ENVIRONMENTAL ASSESSMENT

Application for Non-Capacity License Amendment

Duke Energy Carolinas, LLC

Catawba-Wateree Hydroelectric Project

FERC Project No. 2232

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

May 2018

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FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF ENERGY PROJECTS
DIVISION OF HYDROPOWER ADMINISTRATION AND COMPLIANCE

1.0 INTRODUCTION

Project Name: Catawba-Wateree Hydroelectric Project

FERC Project No.: 2232

1.1 Application

Application Type:	Non-Project Use of Project Lands and Waters; sediment removal and discharge associated with hydraulic sand mining operation
Date filed:	November 13, 2017
Licensee:	Duke Energy Carolinas, LLC
Water Body:	Lake Rhodhiss
Nearest Town:	Morganton, North Carolina
County & States:	Burke County, North Carolina

1.2 Purpose and Need for Action

On November 13, 2017, Duke Energy Carolinas, LLC (licensee or Duke Energy), licensee for the Catawba-Wateree Hydroelectric Project, FERC Project No. 2232, filed an application requesting Federal Energy Regulatory Commission (Commission) authorization to allow Carolina Sand Inc. (Carolina Sand) the use of Catawba-Wateree Hydroelectric Project lands and waters for year-round hydraulic sand mining and discharge of water. This proposed site has been used for sand mining in the past, so no construction would be necessary, and the licensee does not anticipate the need for any operational modifications to accommodate the request. Mined sand is used in asphalt for road construction, snow and ice control, in concrete, as backfill for construction, and in landscaping. The location of the proposed action is on a project reservoir, Lake Rhodhiss. The only physical components to exist within the project boundary would be a hydraulic dredge on a barge in the reservoir, a portion of a pipeline, and the dredge access area. The project boundary includes the area within the full pool elevation of the project

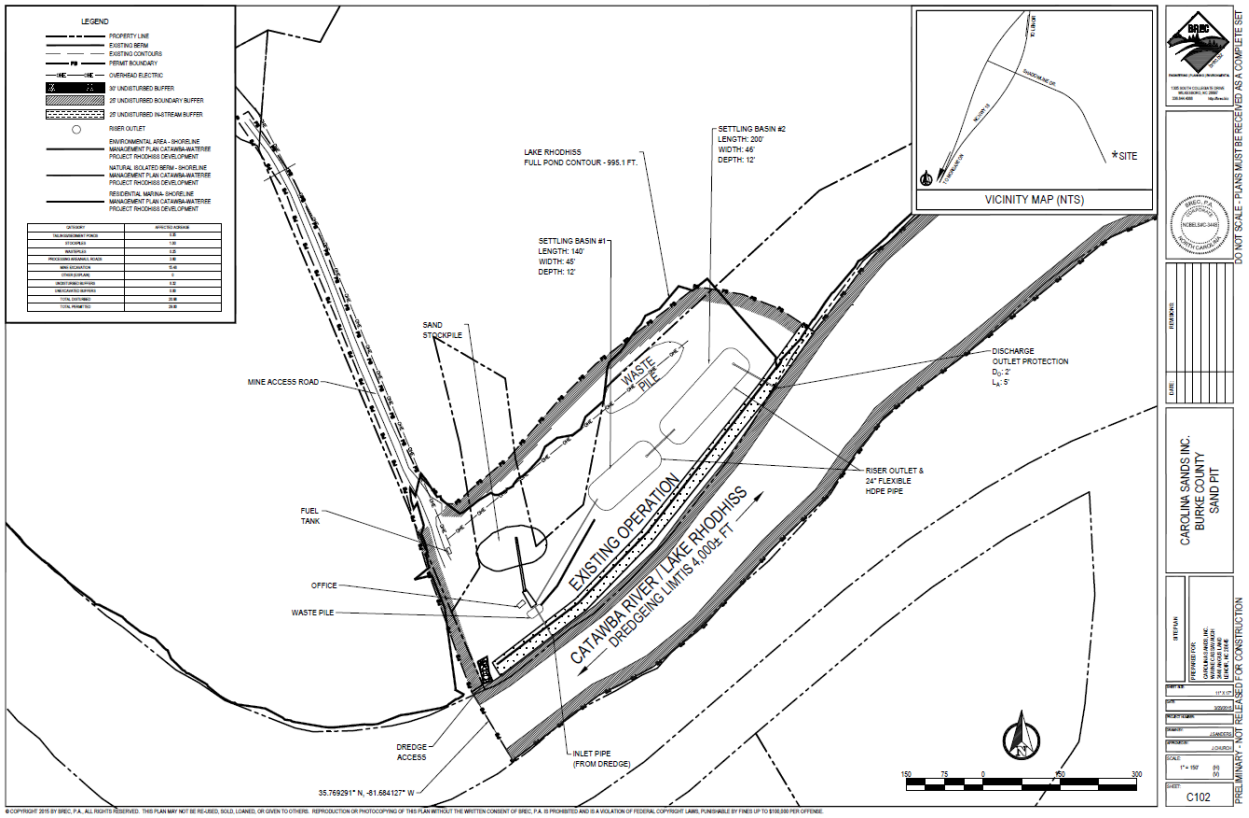

Figure 1. Proposed sand mining site location (source: Duke Energy Carolinas, LLC's November 13, 2017 filing with the Commission).

reservoir. The full pool elevation of Lake Rhodhiss is 995.1 feet mean sea level,[1] which does not include the processing area (Figure 1).

This Environmental Assessment (EA) analyzes the environmental effects of the licensee's proposed action, to authorize a non-project sand mining operation, and provides a basis for the Commission to make an informed decision on the licensee's November 13, 2017 request.

1.3 Statutory and Regulatory Requirements

Clean Water Act

Under section 401 of the Clean Water Act, non-federal applicants seeking federal approval to use state waters or waterways must obtain either certification from the appropriate state water pollution control agency, verifying compliance with the Clean

[1] Unless otherwise specified, all elevations referred to in this document are relative to mean sea level.

Water Act, or a waiver of certification by the appropriate agency. The proposed action is located in North Carolina; therefore, the North Carolina Department of Environmental Quality (North Carolina DEQ) is the appropriate state water pollution certifying agency to act on the Carolina Sand's request. By letter dated February 24, 2017,[2] the North Carolina DEQ indicated that Carolina Sand should instead obtain a permit from the U.S. Army Corps of Engineers (Corps).

