.S. Department of Interior, Bureau of Reclamation. Denver, Colorado. February 2000.

United States Fish and Wildlife Service (USFWS). 2021. National Wetland Inventory. https://www.fws.gov/wetlands/data/Mapper.html. Accessed 11/15/21.

United States Fish and Wildlife Service (USFWS). 2021. Information for Planning and Consultation (IPaC). Report generated December 3, 2021.

United States Fish and Wildlife Service (USFWS). 2023. Information for Planning and Consultation (IPaC). Report generated December 1, 2023.

APPENDIX E: LIST OF PREPARERS

Robert Ballantine, Project Coordinator (Fisheries Biologist. B.S. Fish and Wildlife Biology)