

156 FERC ¶ 62,210
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Alcoa Power Generating, Inc.

Project No. 2197-073

ORDER ISSUING NEW LICENSE

(Issued September 22, 2016)

INTRODUCTION

1. On April 25, 2006, Alcoa Power Generating, Inc. (Alcoa Generating) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),¹ an application for a new license to continue operation and maintenance of its Yadkin Hydroelectric Project No. 2197 (Yadkin Project, or project). The project's authorized capacity being licensed is 210.51 megawatts (MW).² The project is located on the Yadkin River, near the City of Charlotte, in Davie, Davidson, Montgomery, Rowan, and Stanly Counties, North Carolina.³ The project does not occupy federal lands.
2. As discussed below, this order issues a new license for the Yadkin Project.

BACKGROUND

3. On May 19, 1958, the Federal Power Commission, predecessor to the Federal Energy Regulatory Commission (Commission, or FERC), issued the original 50-year license to the Carolina Aluminum Company for the Yadkin Project.⁴ On July 17, 2000, the Commission approved a transfer of the license from Yadkin, Inc. to Alcoa

¹ 16 U.S.C. §§ 797(e) and 808 (2012).

² The project's current authorized installed capacity is 212.44 MW. *See Alcoa Power Generating, Inc.*, 150 FERC ¶ 62,076 (2015).

³ The Yadkin Project is required to be licensed pursuant to section 23(b)(1) of the FPA because the project is located on a Commerce Clause waterway, affects interstate and foreign commerce through its connection to an interstate power grid, and was constructed after 1935. *See* 16 U.S.C. § 817(1) (2012).

⁴ 19 F.P.C. ¶ 704 (1958). The Carolina Aluminum Company changed its name to Yadkin, Inc. shortly after the license was issued. *See Yadkin, Inc.*, 22 F.P.C. ¶ 492 (1959).

Generating.⁵ That license expired on April 30, 2008, and since that time the project has been operating under annual licenses.⁶

4. On December 28, 2006, the Commission issued a public notice⁷ accepting the application for filing and setting a February 26, 2007 deadline for filing motions to intervene and protests. Timely motions to intervene were filed by the City of Salisbury; Stanly County; Concerned Property Owners High Rock Lake; Davidson County; American Rivers and Coastal Conservation League, jointly; SaveHighRockLake.org; The Nature Conservancy; High Rock Lake Association; the South Carolina Department of Natural Resources (South Carolina DNR); the Yadkin Pee Dee Lakes Project;⁸ Duke Energy Carolinas, LLC; the North Carolina Wildlife Resources Commission (North Carolina WRC); the South Carolina Department of Health and Environmental Control (South Carolina DHEC); the U.S. Forest Service (Forest Service); Anson County; City of Rockingham; Sandhill Rod and Gun Club; Trading Ford Historic District Preservation Association; and the Land Trust of Central North Carolina (Land Trust).⁹

5. Timely notices of intervention were filed by the U.S. Department of the Interior (Interior) and the North Carolina Department of Environmental Quality (North Carolina DEQ).¹⁰ The State of North Carolina filed an untimely motion to intervene, which was granted.¹¹ New Energy Capital Partners, LLC (New Energy) filed a request to reopen the

⁵ See *Yadkin, Inc. and Alcoa Power Generating, Inc.*, 92 FERC ¶ 62,029 (2000).

⁶ 16 U.S.C. § 808(a)(1) (2012).

⁷ 72 *Fed. Reg.* 779-780 (2007).

⁸ Yadkin Pee Dee Lakes Project subsequently changed its name to Central Park NC.

⁹ Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c) (2016).

¹⁰ Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c) (2016).

Prior to 2015, North Carolina DEQ was known as North Carolina Department of Environment and Natural Resources. For simplicity, this order refers to the agency throughout as North Carolina DEQ.

¹¹ See notice of April 17, 2009 (unpublished); 18 C.F.R. § 385.214 (2016).

record and a late motion to intervene. New Energy's motion to intervene and its request to reopen the record were denied.¹²

6. On March 13, 2007, the Commission issued a public notice¹³ indicating the application was ready for environmental analysis, and setting a May 12, 2007 deadline for filing comments, recommendations, terms and conditions, and prescriptions. Interior, North Carolina WRC, North Carolina DEQ, South Carolina DHEC, City of Rockingham, City of Salisbury, Rowan County, Stanly County, and Town of Spencer filed recommendations. The National Marine Fisheries Service (NMFS), the South Carolina DNR, The Nature Conservancy, American Rivers, Coastal Conservation League, Davidson County, SaveHighRockLake.org, and four individuals filed comments. Alcoa Generating filed reply comments on June 25, 2007.

7. On May 7, 2007, Alcoa Generating filed the Yadkin Relicensing Settlement Agreement (Agreement). The Agreement was signed by 23 entities: Alcoa Generating; Forest Service; North Carolina DEQ's Division of Water Resources (North Carolina DWR); North Carolina WRC;¹⁴ South Carolina DHEC; South Carolina DNR; Catawba Indian Nation; City of Albemarle; Montgomery County; Rowan County; Town of Badin; High Rock Business Owners Group; Piedmont Boat Club; Salisbury/Rowan Association of Realtors; Uwharrie Point Community Association; American Rivers; Badin Historic Museum, Inc.; Badin Lake Association; High Rock Lake Association; Pee Dee River Coalition; Land Trust; The Nature Conservancy; and Coastal Conservation League. Alcoa Generating adopted the terms of the Agreement as its relicensing proposal. The Agreement states that it resolves all the signatories' outstanding issues associated with the project's relicensing. The Commission issued a public notice of the Agreement on May 17, 2007, and set a deadline of June 6, 2007, for comments. The Coastal Conservation League and American Rivers filed comments jointly, and the City of Rockingham and Anson County each filed comments.

¹² Notice Denying Motion to Intervene, May 30, 2013, *reh'g denied* 144 FERC ¶ 61,218 (2013). Notice Rejecting Motion to Reopen Record, March 13, 2015, *reh'g denied* 152 FERC ¶ 61,040 (2015). New Energy filed notices of appeal of the rehearing orders. The appeals are pending before the Circuit Court of Appeals of the District of Columbia.

¹³ 72 *Fed. Reg.* 12791-12792 (2007).

¹⁴ The North Carolina WRC rescinded its agreement to, and its signature on, the Agreement. *See* North Carolina WRC's September 23, 2013 Filing. Alcoa Generating filed a response to North Carolina WRC's filing on October 8, 2013.

8. Commission staff issued a draft Environmental Impact Statement (EIS)¹⁵ on September 28, 2007, analyzing the effects of the proposed project and alternatives to it, and set a deadline of November 27, 2007, for comments. Public meetings on the draft EIS were held in Salisbury and Hamlet, North Carolina, on November 14 and 15, 2007, respectively.¹⁶ Comments on the draft EIS were filed by: Interior; Alcoa Generating; NMFS; North Carolina WRC; South Carolina DHEC; City of Rockingham and American Rivers; Coastal Conservation League; The Nature Conservancy; U.S. Environmental Protection Agency, Region 4 (EPA); City of Salisbury; SaveHighRockLake.org; Ronald Qualkenbush; Stanly County; and Town of Granite Quarry.

9. On April 18, 2008, Commission staff issued a final EIS. Alcoa Generating, NMFS, EPA, the City of Rockingham and American Rivers, the City of Salisbury, Stanly County, and 1,244 individuals filed comments on the final EIS. Alcoa Generating filed a response to Stanly County's comments on July 15, 2008. Alcoa Generating filed a response to the individuals' comments on February 10, 2009.

10. On May 20, 2013, Stanly County filed an agreement it entered into with the licensee and its parent company (Alcoa, Inc.) to resolve the county's issues associated with the project's relicensing. The county does not ask that the terms of the agreement become conditions of the license, and the agreement does not modify Alcoa Generating's relicensing proposal in any way.¹⁷

11. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue the license.

¹⁵ The draft and final EIS examined the potential environmental impacts of the Yadkin Project and Duke Energy Progress, Inc.'s downstream Yadkin-Pee Dee Hydroelectric Project No. 2206. The Yadkin-Pee Dee Project was relicensed in 2015. See *Duke Energy Progress, Inc.*, 151 FERC ¶ 62,004 (2015).

¹⁶ The transcript of the November 14 meeting in Salisbury was placed in the record of the relicensing proceeding on November 14, 2007. The transcript of the November 15 meeting in Hamlet was placed in the record on August 24, 2016.

¹⁷ Essentially, the agreement provides that the county will withdraw its opposition to the project in exchange for payment of more than \$3 million for general and economic development purposes, and Alcoa, Inc.'s assistance with economic development projects in the county.

PROJECT DESCRIPTION**A. Project Area**

12. The Yadkin Project is located on the Yadkin River, which originates near the Town of Blowing Rock, North Carolina, and flows 100 miles in a northeasterly direction. As the Yadkin River turns southeast, it enters the Charlotte and Raleigh-Durham area. The Yadkin River joins the Uwharrie River at the upper end of Lake Tillery to form the Pee Dee River. The Pee Dee River flows through Lake Tillery and Blewett Falls Lake, and continues to Winyah Bay, South Carolina, and the Atlantic Ocean.¹⁸ The Yadkin-Pee Dee River Basin has a drainage area of 4,190 square miles above Falls Dam (the most downstream development of the Yadkin Project).