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged or fill material into waters of the United States. Activities in waters of the United States regulated under this program include fill for development, water resource projects, infrastructure development, and mining projects. The Corps issued a permit for the proposed action on May 19, 2017 that expires on March 18, 2022.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in any adverse modification of the critical habitat of such species. Eight federally-listed species are known to occur or potentially occur in the Catawba-Wateree project area and downstream in the Wateree River. These species include the threatened dwarf-flowered heartleaf, wood stork, American alligator, and bog turtle; and the endangered Schweinitz's sunflower, Carolina heelsplitter, shortnose sturgeon, and Atlantic sturgeon. No critical habitat has been designated for federally listed species within the Catawba-Wateree Project area. As there is no proposed construction, the proposed action is unlikely to adversely affect the terrestrial dwarf-flowerd heartleaf and Schweintz's sunflower. Similarly, American alligator, wood stork, Shortnose sturgeon, Atlantic sturgeon, and Carolina heelsplitter have historically limited occurrences in the lower Catawba-Wateree developments. As they have not been recorded at the Rhodhiss development, the proposed action is not likely to adversely impact these species. The bog turtle has been observed in Bristol Creek, a tributary of Lake Rhodhiss that enters the lake upstream of the reservoir and outside the zone of operational influence. This, combined with the bog turtle's preferential wetland habitat type not occurring near the proposed dredging location, makes adverse effects unlikely. The robust redhorse, which is under review for listing, also has a historic range overlapping the proposed mining area; however, there are no recent observations. By letter dated March 9, 2017,[3] the U.S. Fish and Wildlife Service (FWS) concluded that the proposed action would not adversely impact any federally-listed species.

[2] The North Carolina DEQ's letter is included in the licensee's November 13, 2017 filing.

[3] The FWS' letter was included in the licensee's November 13, 2017 filing.

The Mining Act of 1971

Article 7 of the Mining Act of 1971 requires any entity seeking to extract minerals by mining to do so in such a way as to minimize its effects on the surrounding environment, and to conduct proper reclamation of mined land to prevent undesirable land and water conditions that would be detrimental to the general welfare, health, safety, beauty, and property rights of North Carolina citizens. The North Carolina Department of Environment and Natural Resources (North Carolina DENR) issued a permit allowing the proposed action on March 3, 2005. The permit expires on September 2, 2021. The permit included authorization to use hydroxyl-chlorosulfate, which acts as a coagulant to solidify sediment and reduce turbidity, prior to discharging water; however, the licensee's application does not indicate that any chemicals would be added to discharge water and the 404 permit does not authorize discharge of any such chemical. As such, this Environmental Assessment will not consider the use of hydroxyl-chlorosulphate.

National Historic Preservation Act

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

By letter dated March 15, 2017,[4] the North Carolina Department of Natural and Cultural Resources' State Historic Preservation Office indicated that no known historic or cultural resources would be affected by the proposed action.

2.0 PROJECT DESCRIPTION

2.1 Catawba-Wateree Hydroelectric Project Description

The Commission issued a license for the Catawba-Wateree Hydroelectric Project to Duke Energy on November 25, 2015.[5] Commission staff issued a Final Environmental Assessment on July 23, 2009 that considered relicensing the project. The following description of the Catawba-Wateree Project is from that Final Environmental Impact Statement describes and the operation of the Rhodhiss development.

[4] The North Carolina State Historic Preservation Office' letter is included in licensee's November 13, 2017 filing.

[5] Order Issuing New License (153 FERC ¶ 62,134).

The Catawba-Wateree Hydroelectric Project lies on the east side of the Blue Ridge Mountains in North and South Carolina (Figure 2). The project is located on an approximately 300-mile stretch of the Catawba River, a major tributary of the Wateree River. The Catawba River drains a portion of the eastern slopes of the Blue Ridge Mountains in western North Carolina and some of the Piedmont area of North Carolina and South Carolina, including most of the urban area of Charlotte, North Carolina. The Catawba River merges with several creeks south of Great Falls, South Carolina, including the Big Wateree Creek, to form the Wateree River, which drains the sandhills and upper Coastal Plain of South Carolina. The watershed upstream from Wateree Dam is about 4,750 square miles in size. Below the Wateree Development, the Wateree River flows for 77 miles to its confluence with the Congaree River to form the Santee River, which flows into Lake Marion, then continues southeast to the Atlantic Ocean.

The eleven project developments include, from upstream to downstream: (1) Bridgewater at river mile (RM) 279.6; (2) Rhodhiss at RM 248.0; (3) Oxford at RM 230.0; (4) Lookout Shoals at RM 220.3; (5) Cowans Ford at RM 186.9; (6) Mountain Island at RM 171.5; (7) Wylie at RM 143.5; (8) Fishing Creek at RM 104.8; (9) Great Falls and Dearborn at RM 101.5; (10) Rocky Creek and Cedar Creek at RM 99.3; and (11) Wateree at RM 76.85.

The Rhodhiss Development includes a reservoir, dam, powerhouse, and transmission line. The reservoir, Lake Rhodhiss, is 2,724 acres at normal maximum elevation 994.1 feet, and has a full pond elevation of 995.1 feet. Lake Rhodhiss has 7,097 acre-feet of usable storage between the normal maximum (994.1 feet) and normal minimum (990.1 feet) reservoir elevations. Rhodhiss Dam is 72 feet high by 1,517 feet long, and consists of, from left to right: (1) a left non-overflow section; (2) a concrete powerhouse intake section with three intakes protected by trashracks; (3) an 800-foot-long ungated ogee spillway section with a crest elevation of 995.1 feet; (4) a right concrete non-overflow section; and (5) an earthen embankment non-overflow section extending to the right bank. The licensee owns five project recreation sites at the Rhodhiss Development, which are managed cooperatively with North Carolina Wildlife Resources Commission (North Carolina WRC) and the Town of Sawmills, North Carolina. These sites provide amenities for boating and fishing. The licensee also operates and maintains a canoe portage around Rhodhiss Dam.

2.2 Rhodhiss Development Operation

The authorized installed capacity for the Rhodhiss Development is 32.335 megawatts. The target operating elevation for Lake Rhodhiss is 992.1 feet, plus or minus 2 feet. All flows are released through the generating units. The maximum full pond water surface elevation is 995.1 feet, after which water begins to spill over the ungated

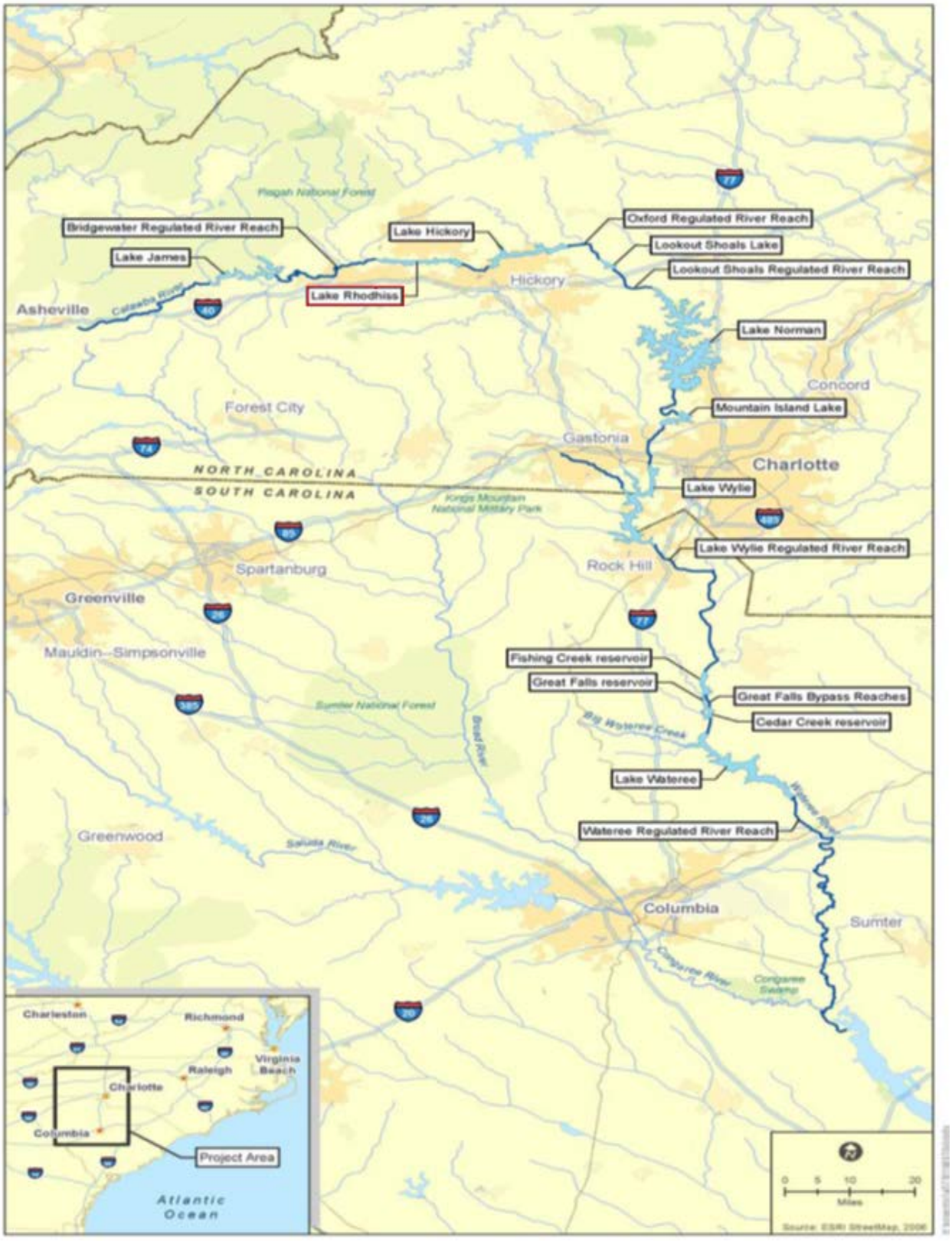

Figure 2. General vicinity of the Catawba-Wateree developments.

spillway. The licensee operates one of the facility's generating units at efficiency load, at least once per day, to provide the development's minimum average daily flow requirement of 225 cubic feet per second (cfs). The development's continuous minimum flow requirement of 40 cfs is met through wicket gate leakage during times of non-generation.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Description of Licensee's Proposal

A. Proposed Action

The licensee requests that the Commission approve a non-project use of project lands and water, to authorize Carolina Sand to conduct hydraulic sand mining in Lake Rhodhiss. The proposed location has been used for sand mining activities by other entities in the past, but is not currently in operation. As such, no construction activities are being proposed. The proposed action would only include the maintenance and operation of the site.

The sanding mining operation would entail the hydraulic dredging in approximately 18.715 acres of Lake Rhodhiss, using barge access. Dredging would occur within a 4,000-foot segment of Lake Rhodhiss, where Catawba River enters Lake Rhodhiss. Carolina Sand anticipates removing an average of 33,000 tons, approximately 25,385 cubic yards, of sand annually. The dredge would pump sand to a processing area outside of the project area (Figure 1). The dredge would suction sand and water from the bottom of the river to be transported via preexisting 30 to 36-inch corrugated pipeline to the processing area, where it would be screened and sorted for removal and distribution. Excess water would be processed through settling ponds to remove sediment, eliminating turbidity, allowed to settle in settling ponds, and then returned to Lake Rhodhiss via pipeline. The settling ponds would be located near the processing area, outside of the Catawba-Wateree project boundary. The licensee would return water at a preexisting location at a rate of 8 cfs. Access to the proposed mining site would use existing roadways, North Carolina Highway 18 via Shadowline Drive.

B. Proposed Environmental Protection Measures

The licensee's application indicates that Carolina Sand will comply with the consulted agencies' recommendations and conditions attached to any pertinent permits or approvals. The North Carolina WRC, on October 24, 2016 and November 30, 2016, recommended that Carolina Sand implement measures to prevent erosion at the settling pond outlet and maintain riparian vegetation buffers to ensure that the river does not widen at or near the dredging location. The North Carolina WRC also requests that the

banks associated with mining activities be stabilized using native woody vegetation, and that any woody vegetation removed for project purposes be relocated immediately outside the mining project area to serve as wildlife habitat. Moreover, the North Carolina WRC indicates that the sand mining site must be reclaimed when the mining operation is inactivated or terminated.