13. The Yadkin River is highly regulated, with flows controlled by seven dams operated by the U.S. Army Corps of Engineers (Corps), Alcoa Generating, and Duke Energy Progress, Inc. (Duke Energy Progress). The farthest upstream of these dams on the Yadkin River is the Corps' W. Kerr Scott Dam, located at river mile (RM) 385, and Reservoir.¹⁹ The W. Kerr Scott Dam provides flood control for the City of Wilkesboro and maintains a conservation pool to provide a continuous minimum flow release of 125 cubic feet per second (cfs) to the Yadkin River.²⁰

14. The Yadkin Project is located about 130 miles downstream of the W. Kerr Scott Dam and Reservoir and includes four developments along a 38-mile-long segment of the Yadkin River. From upstream to downstream, the developments are: High Rock at RM 253; Tuckertown at RM 244.3; Narrows (Badin Lake) at RM 236.3; and Falls at RM 234.

15. Downstream of the Yadkin Project are the Tillery and Blewett Falls Developments which are located at RM 218 and RM 188.2, respectively, and licensed to Duke Energy Progress as the Yadkin-Pee Dee Project.²¹

B. Project Facilities

16. The Yadkin Project features are summarized below and described in more detail in Ordering Paragraph (B)(2).

¹⁸ See final EIS at 37.

¹⁹ The W. Kerr Scott Hydropower Project is located at the W. Kerr Scott Dam and Reservoir and is licensed to Wilkesboro Hydroelectric Company as Project No. 12642. See *Wilkesboro Hydroelectric Company, LLC*, 140 FERC ¶ 62,060 (2012).

²⁰ See Alcoa Generating's April 25, 2006 License Application, Exhibit A, at A-1.

²¹ See *Duke Energy Progress, Inc.*, 151 FERC ¶ 62,004 (2015).

1. High Rock Development

17. The High Rock Development consists of a 14,400-acre reservoir at a full pool elevation of 623.9 feet U.S. Geological Survey (USGS),²² with a usable storage capacity of 217,400 acre-feet. High Rock Reservoir is impounded by a 936-foot-long, 101-foot-high dam that includes a non-overflow section, a gated spillway section with ten 45-foot-wide by 30-foot-high gates, a powerhouse intake, and a non-overflow section. The powerhouse is integral with the dam and contains three turbine/generator units with a total installed capacity of 32.91 MW.

2. Tuckertown Development

18. The Tuckertown Development consists of a 2,560-acre reservoir at a full pool elevation of 564.7 feet, with a usable storage capacity of 6,700 acre-feet. Tuckertown Reservoir is impounded by a 1,370-foot-long, 76-foot-high dam that includes a rock filled section, several non-overflow sections, a gated spillway section with eleven 35-foot-wide by 38-foot-high Tainter gates, and a powerhouse intake section. The powerhouse is integral with the dam and contains three turbine/generator units with a total installed capacity of 38.04 MW.

3. Narrows Development

19. The Narrows Development consists of a 5,355-acre reservoir at a full pool elevation of 509.8 feet, with a usable storage capacity of 129,100 acre-feet. The Narrows Reservoir is impounded by a 1,655-foot-long, 201-foot-high dam which includes a left non-overflow section, a gated spillway with twenty-two 25-foot-wide by 12-foot-high Tainter gates and a trash gate, a powerhouse intake structure, a 520-foot-long bypass spillway with ten 33-foot-wide, 28-foot-high gates, a trash gate, and a right non-overflow section. The powerhouse is located 280 feet downstream of the dam and contains four turbine/generator units with a total installed capacity of 110.36 MW. Included in the project is an approximately 1.5-mile-long, four circuit, 13.2-kilovolt (kV) transmission line extending from the Narrows Development to the Badin Substation.

4. Falls Development

20. The Falls Development consists of a 204-acre reservoir at a full pool elevation of 332.8 feet, with a usable storage capacity of 940 acre-feet. The Falls Reservoir is impounded by a 748-foot-long, 112-foot-high dam that includes a powerhouse intake

²² The final EIS presents lake elevations in National Geodetic Vertical Datum of 1929. However, because the water quality certification references lake elevations in USGS Datum, elevations referenced in this order are in USGS Datum. Both elevations are based on mean sea level, and therefore are essentially the same.

section, a trash gate section, a gated spillway with ten 33-foot-wide by 34-foot-high gates, a gated section with two Tainter gates, and a non-overflow section. The powerhouse is integral with the dam and contains three turbine/generator units with a total installed capacity of 31.13 MW. Included in the project is an approximately 2.8-mile-long, single circuit, 100-kV transmission line extending from the Falls Development to the Badin Substation.

C. Project Recreation Facilities

21. Under the current license, Alcoa Generating operates and maintains, or provides for the operation and maintenance of, recreation facilities at 26 project recreation sites.²³ The High Rock,²⁴ Tuckertown,²⁵ and Narrows²⁶ Developments have eight project recreation sites each; and the Falls Development has two project recreation sites.²⁷ These

²³ See Alcoa Generating's April 25, 2006 License Application, Appendix E-18. Subsequent to the final EIS being issued, staff found that multiple names are attributed to some project recreation sites. To provide clarity in the license order, Alcoa Generating's alternative names are presented in parentheses, where applicable.

²⁴ The sites include: (1) Highway 601 Boat Access Area; (2) York Hill Boat Access; (3) Little Crane Creek Fishing Access Area (Little Crane Creek Fish Access); (4) Southmont Boat Access Area (Southmont Abbotts Creek Boat Access Area); (5) Highway 47 Fishing Pull-Off; (6) Buddle Creek Boat Access Area (Buddle Creek Boating and Fishing Access); (7) Flat Swamp Boat and Swim Access Area (Flat Swamp Access - Pebble Beach; Flat Swamp Boat Access); and (8) High Rock Dam Canoe Portage Trail.

²⁵ The sites include: (1) High Rock Dam Tailrace Access - Rowan County (High Rock Dam Picnic and Fishing Access Area, High Rock Dam Bank Fishing and Picnic Access Area); (2) High Rock Dam Tailrace Access - Davidson County; (3) Cedar Creek Fishing Pull-Off; (4) Flat Creek Fishing Access; (5) Newsome Road Access; (6) Riles Creek Recreation Area (Riles Creek Picnic and Fishing Access; Riles Creek Fishing & Picnic Access Area); (7) Highway 49 Boat Access Area; and (8) Tuckertown Dam Canoe Portage Trail.

²⁶ The sites include: (1) Tuckertown Dam Tailrace Access Area; (2) Garr Creek Access Area; (3) Old Whitney Boat Access Area (Old Whitney Boat & Fishing Access Area); (4) Circle Drive Boat Access Area, up to elevation 545 contour; (5) Palmerville Access Area; (6) Badin Lake Swim and Picnic Area (Badin Swim/Picnic Access Area; Badin Picnic & Swimming Area); (7) Badin Lake Boat Access Area (Badin Boat Access); and (8) Narrows Dam Canoe Portage Trail.

²⁷ The sites include: (1) Falls Boat Access Area (Falls Boating Access Area); and (2) Falls Dam Canoe Portage Trail.

sites provide a variety of recreation amenities, including boat ramps, boat docks, shoreline fishing access, canoe portage trails, picnic areas, restrooms, and parking.

D. Project Boundary

22. The project boundary encloses 24,055 acres of land, in addition to the area inundated by the reservoirs.²⁸ The project boundary for each development encloses the area within the full pool elevation of the project reservoirs, except where it encloses additional lands that serve project purposes (e.g., land occupied by project facilities and recreation sites, and land needed for the management and protection of wildlife and natural resources).

E. Current Project Operation

23. Alcoa Generating operates the High Rock Development in a store and release mode (peaking operation), and the Tuckertown, Narrows, and Falls Developments in a daily run-of-river mode.²⁹ The High Rock Development provides storage for the three downstream developments, with the Narrows Development providing some storage during low flow conditions and emergencies. The daily run-of-river operation of the Tuckertown, Narrows, and Falls Developments re-regulates releases from the High Rock Development. Outflows from the Falls Development provide inflow to Duke Energy Progress's downstream Yadkin-Pee Dee Project.

1. High Rock Development

24. Alcoa Generating operates the High Rock Development according to a rule curve that has upper and lower limits on reservoir elevation.³⁰ The rule curve is designed to maintain higher water elevations in the reservoir from mid-May through mid-September, followed by a fall-winter drawdown to allow storage capacity to capture high inflows and refill the reservoir during the spring months. The full pool elevation for High Rock Reservoir is 623.9 feet. The minimum elevation is 610.9 feet October through April, and 618.9 feet mid-May through mid-September. During normal operation³¹ the High Rock Development is maintained between the minimum and full pool elevations, with most flow passing through the turbines. During normal operation this allows for a maximum

²⁸ See Alcoa Generating's October 13, 2006 Filing, Response to Question 21 of Commission staff's September 14, 2006 Letter.

²⁹ In a daily run-of-river operation outflow equals inflow on a daily basis.

³⁰ See *Yadkin, Inc.*, 39 F.P.C. ¶ 397 (1968).

³¹ Alcoa Generating and the Agreement use the term "normal operation" to define typical inflow periods not inclusive of high flow or drought periods.

drawdown of 13 feet or less during the winter months, and 5 feet or less during the summer months.

25. During high inflow periods, Alcoa Generating implements measures to maintain the reservoir no higher than the full pool elevation. As the reservoir elevation approaches full pool, flows are released through the generating units, and at a gate-controlled spillway through 10 floodgates. During low inflow periods, Alcoa Generating implements measures to maintain the reservoir no lower than the normal minimum operating elevation, typically by reducing flows from the reservoir. During drought years, reservoir elevations below the normal minimum have occurred.

26. In addition to reservoir elevation limits, minimum flow releases are maintained from the High Rock Development for part of the year.³² A weekly average minimum flow of 1,500 cfs is provided during the 10-week period preceding May 15; 1,600 cfs May 15 through July 1; and 1,400 cfs July 1 through September 15. During drought years the Commission has authorized reduced minimum flows to maintain the reservoir elevation.

2. Tuckertown, Narrows, and Falls Developments

27. The Tuckertown Development is operated so as not to exceed the full pool elevation of 564.7 feet, with a fluctuation of less than 1 foot during normal flow periods and maximum daily fluctuation of 1 to 3 feet. Flows are typically passed through the powerhouse or through a gated section of the spillway through 11 Tainter gates.

28. The Narrows Development is operated so as not to exceed the full pool elevation of 509.8 feet, with a fluctuation of less than 1 foot during normal flow periods and maximum daily fluctuation of 1 to 2 feet. Flows are typically passed through the powerhouse or through a gated section of the main spillway through 22 Tainter gates. During flood events, flows may be passed through a bypass spillway located between the intake section and non-overflow section of the dam. Up to 10 gates on the bypass spillway are available to pass flood flows.

29. The Falls Development is operated so as not to exceed the full pool elevation of 332.8 feet, with a daily fluctuation of less than 2 feet during normal flow periods and maximum daily fluctuation of 3 to 4 feet. Flows are passed through the powerhouse or through a gated section of the spillway. During flood events, up to 10 flood gates and two Tainter gates are available to pass flood flows.

³² The minimum flow releases are identified in the Headwater Benefits Settlement Agreement, approved by the Commission in 1968. *See Carolina Power & Light Company and Yadkin, Inc.*, 39 F.P.C. ¶ 389 (1968).

F. Relicensing Proposal

30. Alcoa Generating's relicensing proposal includes: (1) measures to operate and maintain the project in accordance with the provisions in the Agreement (summarized below) that are proposed as conditions of the license;³³ and (2) changes to the project boundary and modifications to certain project works.

1. Proposed Project Operation

31. To enhance aquatic habitat, fish populations, wetlands, recreational opportunities, and aesthetics at High Rock Reservoir, Alcoa Generating proposes to modify the operation of the reservoir as follows: (1) raise the minimum summer³⁴ pool level from 618.9 feet under current operation (5 feet below full pool elevation of 623.9 feet) to 619.9 feet (4 feet below full pool elevation); (2) extend the minimum summer pool level by 12 weeks, 6 weeks earlier in spring and 6 weeks later in fall; and (3) raise the winter³⁵ pool elevation from 610.9 feet under current operation (13 feet below full pool 623.9 feet) to 613.9 feet (10 feet below full pool elevation) (*see* section 3.1.1.1 of the Agreement). High Rock Reservoir will be maintained at these levels, except as needed to maintain minimum flows downstream of Falls Dam, and as provided under the proposed Low Inflow Protocol (LIP) and Hydro Project Maintenance Emergency Protocol (HPMEP).

32. To enhance aquatic habitat, fish populations, wetlands, recreational opportunities, and aesthetics at Tuckertown, Narrows, and Falls Reservoirs, Alcoa Generating proposes to operate the reservoirs year-round at or above the following elevations: (1) Tuckertown at 561.7 feet (3 feet below full pool elevation 564.7 feet), except as provided under the HPMEP; (2) Narrows at 504.8 feet (5 feet below full pool elevation 509.8 feet), except as needed to maintain the minimum flow downstream of Falls Dam, and as provided under the LIP and HPMEP; and (3) Falls at 328.8 feet (4 feet below full pool elevation 332.8 feet), except as provided under the HPMEP (*see* sections 3.1.1.2, 3.1.1.3, and 3.1.1.4 of the Agreement, respectively). The proposed minimum elevations at the Tuckertown, Narrows, and Falls Developments are currently not required, but would result in project operation similar to the way the project is currently operated.

³³ The Agreement also includes measures that are not intended to be incorporated into a new license. *See* Agreement at section 2.0 entitled, "Settlement Provisions Not Covered by Proposed License Articles," at 2-1 through 2-12. However, certain of these measures are appropriately included in this license.

³⁴ Summer is defined as the April 1 to October 31 recreation season.

³⁵ Winter is defined as December 1 to March 1.

33. To enhance conditions for spawning fish in the four project reservoirs, Alcoa Generating proposes to maintain the water surface elevation in each reservoir from April 15 through May 15 within 1 foot below the elevation the reservoir reaches on April 15 (*see* section 3.1.1.5 of the Agreement).

34. To conserve the project's storage capacity and protect water supplies and aquatic habitat and organisms during periods of extended low flow or drought conditions, Alcoa Generating proposes to implement the LIP (*see* section 3.1.4 of the Agreement).³⁶

35. To facilitate its management of project operation, Alcoa Generating proposes to implement the HPMEP, which would temporarily suspend or modify certain operational requirements of the license (i.e., reservoir levels and minimum flows) in the event of an emergency or other abnormal situation, equipment failure, or maintenance activities (*see* section 3.1.5 of the Agreement).

36. To enhance aquatic habitat in the Yadkin River downstream of Falls Dam, Alcoa Generating proposes to provide the following daily average minimum flow releases from the Falls Development, except when operating under the LIP or HPMEP: 1,000 cfs from June 1 through January 31; 2,000 cfs from February 1 through May 15; and 1,500 cfs from May 16 through May 31 (*see* section 3.1.2.1 of the Agreement). These flows would replace the existing weekly average minimum flows at the High Rock Development which were a provision of the Headwater Benefits Settlement Agreement³⁷ (i.e., 1,500 cfs from the beginning of March through May 15; 1,600 cfs May 15 through July 1; and 1,400 cfs July 1 through September 15). When the water surface elevation of High Rock Reservoir is below the normal minimum elevation, and the project is operating under the LIP, flow releases from High Rock Development would be equivalent to the minimum flow requirement at the Falls Development.

37. To monitor compliance with the proposed project operational protocols, and to facilitate the Commission's administration of the license, Alcoa Generating proposes to develop and implement a Flow and Reservoir Elevation Monitoring and Compliance Plan

³⁶ *See* Appendix A to the Agreement, which presents the LIP in its entirety. The LIP contains measures to be implemented at Alcoa Generating's Yadkin Project and Duke Energy Progress's Yadkin-Pee Dee Project. The elements of the LIP pertaining to the Yadkin-Pee Dee Project are not enforceable by the Commission as part of this license. In addition, the formation of the Yadkin-Pee Dee River Basin Drought Management Advisory Group and the activities of the group are elements of the LIP that are not enforceable by the Commission because the Commission cannot enforce the provisions of a settlement that require action be taken by parties it does not regulate. *See, e.g., Avista Corporation*, 93 FERC ¶ 61,116 at 61,329 (2000).

³⁷ *See* n. 32, *supra*.

(see section 3.1.3 of the Agreement). The plan would include provisions for monitoring and reporting reservoir water elevations at the four project developments, and flows from the High Rock and Narrows Developments.

2. Modifications to Authorized Installed Capacity and Turbines/Generators

38. Alcoa Generating proposes to refurbish the following turbine/generator units: High Rock Development Units 1, 2, and 3; Tuckertown Development Units 1, 2, and 3; Narrows Development Unit 3;³⁸ and Falls Development Units 1, 2, and 3. The modifications will increase capacity at the High Rock and Narrows Developments and decrease capacity at the Tuckertown and Falls Developments. Overall, the project's total authorized installed capacity will decrease from 212.44 MW to 210.51 MW.³⁹

39. At High Rock, the company plans to refurbish Units 1, 2, and 3, which will result in improved hydraulic efficiency. When completed, the development's total authorized installed capacity will increase from 32.9 MW to 40.32 MW.⁴⁰

40. At Tuckertown, the company plans to refurbish Units 1, 2, and 3 to improve hydraulic efficiency. When completed, the development's total authorized installed capacity will decrease from 38.04 MW to 28.62 MW.⁴¹

41. At Narrows, Alcoa Generating proposes to refurbish Unit 3 in order to improve hydraulic efficiency. When completed, the development's total authorized installed capacity will increase from 110.36 to 110.7 MW.⁴²

³⁸ Alcoa Generating completed upgrades to the Narrows Development Units 2 and 4 under the prior license. See *Alcoa Generating, Inc.*, 150 FERC ¶ 62,076 (2015). In its relicense application, Alcoa Generating also proposed to upgrade the Narrows Development Unit 1, but it subsequently completed that upgrade as well. *Id.*

³⁹ The current turbines at the Tuckertown and Falls Developments make inefficient use of flows. Alcoa Generating proposes to reduce the size of the turbines at these developments to achieve more efficient use of the available flows. A decrease in authorized capacity at these developments will result in an overall decrease in installed capacity for the project.

⁴⁰ See Alcoa Generating's April 25, 2006 License Application, Exhibit B, section B.2.3.

⁴¹ *Id.*, Exhibit B, section B.3.3.

⁴² *Id.*, Exhibit B, section B.4.3.