The North Carolina WRC also outlined how mining operations should be modified to maintain boater safety in the area. Signs would be placed on the banks upstream and downstream of the dredging operations, and dredging operations would only occur during daylight hours. When boaters are present during dredge operations, dredge operations would be suspended and the dredge would move toward the bank to allow boaters to pass. When the dredge is not operating, all equipment would be moved toward the bank to avoid impeding boat traffic and any equipment left in the river would be marked with reflective floating buoys. These recommendations are also conditions of the North Carolina DENR's March 3, 2005 Mining Act of 1971 permit. The North Carolina DENR's permit also stipulates that the cables extending from the dredge to the bank should remain out of the water, at least 8 feet above the water level to be easily avoidable by river traffic, except immediately prior to moving the barge when slack is necessary. The cables must also be marked in a highly visible manner. Conversely, the cables extending from the dredge to the anchor system must be at least 3 feet under water and marked by buoys. No dredging is permitted at any time when the water level exceeds three feet above normal, when currents are higher and more likely to impact small craft maneuverability.

For the protection of fish spawning in Lake Rhodhiss, the North Carolina DNER's March 3, 2005 mining permit requires that sand mining operations must cease between April 1 and May 31 annually, unless absolutely necessary. Prior to conducting mining activities during this time period, Carolina Sand must obtain a variance from the North Carolina DNER. While other agencies require a riparian buffer of 25 feet, the North Carolina DNER's permit specifies a 30-foot riparian buffer. Similarly, the North Carolina DNER's permit requires a 25-foot buffer between any mining activity and any permit boundary, right-of-way, or other source to protect adjacent property. The mining permit also includes the approval of a reclamation plan. The reclamation plan requires that the mining site be returned to natural conditions upon the inactivation or termination of dredging activities.

On March 9, 2017, the FWS provided recommendations that were consistent with the North Carolina WRC's erosion prevention measures. The FWS also recommended that Carolina Sand comply with the licensee's Shoreline Management Plan.[6] Additionally,

[6] Order Modifying and Approving Updated Shoreline Management Plan (159 FERC ¶ 62,177), issued May 17, 2017.

the FWS recommended contributions to the Habitat Enhancement Fund, a cooperative initiative by the licensee, the North Carolina WRC, and the South Carolina Department of Natural Resources to provide an effective means of allowing continued private recreational access while providing meaningful habitat creation, enhancement and protection activities for fish and wildlife adjacent to the Catawba-Wateree River and its reservoirs.

On December 15, 2016, the North Carolina DEQ noted that the proposed action must comply with the Burke County local riparian buffer ordinance, and mining operations must be conducted in a manner as to prevent any significant increase in turbidity, not to exceed 25 Nephelometric Turbidity Units (NTUs). The North Carolina DEQ stated that the mining activities are necessary to remove excess sediment from the reservoir, but reiterated the requirement to eliminate turbidity from dredged water before returning it to the reservoir.

By letter dated February 28, 2017, the Catawba Indian Nation indicated that it had no immediate concerns with the proposed mining activities impacting traditional cultural properties, sacred sites, or Native American archaeological sites; however, it instructed the licensee is to notify the Catwaba Indian Nation's Tribal Historic Preservation Office if any Native American artifacts or human remains are discovered. On March 14, 2017, the North Carolina Department of National and Cultural Resources (North Carolina DNCR) also indicated that it did not anticipate that the proposed action would impact any historic or culture resources. As such, it did not recommend any protection measures.

3.2 No-Action Alternative

Under the no-action alternative, the Commission would deny the licensee's application made on behalf of Carolina Sand. The licensee would not authorize sand mining in Lake Rhodhiss. Under this alternative, the existing sand mining location would remain dormant, and no potential impacts to the aquatic habitat or riparian zone would occur. Conversely, no reclamation of the sediment processing site would be required, and the licensee would be required to seek alternative actions towards its partnership with the Muddy Creek Watershed Restoration Initiative, which is committed to reducing sediment loads in Lake Rhodhiss.

3.3 Other Action Alternatives

The licensee's application does not consider other action alternatives. Carolina Sand may have considered other dredging locations, within Lake Rhodhiss or in other area reservoirs. As with the no-action alternative, the use of an alternative location would result in the existing sand mining site on Lake Rhodhiss remaining dormant. The proposed location would not be subject to the North Carolina WRC's recommendation to

reclaim the sand mining site once mining activities are inactivated or terminated. Moreover, any new mining location would require significant land-disturbing activities to become operational whereas the proposed action would utilize an existing, abandoned site. For these reasons, the use of an alternative location is not an action requiring further consideration.

4.0 AGENCY CONSULTATION AND PUBLIC INVOLVEMENT

4.1 Licensee's Pre-filing Consultation

Prior to filing its November 13, 2017 application with the Commission, Carolina Sand consulted with the FWS, Corps, Catawba Indian Nation, North Carolina State Historic Preservation Office, North Carolina DNCR, North Carolina DEQ, North Carolina WRC, North Carolina DENR, Burke County Building Standards and Code Enforcement, and Burke County Health Department on numerous occasions since April 10, 2014. The FWS, North Carolina DEQ, and North Carolina WRC expressed concerns regarding potential impacts of the mining activities, and the North Carolina DNCR specifically questioned whether the robust redhorse may be affected by the proposed action. The November 13, 017 filing addresses the agencies' concerns and clarifies that robust redhorse is not known to frequent the area of the proposed action, as determined by a study conducted by an independent consultant. The Catawba Indiana Nation instructed the licensee to notify it if human remains or artifacts are discovered, which the licensee agreed to do.

Also prior to the licensee filing the application, Carolina Sand obtained a section 404 permit from the Corps on May 9, 2017, a mining permit from the North Carolina DENR on April 20, 2000, and a Certificate of Coverage from the North Carolina DENR on October 1, 2015.

4.2. Commission's Public Notice

On December 13, 2017, the Commission issued a public notice of the licensee's November 13, 2017 non-project use application, establishing January 12, 2018, as the deadline for providing comments and interventions. No comments or motions to intervene were received.

5.0 ENVIRONMENTAL ANALYSIS

In this section of the EA, the affected environment in each resource section is presented based on the licensee's November 11, 2017 application, and the Commission's Final Environmental Impact Statement for relicensing the Catawba-Wateree Hydroelectric Project, issued July 23, 2009. Staff analysis of probable impacts from the proposed action then follows in the second part of each resource section under Environmental Effects.