42. At Falls, Alcoa Generating proposes to refurbish the development's three generating units to improve hydraulic efficiency. When completed, the development's total authorized installed capacity would decrease from 31.13 MW to 30.87 MW.⁴³

3. Water Quality Measures

43. Alcoa Generating proposes to implement a series of measures to increase dissolved oxygen (DO) concentrations and enhance water quality in the project's four tailraces (*see* sections 2.2.1 and 2.2.2 of the Agreement). These measures include installing aeration valves at the project's four developments and new aerating turbines at the High Rock and Narrows Developments. Once the DO enhancement measures are installed, Alcoa Generating will operate the generating units with the installed DO enhancement equipment on a "first on - last off" basis,⁴⁴ subject to unit availability. Alcoa Generating proposes to operate the units in this manner beginning no later than May 1 and continue through November 30 of each year.

44. To document adherence to the minimum DO concentration of 5.0 milligrams per liter (mg/L) on a daily average basis, and 4.0 mg/L on an instantaneous basis, Alcoa Generating proposes to monitor and report on DO and water temperature in each of the four development's tailraces from May 1 through November 30 of each year (*see* section 3.2.2 of the Agreement).

4. Rare, Threatened, and Endangered Species Measures

45. To protect rare, threatened, and endangered species⁴⁵ at the project, Alcoa Generating proposes to prepare a Rare, Threatened, and Endangered Species Management Plan (*see* section 3.6.1 of the Agreement) for freshwater mussels, Schweinitz's sunflower, Yadkin River goldenrod, and bald eagle that includes: (1) periodic monitoring of freshwater mussels in the project's tailraces during the first 10 years of the effective date of the new license; (2) measures for protecting Schweinitz's sunflower and Yadkin River goldenrod, monitoring known occurrences of both species within the project boundary, controlling invasive species that compete with these species,

⁴³ *Id.*, Exhibit B, section B.5.3.

⁴⁴ To maximize the DO benefit associated with the installed aeration technology, Alcoa Generating would bring on line those units that are equipped with DO enhancement measures first, before turning on the remaining units. Those same units with DO enhancement measures would be the last units taken off line.

⁴⁵ For the purpose of this order, rare, threatened, or endangered species are those that are designated as threatened or endangered by a state or federal resource agency, and other native freshwater mussels.

and directing recreational users away from known occurrences of both species; and (3) continued monitoring of bald eagle nesting within the project boundary.

46. To protect and enhance native plants and wildlife habitat at the project, Alcoa Generating proposes to prepare a Transmission Line Corridor Management Plan that includes measures for maintaining vegetation within the 200-foot-wide transmission line corridors of the Narrows Development and Falls Development, at height limits compatible with transmission line operation and minimizes adverse effects on terrestrial resources, including wetlands (*see* section 3.6.2 of the Agreement and section 7.12 of the Agreement's "Yadkin Project FERC No. 2197 Joint Explanatory Statement for the Relicensing Settlement Agreement," dated April 2007 (Joint Explanatory Statement)).⁴⁶

5. Recreation and Land Use Measures

47. To enhance recreational opportunities at the project, Alcoa Generating proposes to prepare a Recreation Plan (*see* section 3.3.1 of the Agreement) that includes provisions for: (1) improvements to a number of project recreation sites; (2) construction of (a) two new accessible fishing piers, (b) a new recreation site with a swimming area, and (c) up to 10 new dispersed campsites; (3) a map or maps that identify all existing and new project recreation sites within the Yadkin Project boundary; (4) a description of the recreation amenities at each site; (5) a discussion of how the needs of the disabled were considered in the planning and design of the project recreation amenities; (6) a facility construction schedule; and (7) signs to identify project recreation sites.

48. To protect scenic and environmental resources on the project's shorelines, Alcoa Generating proposes to prepare a revised Shoreline Management Plan (*see* section 3.4.1 of the Agreement) that includes: (1) Appendix D to the Agreement;⁴⁷ and (2) a Shoreline Stewardship Policy used by Alcoa Generating to review and process adjacent property

⁴⁶ As part of its existing vegetation maintenance program for the project transmission line corridors, Alcoa Generating uses herbicides, mowing, and brush cutting, and implements the following measures to minimize adverse effects on terrestrial resources: (1) herbicides applied selectively with a drift control agent to minimize over-spraying; (2) does not apply herbicides within 100 feet of the reservoirs, when wind speed exceeds 10 miles per hour, or during rainfall; (3) uses herbicides approved for use in wetlands; and (4) minimizes adverse impacts on sensitive habitats and low-growing species which will not interfere with the transmission line.

⁴⁷ Appendix D to the Agreement is entitled, "Modifications to the Yadkin Project Specifications for Private Recreation Facilities, Shoreline Stewardship Policy, and Subdivision Access Approval, Multi-use Facility Permitting, and Industrial Approval Procedures for Inclusion in the Revised Shoreline Management Plan."

owners' permits for non-project uses of project waters and shoreline lands (e.g., boat docks).

6. Cultural Resources

49. To protect cultural resources, Alcoa Generating proposes to prepare an Historic Properties Management Plan (HPMP) (*see* section 3.5.1 of the Agreement).

SUMMARY OF LICENSE REQUIREMENTS

50. The license, which authorizes 210.51 MW of renewable energy, requires the proposed measures above, the proposed modifications to the turbine/generator units, the staff-recommended measures described below, and the conditions included in North Carolina DEQ's water quality certification (certification) (Appendix A). Combined, these measures will protect and enhance water quality, fisheries, wildlife, recreation, and cultural resources at the project.

51. To protect human health, the license requires Alcoa Generating to implement its proposed Fish Sampling Work Plan for Narrows Reservoir, filed on May 16, 2016, with the additional requirement to file the fish sampling report with the North Carolina DEQ and the Commission to facilitate administration of the license requirement.

52. To protect freshwater mussels, the Schweinitz's sunflower, the Yadkin River goldenrod, and bald eagles, the license requires Alcoa Generating's proposed Rare, Threatened, and Endangered Species Management Plan with additional detail on implementation, monitoring, and consultation with resource agencies.

53. To enhance recreational opportunities, the license requires Alcoa Generating's proposed Recreation Plan with additional clarification on existing and new project recreation sites, strategies for siting dispersed project campsites, provisions for operation and maintenance of project recreation sites, and monitoring.

54. To protect scenic and environmental resources, the license requires Alcoa Generating to update its existing Shoreline Management Plan.

55. To protect and enhance native species within the project transmission line corridors, the license requires Alcoa Generating's proposed Transmission Line Corridor Management Plan to include additional detail and effectiveness monitoring.

56. To protect cultural resources, the license requires Alcoa Generating to implement a Programmatic Agreement (PA) that requires development of an HPMP.

WATER QUALITY CERTIFICATION

57. Under section 401(a)(1) of the Clean Water Act (CWA),⁴⁸ the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency has either issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed 1 year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorized construction or operation of the project.⁴⁹

58. On May 10, 2007, Alcoa Generating applied to North Carolina DEQ for water quality certification for the Yadkin Project, which North Carolina DEQ received the same day. On November 16, 2007, North Carolina DEQ issued a certification for the Yadkin Project. However, on April 16, 2008, North Carolina DEQ revoked the certification based on the fact that public notice of the certification application was not published in the local newspaper.

59. On May 8, 2008, Alcoa Generating refiled its request for certification with North Carolina DEQ, which North Carolina DEQ received the same day. On May 7, 2009, North Carolina DEQ issued a certification for the Yadkin Project, which was appealed by Stanly County and subsequently stayed pending appeal. On December 1, 2010, North Carolina DEQ revoked the May 2009 certification. The revocation was appealed by Alcoa Generating.

60. On September 28, 2012, while Alcoa Generating's appeal was pending, the company filed a new application for certification with North Carolina DEQ. On October 4, 2012, Alcoa Generating withdrew its appeal. On August 2, 2013, North Carolina DEQ denied the September 28, 2012 application for certification because of claims that Alcoa Generating did not own or have sufficient rights over the stream bed of the Yakin River.

61. On September 25, 2013, Alcoa Generating appealed the denial of its application and, on May 29, 2015, the North Carolina Office of Administrative Hearings reversed North Carolina DEQ's August 2, 2013 denial of certification. North Carolina DEQ appealed the administrative law judge's May 29, 2015 decision. On September 25, 2015, the Wake County Superior Court affirmed the administrative law judge's decision and ordered North Carolina DEQ to act on Alcoa Generating's September 28, 2012 application within 30 days.

⁴⁸ 33 U.S.C. § 1341(a)(1) (2012).

⁴⁹ 33 U.S.C. § 1341(d) (2012).

62. On October 23, 2015, North Carolina DEQ⁵⁰ issued a certification for the Yadkin Project that includes 13 conditions, which are set forth in Appendix A of this order, and incorporated into the license by Ordering Paragraph (D). Six of the 13 conditions are general or administrative in nature and are not discussed further.⁵¹ The remaining seven conditions require Alcoa Generating to:⁵² (1) implement sediment and soil erosion control measures, including best management practices, for any project-related construction (Condition 1); (2) remove, or provide for the removal of, sediment at the City of Salisbury water supply intake (Condition 8); (3) develop a sedimentation and flood plan to protect the City of Salisbury's water intake (Condition 9); (4) sample fish in Narrows Reservoir for contaminants,⁵³ monitor contaminants in powerhouse discharges, and monitor contaminants in the sediment in Narrows Reservoir (Condition 10); (5) provide financial assurance for implementing the conditions of the certification

⁵⁰ The certification was issued by North Carolina DWR, a division of North Carolina DEQ.

⁵¹ The certification's general terms and conditions stipulate that: (1) contaminants resulting from construction activities are not permitted to enter wetlands, waters, or riparian areas (Condition 2); (2) no sediment and erosion control measures may be placed in wetlands or waters, and to the extent such measures are unavoidable they are to be (a) done in a manner that does not cause instability of the wetlands, stream beds, or banks adjacent to, upstream of, or downstream from the action, and (b) removed and natural grade restored (Condition 3); (3) the approval is for the purpose and design described in the license application and public notice, and a new certification application may be required should changes in the project occur (Condition 4); (4) the North Carolina DEQ Director, staff, or representative are afforded access to the project (Condition 5); (5) the certification does not grant or affirm any property right, license, or privilege in any waters or any right of use in any waters (Condition 6); and (6) the licensee conduct its activities in a manner consistent with state water quality standards, and applicable law (Condition 7).

⁵² The Agreement provides, and the certification requires, that the effective date for implementing the measures be tied to when the license order is final and non-appealable. However, because of the uncertainty of such a date, the deadlines for implementing the measures included in this license are tied to the license issuance date, or as otherwise specified in the license order.

⁵³ Alcoa Generating developed a "Fish Sampling Work Plan for Narrows Reservoir" dated December 14, 2007, and filed it with the Commission on May 16, 2016. This plan is discussed in this order. *See infra* at P 70 and P 71.

(Condition 11); and (6) implement DO enhancements and water quality monitoring at the High Rock, Narrows,⁵⁴ Tuckertown, and Falls Developments (Condition 12).

63. Certification Condition 13 requires Alcoa Generating to implement the Agreement's: (a) lake level operational curves⁵⁵ and spring reservoir stabilization program (section 3.1.1 of the Agreement); (b) minimum flow provisions, spring spawning enhancement flow provision, and LIP (sections 3.1.2, 2.1.1, and 3.1.4 of the Agreement); (c) provisions involving maintenance of flow gages, and reservoir level and flow monitoring (sections 2.1.2 and 3.1.3 of the Agreement); (d) HPMEP (section 3.1.5 of the Agreement); (e) provision for supporting a total maximum daily load process (section 2.2.5 of the Agreement); and (f) shoreline management measures (section 3.4.1 of the Agreement).

A. Sedimentation and Flood Control at the High Rock Development

64. Construction of High Rock Dam altered the sediment transport regime in the Yadkin River so that High Rock Reservoir intercepts and traps nearly all the sediment load from upstream areas.⁵⁶ Sediment has accumulated in the upper reaches of High Rock Reservoir and created an extensive sediment delta that causes flood waters to reach

⁵⁴ In accordance with section 2.2.1 of the Agreement, Alcoa Generating installed two draft tube air valves at each of the Narrows Development's units 1, 2, and 4. Specifically, valves were installed at unit 1 in April 2009, unit 2 in July 2008, and unit 4 in January 2010. The draft tube air valves are designed to function when the pressure in the draft tube is negative, which creates a pressure differential adequate to draw air in through the valves. Based on Alcoa Generating's monitoring since 2007, the operation of the draft tube air valves has significantly improved DO in the Narrows Development and Falls Development tailraces. *See* Alcoa Generating's June 21, 2016 Filing, entitled "2015 Tailwaters Dissolved Oxygen Report, Yadkin Project, FERC Project No. 2197."

⁵⁵ In comments on the final EIS, numerous individuals contend that operating Narrows Reservoir, as proposed, within 5 feet of full pool (504.8 to 509.8 feet; which is less than the 31 feet allowed under the existing license (*see* final EIS at 84)), results in unusable boat ramps and docks, reduced fish habitat, and unsafe boating because of exposed objects. Notwithstanding the individuals' concerns, the certification requires that Alcoa Generating operate Narrows Reservoir with a drawdown of up to 5 feet below full pool. This requirement would assist Alcoa Generating in meeting its downstream minimum flow obligations, except in times of drought (*see* final EIS at 84). During times of drought, the license requires Alcoa Generating to operate under a LIP. The LIP considers both reservoir and river needs, and strikes a balance between those needs during low-inflow conditions.

⁵⁶ *See* final EIS at 45.

higher elevations along the shoreline. This has implications for infrastructure located along the upper reaches of High Rock Reservoir, including the City of Salisbury's water supply intake (which is presently kept clear by a private sand and gravel mining operation) and pump station,⁵⁷ the access road to the pump station (which floods intermittently when the water surface elevation exceeds 628.3 feet), and the Grant Creek Wastewater Treatment Facility.

65. Alcoa Generating did not propose any measures to address the on-going effects of sedimentation in High Rock Reservoir. The City of Salisbury and Rowan County, North Carolina recommended that Alcoa Generating implement measures to reduce flooding at the Grant Creek Wastewater Treatment Facility (located 16.72 river miles upstream of High Rock Dam) and to reduce both flooding and sediment buildup at the City of Salisbury's water supply intake, pump station, and an access road to the pump station (all located 19.4 river miles upstream of the dam).

66. The final EIS includes an analysis of a number of sedimentation and hydraulic modeling studies,⁵⁸ and recommends that Alcoa Generating develop a Sedimentation and Flood Plan for the City of Salisbury's water supply intake, pump station, and access road.⁵⁹

67. Alcoa Generating argues that Commission staff's final EIS for the Yadkin Project is flawed, and staff's recommendation for reducing sedimentation and flooding at High Rock Reservoir is not supported by valid, substantial evidence and is inconsistent with the FPA.⁶⁰ The company has specific concerns regarding the scientific and engineering validity of the City of Salisbury's studies, as well as its contractual, property, and other legal rights in the vicinity of the City of Salisbury's facilities. For these reasons Alcoa Generating requests that staff's recommendation not be included in any new license issued for the project.

⁵⁷ The water supply intakes and pump station are the sole source of potable water for the City of Salisbury and Rowan County. Accumulated sediment can physically cover the intake gates, as well as exacerbate flooding in the area of the pump station and access road. The result is a potential loss of potable water for the city and county, as well as residents and businesses. *See* final EIS at 47.

⁵⁸ *See* final EIS at 45-48, 55-59, 76-80, and Appendix B to the final EIS.

⁵⁹ *See* final EIS at 292-295. The City of Salisbury, North Carolina, in its May 27, 2008 comments on the final EIS, supports the staff-recommended measure to reduce sedimentation and flooding at the water supply intake and pump station.

⁶⁰ *See* Alcoa Generating's June 12, 2008 Filing.

68. As stated above, construction of High Rock Dam altered the flow pattern of the Yadkin River, and, as a result, sediment accumulation in the upper reaches of High Rock Reservoir has increased the flood elevations along the shoreline. Nonetheless, the Commission does not have authority to adjudicate claims for, or to require payment of damages for, project-induced adverse effects to property of others.⁶¹ Rather, the City of Salisbury, if it believes that its water supply intake, pump station, and access road are adversely affected by flooding caused by operation of High Rock Dam, can seek redress with Alcoa Generating in state court.⁶² Moreover, section 10(c) of the FPA makes clear that a licensee of a hydropower project “shall be liable for all damages occasioned to the property of others by the construction, maintenance, or operation of the project works...”⁶³

69. For the above reason(s), a license condition requiring a Sedimentation and Flood Protection Plan is unnecessary. However, Condition 8 of the certification requires Alcoa Generating to remove sediment at the City of Salisbury’s water supply intake, and Condition 9 of the certification requires the company to develop a Sedimentation and Flood Protection Plan to protect the City of Salisbury’s water supply intake, pump station, and access road from sedimentation and flooding. As mandatory conditions, Conditions 8 and 9 are made part of the license by Ordering Paragraph (D).⁶⁴

B. Narrows Reservoir Fish Sampling Work Plan

70. Certification Condition 10.A requires Alcoa Generating to implement the *Fish Sampling Work Plan for Narrows Reservoir*, dated December 14, 2007. This plan, which was filed with the Commission on May 16, 2016, describes: (1) the contaminant history of the site; (2) Alcoa Generating’s proposed methods for sampling and analyzing fish tissue from three species of fish in Narrows Reservoir; (3) the proposed sampling locations in Narrows Reservoir; and (4) a reporting schedule. The plan stipulates that the

⁶¹ See, e.g., *Ohio Power Co.*, 71 FERC ¶ 61,092, at 61,312 (1995) (citing to *South Carolina Public Service Authority v. FERC*, 850 F.2d 788, 795 (D.C. Cir. 1988)).

⁶² See *PacifiCorp*, 133 FERC ¶ 61,232, at P 163 (2010), *order on reh’g*, 135 FERC ¶ 61,064 (2011); *Portland General Electric Company*, 107 FERC ¶ 61,158, at PP 27-33 (2004); *FPL Energy Maine Hydro, LLC*, 106 FERC ¶ 61,038, at PP 53-55 (2004).

⁶³ 16 U.S.C. § 803 (2012).

⁶⁴ The City of Salisbury’s and Rowan County, North Carolina’s recommendations that Alcoa Generating implement measures to reduce flooding at the Grant Creek Wastewater Treatment Facility are considered later in this order pursuant to section 10(a) of the FPA.

results of the sampling and validation of field data will be summarized in a report, which will be completed 90 days following completion of the field activities.

71. To facilitate the Commission's administration of the license, Article 402 approves the plan and requires Alcoa Generating to: (a) implement the plan; and (b) submit the report to North Carolina DEQ within 90 days, and filed with the Commission within 180 days, following completion of the field studies.