5.1 General Area Description

The Catawba-Wateree Project area and the surrounding region can be characterized generally as rolling hills, with elevations ranging from 1,200 feet mean sea level (ft msl) at the Bridgewater Development, to approximately 80 ft msl at the confluence of the Wateree and Congaree Rivers, which is the downstream terminus of the project's operational influence. The Bridgewater, Rhodhiss, Oxford, and Lookout Shoals Developments are located within the Piedmont of North Carolina. The Piedmont Province is located between the Blue Ridge scarp to the west and the Fall Line to the east, descending gradually in elevation to 600 to 800 ft at the Fall Line. The terrain is composed of gently rolling, well-rounded hills, and long, low ridges. The Piedmont was intensively farmed in the past, and former agricultural fields are in various stages of succession or have been converted to managed pine plantations. The Piedmont portion of the watershed is more extensively developed than the Blue Ridge scarp region. Considerable development is centered around the city of Charlotte, with additional development clustered in and around the cities of Morganton, Hickory, Mooresville, and Gastonia in North Carolina, and Rock Hill, and Lancaster in South Carolina. The forested areas bordering Catawba-Wateree developments have been logged or burned at least once and consist of secondary growth. Land use within the Catawba River Basin varies greatly, but is generally a mix of timber harvesting, forest, agricultural, and developed lands.

The Catawba-Wateree Project is operated as a coordinated, "stair-step" system and flows released from the upstream Catawba-Wateree Project developments in turn influence the water level, quality, and aquatic resources of the downstream developments. This influence is felt throughout the length of the Catawba-Wateree Project to the confluence with the Congaree River in South Carolina. Operations are primarily based on prevailing hydrologic conditions, license requirements, and regional power needs.

5.2 Resource Area Descriptions and Analysis

A. Geology and Soils

Affected Environment

The Rhodhiss Development is located in North Carolina's Inner Piedmont belt. Rock units mapped in the vicinity of the developments include a variety of medium- to coarse-grained types that include granitic gneiss, augen gneiss, biotite gneiss, mica schist, garnet mica schist, sillimanite-mica schist, Toluca granite, amphibolite, ultramafic rocks, quartz-feldspar gneiss, and pegmatite. In general, soils within the Catawba-Wateree Project are well-drained, clayey or loamy soils and subsoils formed from the weathering of metamorphic or igneous rocks such as granite, gneiss, and schist.

Alluvium in the area consists of sand and silt deposits in the flood plains of major streams. Historically, the river has carried a heavy sediment load, as evidenced by the numerous mid-channel islands found in the Piedmont and Coastal Plain sections of the river. Land use has been a major factor in affecting the sediment yield of the river. Each of the 11 reservoirs along the Catawba-Wateree Project operates as a silt trap, disrupting the normal stream sediment continuity.

Environmental Effects

Because the proposed action would not involve new construction or significant ground-disturbing activities, we have not identified substantive issues related to geology or soils. The Shoreline Management Plan and complying with the proposed riparian buffers would minimize the potential for shoreline erosion in the affected area. Sedimentation in the project reservoirs is a concern at all Catawba-Wateree developments as a result of the current geologic and land use conditions. As such, the removal of sediment from project reservoirs is generally considered beneficial and is encouraged by the Muddy Creek Watershed Restoration Initiative, which is committed to reducing sediment loads in Lake Rhodhiss.

B. Water Quality

Affected Environment

Reservoir water quality is determined by several factors including the water quality of inflows, hydraulic retention times, reservoir depth, depth at which water is withdrawn in a reservoir, and land uses adjacent to the reservoir. Natural thermal stratification in Lake Rhodhiss is negligible as a result of its short water retention time. The North Carolina Department of Water Quality (North Carolina DWQ) sampled Lake

Rhodhiss in 2007 and determined it to have elevated nutrient concentrations, be eutrophic, and have high productivity conditions (North Carolina DWQ, 2008). Algal blooms dominated by blue-green algae have occurred in the upper arm of the lake and near the dam in the summer. The 2007 assessment also noted high pH levels in Lake Rhodhiss, which the North Carolina DWQ attributed to the algal blooms.

Environmental Effects

Under the proposed action, Carolina Sand would remove sediment from the reservoir. The dredged water would not be chemically treated in any way before being returned to the reservoir, though it would be retained in existing settling ponds until an acceptable turbidity level is achieved. While the targeted sand is not nutrient-rich, it may demonstrate minor improvements to nutrient loading. Otherwise, no measurable adverse impacts to water quality are anticipated.

C. Aquatic Resources

Affected Environment

During relicensing proceedings, Duke Energy conducted mapping of primary shallow aquatic habitat types in Lake Rhodhiss using hydroacoustic and LiDAR technologies as well as habitat sampling along survey transects. Habitat types were classified into seven categories: cobble, riprap and piers, vegetation and tributary confluence, mud flats, sand, clay, and woody debris. Along the 153 miles of Lake Rhodhiss shoreline, clay and vegetation and tributary confluence were the most abundant habitat types, comprising 47 percent and 27 percent of the surveyed area respectively. The vegetation and tributary confluence category was considered to add considerable habitat complexity for fish habitat. Other habitat types were nearly an order of magnitude less abundant.

Duke Energy conducted creel surveys, fish health assessments, electrofishing surveys, and hydroacoustic and purse seine sampling surveys from 1993 through 1997 to characterize fishery resources throughout the project area (Duke Energy, 2003). While survey results varied between years, species diversity typically remained around 30 species. Striped bass constituted the largest percentage of total sport fish harvest by weight, and threadfin and gizzard shad were among the most abundant littoral forage fish in Lake Rhodhiss. The surveys did not yield any observations of robust redhorse, Carolina redhorse, or highfin carpsucker. While these are not federally-listed species, they are comparatively rare among sucker populations. The robust redhorse is state-listed as endangered, and the Carolina redhorse is threatened (North Carolina WRC, 2017). Habitat modification appears to be a primary factor affecting the decline of sucker species, specifically the robust redhorse. Watershed disturbances that result in erosion

have had a negative effect on the species by increasing sediment load to streams which bury gravel substrate essential to robust redhorse for spawning and larval development. Freshwater mollusks are a major source of food for the redhorse and also are sensitive to sedimentation; many native populations of freshwater mussel species are in decline through much of their range.