C. Dissolved Oxygen Monitoring

72. Certification Condition 12.F requires Alcoa Generating to update its "*Draft Dissolved Oxygen Monitoring Plan (May 2007)*" and submit it to North Carolina DWR for approval. The updated plan is to include, at a minimum: (1) updated contact information; (2) background information; (3) a description of proposed technologies; (4) a discussion of the monitoring and reporting procedures for the proposed upgraded "real-time" DO monitoring equipment; and (5) a discussion of how the DO meters will be repaired and replaced quickly in the event of a malfunction. The plan will be updated in consultation with North Carolina DWR and other appropriate state and federal resource agencies. The certification, however, does not identify which agencies are to be consulted. Therefore, to ensure the appropriate agencies are consulted, Condition 12.F of Appendix A to this order includes a requirement that the specific agencies to be consulted include North Carolina WRC, the FWS, and EPA, in addition to North Carolina DWR.

COASTAL ZONE MANAGEMENT ACT

73. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),⁶⁵ the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.

74. The State of North Carolina's coastal zone includes the 20 counties that in whole, or in part, are adjacent to, adjoining, intersected by, or bounded by the Atlantic Ocean or any coastal sound(s). The Yadkin Project is located outside of North Carolina's coastal zone, and North Carolina has not described a geographic location for federal license activities outside the coastal zone that it wishes to review. Notice of the license application was published in the *Federal Register* on December 28, 2006. In addition, North Carolina DEQ was provided a copy of the September 28, 2007 draft EIS and the April 18, 2008 final EIS. The agency did not notify the Commission or the applicant that it wished to review the application. Therefore, certification is not required.

⁶⁵ 16 U.S.C. § 1456(c)(3)(A) (2012)

75. The Yadkin River, on which the Yadkin Project is located, flows into South Carolina. By letter dated January 10, 2007,⁶⁶ the South Carolina DHEC - Office of Ocean and Coastal Resource Management notified Alcoa Generating that the project is consistent with the South Carolina Coastal Zone Management Program.

SECTION 18 FISHWAY PRESCRIPTION

76. Section 18 of the FPA⁶⁷ provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

77. By letters filed May 11, 2007, the Secretary of Commerce and the Secretary of the Interior requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 403 reserves the Commission's authority to require fishways that may be prescribed by Commerce and Interior for the Yadkin Project.

THREATENED AND ENDANGERED SPECIES

78. Section 7(a)(2) of the Endangered Species Act (ESA) of 1973⁶⁸ requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

79. In its license application, Alcoa Generating identified two multi-stem stands of the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*) known to occur within the project boundary near the Falls Development. One of the sunflower stands occurs on a ledge, protected from human disturbance; however, it is threatened by competition from the non-native invasive Japanese honeysuckle and other vegetation. The other sunflower stand occurs in close proximity to the Falls Dam Canoe Portage Trail. No critical habitat has been designated for this species.

80. In the draft EIS,⁶⁹ issued September 28, 2007,⁷⁰ Commission staff determined that relicensing the Yadkin Project, as proposed, with staff-recommended measures would be

⁶⁶ See Alcoa Generating's January 17, 2007 Filing at 2.

⁶⁷ 16 U.S.C. § 811 (2012).

⁶⁸ 16 U.S.C. § 1536(a) (2012).

⁶⁹ See draft EIS at 157-158.

⁷⁰ The draft EIS served as staff's Biological Assessment.

likely to adversely affect the federally endangered Schweinitz's sunflower because of trampling, collection, recreation-related impacts, and the potential for encroachment of invasive plants. Staff requested formal consultation with FWS on September 28, 2007. By letter filed November 13, 2007, FWS indicated that it could likely assist staff in reaching a "not likely to adversely affect" determination by providing additional conservation measures to protect the sunflower, as discussed below. Based on a site visit to the Falls Development in November 2007, FWS determined that additional protection measures were needed given the proximity of the sunflower plants to the canoe portage trail.⁷¹

81. Following consultation with FWS, Alcoa Generating proposed to protect the Schweinitz's sunflower and its habitat at the Falls Development by implementing FWS's recommended measures as part of a Rare, Threatened, and Endangered Species Management Plan.⁷² The measures include: (1) installing signs and rope at the project's Falls Dam Canoe Portage Trail to direct recreational users to stay on the trail; (2) monitoring the population annually; and (3) developing a Schweinitz's sunflower management plan to address potential threats to the sunflower stands, including controlling invasive vegetation. In the final EIS,⁷³ staff found that relicensing the project, as proposed with FWS's and Alcoa Generating's additional measures, would not be likely to adversely affect the Schweinitz's sunflower and its habitat.

82. By letter filed April 16, 2008, FWS concurred with Commission staff's determination. Therefore, no further action under the ESA is required. Article 404 requires Alcoa Generating to prepare a Rare, Threatened, and Endangered Species Management Plan that includes the provisions above.

NATIONAL HISTORIC PRESERVATION ACT

83. Under section 106 of the National Historic Preservation Act (NHPA)⁷⁴ and its implementing regulations,⁷⁵ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of

⁷¹ See FWS's November 13, 2007, and April 16, 2008 Filings.

⁷² See Alcoa Generating's February 10, 2008 Filing.

⁷³ See final EIS at 31 and 169-172.

⁷⁴ Section 106 of the National Historic Preservation Act of 1966, as amended, 54 U.S.C. § 306108, Pub. L. No. 113-287, 128 Stat. 3188 (2014). (The National Historic Preservation Act was recodified in Title 54 in December 2014).

⁷⁵ 36 C.F.R. Part 800 (2015).

Historic Places (defined as historic properties) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This process 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.

84. To satisfy these responsibilities, the Commission executed a PA with the North Carolina SHPO on July 30, 2008, and invited Alcoa Generating, the Forest Service, Catawba Indian Nation, Badin Historic Museum, Inc., and Trading Ford Historic District Preservation Association to concur with the stipulations of the PA. Alcoa Generating, Catawba Indian Nation, Badin Historic Museum, Inc., and Trading Ford Historic District Preservation Association concurred. The PA requires Alcoa Generating to develop an HPMP for the project. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 408 requires Alcoa Generating to implement the PA.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

85. Section 10(j)(1) of the FPA⁷⁶ requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,⁷⁷ to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

86. In response to the March 13, 2007 public notice that the project was ready for environmental analysis, Interior filed six recommendations under section 10(j).⁷⁸ Two recommendations are outside the scope of section 10(j) and are discussed in the next section. Of the remaining four recommendations that are within the scope of section 10(j), the license includes conditions consistent with three of those recommendations: (1) daily average minimum flows⁷⁹ from the Falls Development into the Yadkin River (Certification Condition 13A); (2) measures consistent with Interior's recommendation for a bald eagle management plan (Article 404); and (3) vegetation

⁷⁶ 16 U.S.C. § 803(j)(1) (2012).

⁷⁷ 16 U.S.C. §§ 661 *et seq.* (2012).

⁷⁸ Interior filed the recommendations on May 11, 2007.

⁷⁹ Except when operating under the LIP or HPMEP, the schedule for releasing daily average minimum flows is 1,000 cfs from June 1 through January 31; 2,000 cfs from February 1 through May 15; and 1,500 cfs from May 16 through May 31.

management techniques and maintenance protocols for maintaining sensitive, native plant species and their habitats within the project's transmission line corridors (Article 405).

87. If the Commission believes that any section 10(j) recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.⁸⁰ If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

88. Interior recommends that Alcoa Generating replace the project's trashracks with trashracks having a bar spacing not exceeding 2.5 inches to prevent fish entrainment⁸¹ in the turbines. Commission staff made an initial determination that Interior's recommendation may be inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA.⁸² By letter dated September 28, 2007, staff advised Interior of its preliminary determination.⁸³ Staff and Interior held a section 10(j) meeting on December 5, 2007,⁸⁴ and at the meeting, Interior agreed with staff that the trashracks do not need to be replaced because the current trashrack configuration is adequate to protect the fishery resource. On

⁸⁰ 16 U.S.C. § 803(j)(2) (2012).

⁸¹ Entrainment could occur when fish are unable to overcome the approach velocity at a screen face or bar rack and pass through the intake and turbines during project operation.

⁸² See draft EIS at 297-298.

⁸³ Letter from M. Pawlowski, Branch Chief, FERC, Office of Energy Projects, Washington, D.C. to W. Taylor, Director, Office of Environmental Policy and Compliance, Interior, Washington, D.C.

⁸⁴ Twenty-one other individuals were present during the telephone conference, representing FWS, NMFS, Progress Energy Carolinas (now operating as Duke Energy Progress), Alcoa Generating, North Carolina DEQ, North Carolina WRC, Carolina Forest Homeowners Association, Coastal Conservation League, City of Rockingham, and American Rivers.

December 11, 2007, staff provided a summary of the section 10(j) meeting that noted the resolution of the issue.⁸⁵

SECTION 10(a)(1) OF THE FPA

89. Section 10(a)(1) of the FPA⁸⁶ requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

90. Interior provided two recommendations under section 10(j) of the FPA that are not specific measures to protect, mitigate damages to, or enhance fish and wildlife, or that do not address a project effect.⁸⁷ Consequently, these recommendations are not considered under section 10(j) of the FPA, but rather addressed under the broad public-interest standard of section 10(a)(1) of the FPA.

91. Interior recommends that Alcoa Generating: (1) develop a rare, threatened, and endangered species management plan that includes the North Carolina state-listed Yadkin River goldenrod; and (2) maintain public access to the project's tailraces. As discussed below, the license includes these recommendations.