Duke Energy conducted freshwater mussel surveys of all project reservoirs in 2004 (Alderman Environmental Services, Inc., 2005). Eight species were collected in the Rhodhiss development, including the Eastern elliptio, variable spike, Carolina lance, Atlantic spike, brook floater, Eastern floater, Eastern creekshell, and the notched rainbow. The Eastern elliptio dominated the collection with nearly 82 percent of the total catch. All of the individuals were collected from Warriors Fork, Johns River, and the regulated river reach. Warriors Fork enters Lake Rhodhiss approximately 2,000 feet upstream of the proposed sand mining site. The Eastern floater was the only species not collected in Warriors Fork. Of the observed species, the brook floater is a federal species of special concern. The brook floater is considered endangered in North Carolina, and the notched rainbow is a North Carolina species of special concern. Duke Energy prepared species protection plans for each sensitive mussel species during its relicensing process, and the proposed action does not contravene the protection measures.

Three aquatic invasive plant species have been documented at the Catawba-Wateree Project: hydrilla, parrotfeather, and Brazilian elodea. While no observations of these species in Lake Rhodhiss have been reported, parrotfeather and Brazilian elodea are known to occur in Lake Hickory, the next reservoir downstream from Lake Rhodhiss. Conversely, hydrilla has been documented in Lake James and is likely a larger threat as it is more likely to spread downstream to Lake Rhodhiss.

Environmental Effects

The proposed mining operations would impact 18.715 acres of the 2,724-acre Lake Rhodhiss or approximately 0.7 percent. While sandy substrate is proportionately rare in Lake Rhodhiss, the affected area is relatively small, and does not include any essential fish habitat. Moreover, there are no fish species of special concern known to occur in the project reservoir. Regarding mussel populations, impacts to aquatic habitat should be localized, and any minor increases in turbidity should not impact Warriors Fork as its confluence is upstream of the sand mining site. No other known mussel habitat exists in or near the area of impact. The non-impacted habitat in Lake Rhodhiss appears to be more complex and beneficial for both mussels and warm water fisheries. Accordingly, the proposed action should not have any significant impacts on fish habit or mussel populations.

Should hydrilla spread downstream to Lake Rhodhiss, the proposed sand mining site, located on the upstream end of the reservoir, would be one of the first locations to be impacted. Dredging activities may fragment hydrilla, aiding in its spread; however, it may also remove hydrilla and provide an opportunity for early detection if the sand mine operators are made aware of the threat and how to identify it. As hydrilla has not yet been reported in Lake Rhodhiss, Commission staff finds that the proposed action is not likely to adversely affect aquatic resources.

D. Terrestrial Resources

Affected Environment

Most of the Catawba-Wateree Hydroelectric Project is located within the Piedmont Province of North Carolina, including the Rhodhiss Development. The original forested areas bordering Catawba-Wateree developments have been logged or burned at least once and consist of secondary growth. Within 1 mile of each of the developments, varying degrees of forest clearing have occurred for private residential or commercial development. Forested wetlands dominated the Rhodhiss Development (139.6 acres) and are characterized by river birch, green ash, and black willow. Two scrub/shrub wetlands have been identified within the Rhodhiss Development, each dominated by different plant communities; one is primarily a mix of tag alder and buttonbush while the other is principally comprised of green ash and black willow (8.2 acres). One emergent wetland was characterized as a mixture of wool-grass, soft rush, and *Panicum* grass (9.1 acres) and appeared to be a result of relatively recent sediment accretion from nonproject-related disturbances on upstream tributaries that feed into Lake Rhodhiss. Three invasive species, Chinese privet, Japanese honeysuckle, and Vietnamese grass are likely to occur in the in or near the proposed sand mining area. These species grow and spread rapidly, and they may overtake native species, particularly after land-disturbing activities.

Two federally-listed terrestrial plant species have been documented in the Catawba-Wateree project boundary: Schweinitz's sunflower (*Helianthus schweinitzii*, endangered) and dwarf-flowered heartleaf (*Hexastylis naniflora*, threatened). Neither have been documented near the impacted area of the proposed action. Schweinitz's sunflower has been found along the Mountain Island bypassed reach, and dwarf-flowered heartleaf has been found at Paddy Creek, Linville Dam, and near Lake Hickory. A North Carolina state-listed threatened species, ovate-leaved catchfly (*Selene ovata*) has previously been documented in the Catawba-Wateree project area; however, there are no known occurrences at the Rhodhiss Development (Gaddy, 2005). At the time of relicensing, Georgia aster (*Symphyotrichum georgianum*) was a candidate for federal listing; however, the listing has since been found to be unwarranted (FWS, 2014).

The various habitats associated with the Catawba-Wateree Project area and surrounding vicinity provide excellent resident, migratory/transient, and seasonal habitat for a high diversity of wildlife species. Mammal species are well represented by large and small game species, furbearers, rodents, and bats that reside in many different habitats such as woodland, scrub/shrub or early successional areas, grasslands, and wetlands. Species typically found within the Catawba-Wateree Project area include species such as white-tailed deer, coyote, red fox, Virginia opossum, gray squirrel, striped skunk, southern flying squirrel, eastern cottontail, and raccoon. Beaver, muskrat, and mink are found typically in wetland areas. Small mammals commonly found in the Catawba-Wateree Project area include white-footed deer mouse, eastern mole, meadow-jumping mouse, and southeastern shrew. Several species of bats are considered seasonally common at most of the Catawba-Wateree developments including eastern pipistrelle, big brown bat, and eastern red bat.

Based on bird surveys conducted in 2004 and 2005, the five common species were Carolina chickadee, tufted titmouse, Carolina wren, northern cardinal, and American goldfinch. Several special status bird species were observed during the survey. Wood stork (*Mycteria americana*) was the only federally listed (endangered) species observed. Bald eagle (*Haliaeetus leucocephalus*) was also recorded and is state-listed as threatened. Three state-listed significantly rare bird species were also observed: sharp-shinned hawk (*Accipiter striatus*), brown creeper (*Certhia americana*), and hermit thrush (*Catharus guttatus*). None of these species observations were made at the Rhodhiss Development.

The project area is also home to a number of reptile and amphibian species. Reptile species representative of grassland habitat in the Catawba-Wateree Project area include northern fence lizard and eastern garter snake. In scrub/shrub habitat southern ringneck snake, rough green snake, northern black racer, and black rat snake are typical species encountered. Woodland reptile species include eastern box turtle, five-lined skink, northern redbelly snake, corn snake, and northern copperhead. Reptile species typically encountered in aquatic habitats include snapping turtle, eastern painted turtle, northern water snake, and queen snake.