A. Rare, Threatened, and Endangered Species Management

92. During preparation of the license application, Alcoa Generating consulted with FWS and North Carolina WRC and conducted rare, threatened, and endangered species surveys. Several North Carolina listed terrestrial species, including the state endangered Schweinitz's sunflower,⁸⁸ as well as the state threatened Yadkin River goldenrod⁸⁹ and

⁸⁵ Letter from M. Pawlowski, Branch Chief, FERC, Office of Energy Projects, Washington, D.C. to P. Benjamin, Field Supervisor, FWS, Raleigh, North Carolina.

⁸⁶ 16 U.S.C. § 803(a)(1) (2012).

⁸⁷ Section 10(j) applies to conditions relating to fish and wildlife "affected by the development, operation, and management of the project."

⁸⁸ The Schweinitz's sunflower is listed as endangered at both the federal and state levels.

⁸⁹ Yadkin River goldenrod is a plant endemic to about 3.2 miles of rock outcrops and shoreline along the Yadkin River in North Carolina, mostly within the project boundaries of the Yadkin Project and the Yadkin-Pee Dee Project. *See* 78 Fed. Reg. 70104, 70108-09 (2013). On May 11, 2005, FWS made the Yadkin River goldenrod a
(continued ...)

bald eagle⁹⁰ were identified within the project boundary during the surveys.⁹¹ Of the freshwater mussel species identified,⁹² three North Carolina listed mussel species occur in the project's tailraces and in the free-flowing reach of the Yadkin River downstream of Falls Dam: the North Carolina listed endangered Eastern creekshell, the threatened alewife floater, and Eastern lamp mussel.⁹³

93. Alcoa Generating proposes to prepare a Rare, Threatened, and Endangered Species Management Plan that includes provisions to monitor and protect: (1) Schweinitz's sunflower and Yadkin River goldenrod from project-related effects, including project maintenance and recreation activities, by controlling encroaching invasive vegetation, as well as installing signs and rope to prevent trampling by directing recreational users on a trail; (2) freshwater mussels in the project's tailraces⁹⁴ from project-related effects, including the effect of project operations on mussel populations after the installation of aeration technologies and the anticipated improvements to DO concentrations in the tailraces;⁹⁵ and (3) bald eagle nesting and perching areas.

candidate species for listing under the ESA. *See* 70 Fed. Reg. 24870, 24873.

⁹⁰ FWS issued a bald eagle delisting notice on July 9, 2007 (72 Fed. Reg. 37346), and it became effective on August 9, 2007. Although federally delisted, bald eagles are still protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as well as listed as threatened in North Carolina.

⁹¹ *See* final EIS at 162-164 and 167-168.

⁹² Freshwater mussels at the Yadkin Project include Eastern elliptio, Pee Dee lance, Eastern floater, and paper pond shell. Pee Dee lance (*Elliptio cf. lanceolata*) is an undescribed lance that is currently thought to be morphologically and genetically distinct from yellow lance (*Elliptio lanceolata*), which is listed as endangered by the State of North Carolina. Because of taxonomic uncertainty, the status of this potential "new" species is undetermined (*see* <http://pbadupws.nrc.gov/docs/ML0907/ML090780711.pdf>).

⁹³ *See* final EIS at 100-101.

⁹⁴ Alcoa Generating states that there would be an emphasis on monitoring in the Falls Development tailrace, presumably because of a higher diversity of mussel species in this area, as well as a greater potential for mussel recruitment and more suitable stream habitat conditions. *See* section 3.6.1 of the Agreement.

⁹⁵ *See* section 2.2.4 of the Agreement and the Agreement's Joint Explanatory Statement, section 7.6.1, at 8.

94. As discussed below, Article 404 requires Alcoa Generating to prepare a Rare, Threatened, and Endangered Species Management Plan to protect the freshwater mussels, Yadkin River goldenrod, and bald eagle at the project.

1. Other Freshwater Mussels

95. The proposed changes in DO concentrations and minimum flow releases into the project's tailraces could affect freshwater mussel populations known to occur in the tailraces and in an approximately 1-mile-long, riverine reach of the Yadkin River downstream of Falls Dam. As part of the Rare, Threatened, and Endangered Species Management Plan, Alcoa Generating proposes to periodically monitor freshwater mussels in the project's tailraces, with an emphasis at the Falls Development tailrace.⁹⁶

96. As off-license measures, Alcoa Generating also intends to: (1) conduct the freshwater mussel monitoring within the first 10 years of the effective date of a new license for the Yadkin Project; and (2) at the end of the 10-year mussel monitoring period, if the results indicate poor mussel recruitment in the Falls Development tailrace, provide a one-time contribution of \$50,000 to North Carolina WRC for managing freshwater mussels in the river basin.⁹⁷

97. In the final EIS,⁹⁸ Commission staff found that Alcoa Generating's proposal to release minimum flows from Falls Dam⁹⁹ would likely enhance habitat conditions for freshwater mussel populations downstream of the Falls Development. Staff also found that periodically monitoring freshwater mussels during the first 10 years of the license would allow these potential improvements to be documented, along with any potential adverse effects caused by project operation and maintenance. However, staff found that the Agreement lacks specific measures that could be implemented to enhance mussel habitat in the project's tailraces if monitoring reveals that mussel recruitment has not improved with: (1) the installation of turbine aeration systems to increase DO; and (2) the new operating regime, including the higher minimum flows released from Falls Dam. Staff also found that a contribution of funds to North Carolina WRC for mussel management efforts elsewhere in the river basin does not appear to have an appropriate nexus to the project.¹⁰⁰

⁹⁶ See section 3.6.1 of the Agreement.

⁹⁷ See section 2.5.1 of the Agreement.

⁹⁸ See final EIS at 122 and 308.

⁹⁹ See section 3.1.2 of the Agreement.

¹⁰⁰ See final EIS at 122.

98. The Commission cannot ensure that Alcoa Generating's contribution of funds to North Carolina WRC would be used to mitigate the project's effects on freshwater mussels.¹⁰¹ Also, both staff and resource agencies need to have the opportunity to review the monitoring results and determine whether or not additional, or modified, protection and enhancement measures are needed for mussels occurring at the project. Accordingly, staff recommended that Alcoa Generating consult with FWS and North Carolina WRC at the end of the 10-year monitoring period to determine if there is a need to modify or add measures to protect and enhance freshwater mussel populations downstream of the Falls Development.¹⁰²

99. Article 404 requires that Alcoa Generating prepare a Rare, Threatened, and Endangered Species Management Plan, including provisions to: (1) monitor water quality and freshwater mussels within the project's tailraces for 10 years following license issuance; (2) prepare an annual report that documents the results of the monitoring;¹⁰³ (3) submit the annual monitoring report to FWS and North Carolina WRC for review and comment; (4) consult with FWS and North Carolina WRC at the end of the 10-year monitoring period to determine (a) if any improvements in mussel recruitment occurred during the 10 years of monitoring, and (b) whether additional measures are needed to protect and enhance freshwater mussel habitat and populations within the project boundary; and (5) file a 10-year monitoring report with the Commission for review and approval that summarizes the data and information from the annual reports, and addresses any additional measures recommended by FWS and North Carolina WRC to protect and enhance mussel populations at the project.

¹⁰¹ See *Settlements in Hydropower Licensing Procedures Under Part I of the Federal Power Act*, 116 FERC ¶ 61,270 (2006) at P 26.

¹⁰² See final EIS at 308.

¹⁰³ The report would include: (a) a description of the status of project aeration systems and the method used to monitor DO and freshwater mussel populations (including data on recruitment); (b) the DO data for each development's tailrace and a description of the effects of the DO concentrations on mussel populations; (c) a list of freshwater mussel species collected during sampling in each development's tailrace; (d) a map showing the geo-referenced locations of freshwater mussels collected in relationship to the project boundary; and (e) a summary of the flows (instream and generation releases; frequency and duration) in each development's tailrace, and a description of the effects of such flows on mussel populations.

2. Yadkin River Goldenrod

100. Yadkin River goldenrod is thought to be limited by a lack of suitable habitat. Habitat at 14¹⁰⁴ of the known Yadkin River goldenrod locations¹⁰⁵ within the project boundary is affected by periodic scouring flows, including at 12 sites downstream of Narrows Dam and two sites downstream of Falls Dam. The effects of changes in frequency and duration of scouring flows under proposed operations on this species are not well understood. Periodic inundation and scouring during high project flows may benefit Yadkin River goldenrod by reducing competition with other species, including non-native, invasive species, or may harm the goldenrod by scouring out the plants. Alcoa Generating proposes to develop, in consultation with FWS and North Carolina WRC, measures that address potential project effects on this species as part of a Rare, Threatened, and Endangered Species Management Plan.

101. In the final EIS,¹⁰⁶ Commission staff recommended that Alcoa Generating implement a Rare, Threatened, and Endangered Species Management Plan with specific measures, as recommended by FWS, to protect the Yadkin River goldenrod. The measures include: (1) controlling encroaching invasive vegetation; (2) monitoring the effects of project operation on the species and its habitat; and (3) creating additional suitable habitat.¹⁰⁷

102. In July 2013, Alcoa Generating entered into a Candidate Conservation Agreement (conservation agreement)¹⁰⁸ for the Yadkin River Goldenrod with FWS to address potential ongoing threats to the species within the project boundary for a 30-year term. The measures in the conservation agreement were similar to those recommended by staff in the final EIS. On November 22, 2013, given Alcoa Generating's implementation of the protection measures in the conservation agreement, FWS concluded that listing Yadkin River goldenrod is no longer warranted because the species no longer meets the

¹⁰⁴ See final EIS at 162-165.