The bog turtle (*Clyptemys muhlenburgii*) has two distinct populations in the United States: a northern population listed as threatened by FWS, and a southern population listed as threatened due to their similarity in appearance to other endangered or threatened turtles. The bog turtle is federally threatened and has been observed in Bristol Creek, a tributary of Lake Rhodhiss that enters the lake upstream of the reservoir and outside the zone of operational influence. They usually occur in small, discrete populations in wetlands that have micro-habitats, including flooded areas, dry areas, and saturated areas that provide foraging, breeding, hibernating, basking, and shelter areas.

Amphibians found in woodland areas typically include spotted salamander,

American toad, and Fowler's toad. Typical amphibians of wetlands in the Catawba-Wateree Project area include red-spotted newt, southern two-lined salamander, three-lined salamander, green frog, bullfrog, and pickerel frog.

Environmental Effects

Because the proposed action does not include any land-disturbing activities, it is not likely to enable the spread of terrestrial invasive plant species or adversely impact plant species of special concern. Similarly, there is no critical habitat for any terrestrial special status species in the Catawba-Wateree project area. Transient use of the proposed action area may occur by any of the abovementioned species. Bird species in particular may make use of the riparian buffer that Carolina Sand would maintain; however, the nearby U.S. Route 64, which crosses Lake Rhodhiss approximately 2,000 ft upstream of the proposed action area, make it unlikely that any sensitive bird species would demonstrate preference for available habitat in the vicinity of the proposed action. For these reasons, Commission staff does not anticipate that the proposed mining activities would cause any adverse impacts to terrestrial resources.

E. Recreation Resources

Affected Environment

There are 6 public recreation areas on Lake Rhodhiss (Table 1, Figure 3). Five of these public recreation areas have major recreational facilities including 11 boat ramps, 6 courtesy docks, a canoe portage around the dam, and a fishing pier. There is also one commercial marina on Lake Rhodhiss. Duke Energy owns all of the project-related recreational facilities at the Rhodhiss Development; however, four of these are managed by North Carolina WRC and another, the Sawmills Veterans Memorial Park, is managed by the town of Sawmills, North Carolina, with North Carolina WRC managing its boating access facilities.

Duke Energy estimates that Lake Rhodhiss sees 408,814 recreation days per year with 406,091 recreation days occurring at the public recreation areas (Duke Energy, 2007). Most visitor use occurs between April and September, 69 percent of total annual use. Visitors to the Rhodhiss Development recreation areas were primarily boat fishing (46 percent) and bank/pier fishing (15 percent). In anticipation of increased future use, Duke Energy's December 29, 2006 revised license application included provisions to develop additional recreation sites throughout the project area. At the Rhodhiss development, Duke Energy intends to develop an additional access area at Corpening

Table 1. Recreation facilities at the Rhodhiss Development.

Site name	Owner/manager	Facilities
Lake Rhodhiss		
Johns River	Duke Energy/North Carolina WRC	one boat ramp, one courtesy dock, small parking area
Huffman Bridge	Duke Energy/North Carolina WRC	bank fishing, small parking area
Castle Bridge	Duke Energy/North Carolina WRC	six boat ramps, three ADA-compliant courtesy docks, large paved parking area, six ADA-compliant parking spaces
Conley Creek/Sawmills Veterans Memorial Park	Duke Energy/North Carolina WRC and Town of Sawmills	two boat ramps, one ADA-compliant courtesy dock, one fishing pier, large paved parking area, two ADA-compliant parking spaces
Rhodhiss	Duke Energy/North Carolina WRC	two boat ramps, one ADA-compliant courtesy dock, large paved parking area, four ADA-compliant parking spaces
Rhodhiss Canoe Portage	Duke Energy	canoe portage around the dam

Bridge, along the Johns River. Although not yet constructed, this site would be upstream of the Johns River Access Area. As such, the Johns River Access Area would remain the geographically nearest access point to the proposed mining location. Recreational boaters entering the project area at Johns River would have to travel approximately 5.5 miles to the sand mining location.

Lake Rhodhiss experiences significant visitor use, which is only likely to increase in the future. At present, the nearest public access point to the proposed sand mining location is over 5 miles away by boat and the proposed recreation development at Corpening Bridge is not likely to improve access to the sand mining location. While the area is not restricted from recreational boating, there is no evidence of frequent use, possibly in part because more suitable fish habitat elsewhere in the reservoir is more appealing to recreationalists. In order to minimize and mitigate for any potential effects, Carolina Sand has committed to modifying its operations when recreationalists are in the area. When boaters are present during dredge operations, dredge operations would be suspended and the dredge would move to allow boaters to pass. Otherwise, all dredging equipment would be kept near the bank to avoid impeding boat traffic. Any equipment left in the river would be stored in a manner to maximize visibility, and it would be marked with reflective buoys. Carolina Sand has also indicated that it intends to cease dredging operations when the water level exceeds three feet above normal, when currents are higher and more likely to impact small craft maneuverability.

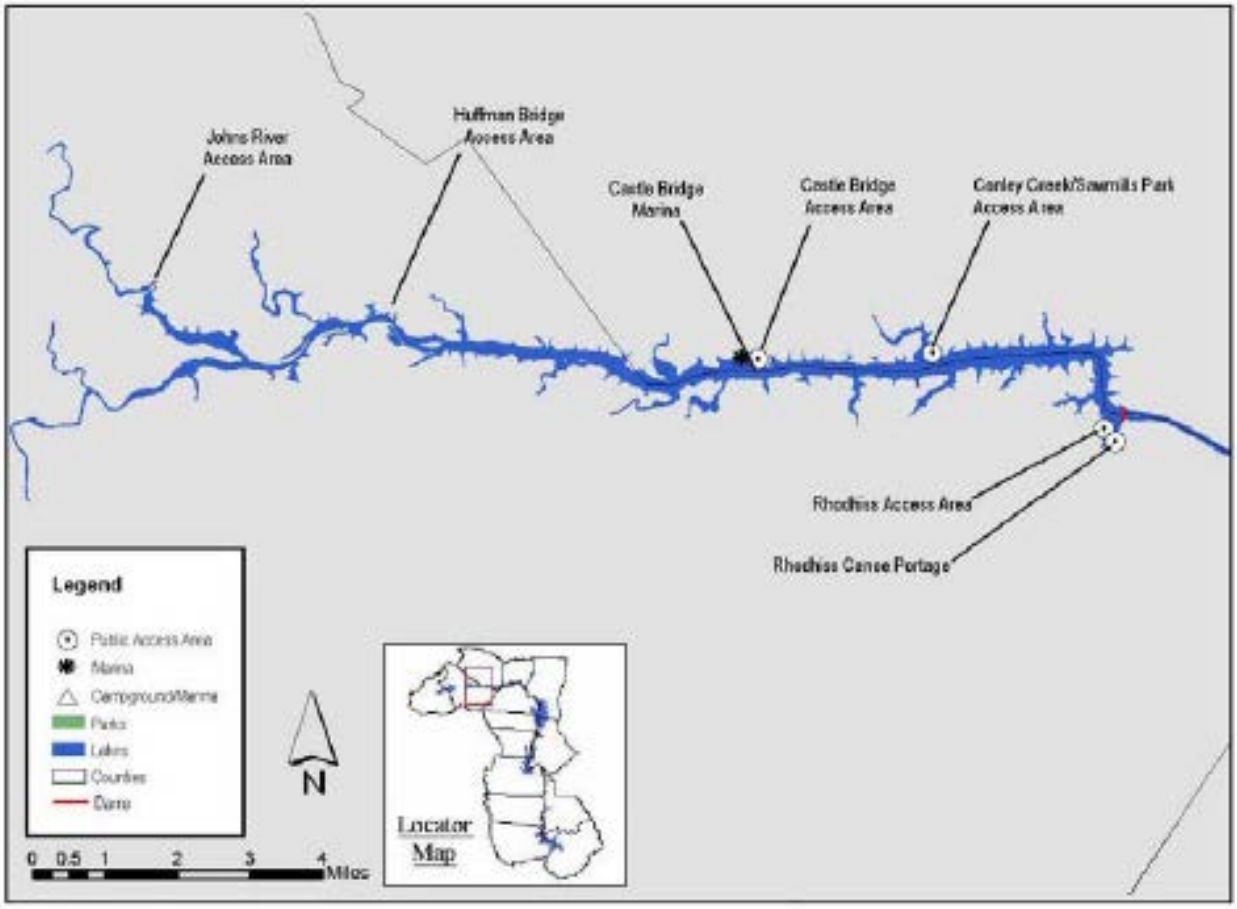

Figure 3. Locations of Rhodhiss Development recreational facilities.

Environmental Effects

The licensee does not propose any modifications to reservoir levels, ramping rates, or other hydraulic specifications that have the potential to affect anglers, boaters, canoeists, or other recreationalists that are not in the immediate area of the sand mining operations. Dredging operations may, however, interfere with recreational navigation. Johns River and Huffman Bridge access areas are reasonably close and the visitor use on Lake Rhodhiss is high. Carolina Sand has indicated that it would implement operational modifications and shutdowns to minimize interactions between recreationalists and mining operations. The proposed mitigation should prevent any impediments to navigability in the proposed action area. Because the site was an active mining location in the past and because the sandy substrate and associated habitat is not likely to attract sportfish species, it is not likely that mining operations would adversely impact recreation opportunities in Lake Rhodhiss.

5.3 Cumulative Impacts of Proposal

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or in time with the impacts of other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant actions. Throughout consultation on and review of the licensee's proposal, no existing resources were identified with the potential to be adversely affected, and therefore no cumulative adverse effects are anticipated.

5.4 Impacts of No-Action Alternative

Under the no-action alternative, the Commission would deny the licensee's application. Duke Energy would not authorize sand mining in Lake Rhodhiss, and the abandoned sand mining location would remain dormant. As such, no potential impacts to the aquatic habitat or riparian zone would occur. Conversely, no reclamation of the sediment processing site would be required. Moreover, the licensee has partnered with the Muddy Creek Watershed Restoration Initiative, which is committed to reducing sediment loads in Lake Rhodhiss. Permitting sand mining operations would constitute an action towards this goal, so the licensee would be required to seek out alternative actions towards its partnership under the no-action alternative.

6.0 CONCLUSIONS AND STAFF RECOMMENDATIONS

6.1 Conclusions

If implemented in compliance with the state and federal permits described above, the proposed action would not result in any significant environmental effects or significant cumulative impacts. There are no known historic or cultural resources, or critical habitat for threatened or endangered species in the proposed area of impact. While transient use of the affected area may occur, special status species are unlikely to utilize the area significantly as a result of its previous disturbances and proximity to high traffic areas. Carolina Sand's proposed barge operations should prevent impacts to public recreation. The applicant is not proposing any land-disturbing activities, and the in-water work would be located in an area that has previously experienced high levels of disturbance. As such, it is not likely that significant impacts would occur.

6.2 Staff Recommendations

Due to the extensive consultation and permit requirements imposed on Carolina Sand prior to requesting Commission approval of the non-project use, the proposed

action includes considerable environmental and recreation protection measures. To ensure that project waters are properly protected, Duke Energy should include, as conditions of any permit it issues under this application, provisions for Carolina Sand to monitor its compliance with turbidity, sedimentation, and erosion permit requirements. Duke Energy should also work with Carolina Sand to monitor for hydrilla and to avoid increasing its spread by fragmentation during dredge operations. To ensure that project waters are properly protected, Duke Energy should inform Carolina Sand of any recreation events on Lake Rhodhiss that may require additional operational modifications to avoid impacts to recreation. In the rare event that cultural or historic items are found during dredging operations, the licensee should require Carolina Sand to notify the licensee immediately, and the licensee should work with the Catawba Indiana Nation and North Carolina State Historic Preservation Office.

The request for non-project use of project lands and waters incorporates numerous prior recommendations by resource agencies. Approval and implementation of the proposed action would have no significant adverse impacts on any environmental resource analyzed in this EA. Also, the proposed action would not produce or significantly add to any existing cumulative environmental impacts. Based on our analysis, we recommend that the proposed action be approved.

6.3 Finding of No Significant Impact

If the Commission approves the licensee's request to conduct sand mining operations in Lake Rhodhiss, based on our independent analysis, the proposed action would not constitute a major federal action significantly affecting the quality of the human environment.

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8.0 LIST OF PREPARERS

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