¹⁰⁵ A total of 24 locations were identified, 22 downstream of Narrows Dam and two downstream of Falls Dam. See Alcoa Generating's October 5, 2006 Filing.

¹⁰⁶ See final EIS at 309.

¹⁰⁷ See final EIS at 318-319.

¹⁰⁸ See "Candidate Conservation Agreement for the Yadkin River Goldenrod (*Solidago plumosa*), Montgomery & Stanly Counties, North Carolina," filed March 10, 2016. The conservation agreement includes Alcoa Generating-owned lands within the Yadkin Project boundary bounded on the upstream end by Narrows Dam and on the lower end by Falls Dam.

definition of an endangered or threatened species under section 3 of the ESA, and therefore removed it from candidate status.¹⁰⁹

103. The conservation agreement is voluntary and is not included in the Agreement. It can be terminated by the parties before the end of the license term.¹¹⁰ Therefore, to ensure the protection of the Yadkin River goldenrod for the term of a new license, Article 404 requires Alcoa Generating to implement the following measures as part of a Rare, Threatened, and Endangered Species Management Plan: (1) identify methods for annual control of non-native invasive vegetation that encroaches on Yadkin River goldenrod locations within the project boundary; (2) maintain signs downstream of Narrows Dam to discourage recreationists from entering the tailrace area and inadvertently trampling the plant; (3) monitor the locations of the Yadkin River goldenrod within the project boundary annually to identify effects of project operations and project-related recreation on the species and its habitat, to include standardized enumeration of stems and rosettes combined with georeferenced maps/photographs; and (4) allow FWS and North Carolina Department of Agriculture's Plant Conservation Program staff access to the project (i.e., the Narrows and the Falls Developments) to assist in their efforts to harvest and spread seed to suitable habitat in and near the existing population.

3. Bald Eagles

104. Bald eagles have nested at the Yadkin Project along High Rock, Tuckertown, Narrows, and Falls Reservoirs, and use the project's tailraces and open water of the reservoirs for foraging. Based on FWS's concern that increased recreation and shoreline development could affect future nesting success,¹¹¹ Alcoa Generating has been monitoring bald eagle nesting activities at the project since 2001.¹¹² To ensure that adequate nesting habitat is maintained for bald eagles, Alcoa Generating proposes to, as part of a Rare, Threatened, and Endangered Species Management Plan: (1) continue annual monitoring of bald eagle nesting activities to document active nesting areas, recruitment, and the locations and status of suitable habitat at the Yadkin Project; and (2) develop, in consultation with FWS and North Carolina WRC, measures to protect bald eagles and their habitat at the project.

¹⁰⁹ See 78 Fed. Reg. 70104, 70108-09 (2013).

¹¹⁰ The conservation agreement can be terminated by the parties or extended beyond the initial 30-year term.

¹¹¹ See final EIS at 164. See also, the Agreement's Joint Explanatory Statement, section 7.11, at 11.

¹¹² See Alcoa Generating's April 25, 2006 License Application, Exhibit E, at E-134.

105. In the final EIS,¹¹³ Commission staff concluded that Alcoa Generating's measures, including monitoring bald eagle nesting activities, would be consistent with Interior's recommendation, and would document active nest locations and minimize the effects of shoreline development, recreation, and other shoreline uses on bald eagles nesting in the project area.¹¹⁴ While the license application discussed Alcoa Generating's existing Bald Eagle Management Plan¹¹⁵ and other provisions protective of bald eagles in the Shoreline Management Plan, as well as the consistency of these measures with the FWS's Habitat Management Guidelines for the Bald Eagle in the Southeast Region,¹¹⁶ the proposed Rare, Threatened, and Endangered Species Management Plan does not include specific bald eagle protection measures.¹¹⁷ Also, since the license application was filed, FWS has updated its bald eagle guidance.¹¹⁸

106. Therefore, Article 404 requires Alcoa Generating to implement the following bald eagle measures as part of a Rare, Threatened, and Endangered Species Management Plan: (1) updated protection measures, developed in consultation with FWS and North Carolina WRC, based on (a) the provisions of Alcoa Generating's existing Bald Eagle Management Plan, and (b) FWS's National Bald Eagle Management Guidelines to ensure continued protection of this species; and (2) continued annual monitoring of bald eagle nesting to document the active nesting areas, recruitment, and the locations and status of suitable habitat at the Yadkin Project. In addition, because the needs of, and management objectives for, bald eagles may change over time, the plan includes provisions for filing

¹¹³ See final EIS at 164.

¹¹⁴ The area to be monitored includes land within the project boundary, as well as adjacent land within the FWS's recommended buffer distances for activities that may disturb nesting bald eagles (*see* FWS's National Bald Eagle Management Guidelines).

¹¹⁵ The measures to protect the bald eagle are provided in Yadkin, Inc.'s Bald Eagle Management Plan, approved by the Commission in 1995. *See* 72 FERC ¶ 62,157 (1995). The plan was filed to satisfy the requirements of Article 37 of the license.

¹¹⁶ *See* Alcoa Generating's April 25, 2006 License Application, Exhibit E, at E-266 and U.S. Fish and Wildlife Service. 1987. Habitat Management Guidelines for the Bald Eagle in the Southeast Region. U.S Fish and Wildlife Service, Region 4. Atlanta, GA.

¹¹⁷ *See* section 3.6.1 of the Agreement.

¹¹⁸ *See* U.S. Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. Available at <https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf>.

survey reports and consulting with FWS and North Carolina WRC to revisit survey requirements.

107. As discussed in this order,¹¹⁹ the staff-recommended Conservation Zone Land Use Classification in a revised Shoreline Management Plan would protect environmentally sensitive areas, including the federally listed Schweinitz's sunflower habitat. This land use classification would also protect shoreline lands from development, such as boat docks, and protect the bald eagle from human disturbance. Alcoa Generating's proposal to enclose within the project boundary islands at the project's reservoirs would continue to protect the bald eagle and its habitat.¹²⁰

B. Recreation Facilities

108. Alcoa Generating proposes, and Interior recommends, maintaining public access to the project's tailraces. In the final EIS,¹²¹ Commission staff recommended adoption of the company's proposal, and the measure is required by Article 406 (Recreation Plan).

1. Recreation Plan

109. To enhance recreational opportunities, Alcoa Generating proposes to prepare a Recreation Plan that includes: (1) a list of all existing and new project recreation sites; (2) a map or maps identifying the existing and new project recreation sites in relationship to the Yadkin Project boundary; (3) a description of the recreation enhancements proposed and described below at each site, including the length and width of any project-related trail and canoe portage; (4) a discussion of how the needs of the disabled were considered in the planning and design of project recreation amenities; (5) a facility construction schedule; and (6) signs to identify project recreation sites.

110. At the High Rock Development, Alcoa Generating proposes to improve accessibility at the restrooms, pathways, and picnic tables; designate parking spaces for persons with disabilities; install signs; install a portable toilet at York Hill Boat Access and at Dutch Second Creek Boat Access;¹²² and install a courtesy dock at the Highway

¹¹⁹ See *infra* at P 128.

¹²⁰ In the current Shoreline Management Plan, at 5-13, Alcoa Generating identified 25 specific areas at the reservoirs' shorelines as priority bald eagle habitat: 9 areas at the High Rock Reservoir; 6 areas at the Tuckertown Reservoir; 7 areas at the Narrows Reservoir; and 3 areas at the Falls Reservoir. In general, most of the areas are undeveloped, mature forest located on islands.

¹²¹ See final EIS at 319.

¹²² See Appendix C to the Agreement, section I.2, at C-2. Dutch Second Creek
(continued ...)

601 Boat Access Area. At High Rock Reservoir, Alcoa Generating proposes to: (1) install an accessible fishing pier; (2) develop a new recreation site with a swimming area and beach; and (3) remove signs from the Rowan County Pump Station Boat Access Area and close the site to eliminate security concerns.¹²³

111. At the Tuckertown Development, Alcoa Generating proposes to improve accessibility at a restroom and pathway; designate an accessible parking space; install signs; and install a portable toilet at the Riles Creek Recreation Area.¹²⁴ Alcoa Generating also proposes to install an accessible fishing pier at Tuckertown Reservoir, and to improve the tailrace fishing access area.

112. At the Narrows Development, Alcoa Generating proposes to improve accessibility at the restrooms, pathways, and picnic tables; designate accessible parking spaces; install signs; and install a portable toilet at the Lakemont Access Area.¹²⁵

113. At the Falls Development, Alcoa Generating proposes to designate an accessible parking space; install signs; and install a courtesy dock at the Falls Boat Access Area (Falls Boating Access Area).

114. Within 20 years of the effective date of a new license, Alcoa Generating proposes to improve the: (1) High Rock Dam Canoe Portage Trail; (2) Tuckertown Dam Canoe Portage Trail; and (3) Narrows Dam Canoe Portage Trail, as needed based on recreational

Boat Access (Dutch Second Creek Public Access) is a non-project recreation site (i.e., facilities that Alcoa Generating is not responsible for operating and maintaining). North Carolina WRC constructed, and continues to operate and maintain, the site. The site has a boat ramp, boat dock, shoreline fishing access, signs, and parking. *See* Alcoa Generating's April 25, 2006 License Application, Appendix E-18, at 69.

¹²³ *See* section 3.3.1.2 of the Agreement. The Rowan County Pump Station Boat Access Area, which is owned and operated by Rowan County, is a non-project recreation site (i.e., facilities that Alcoa Generating is not responsible for operating and maintaining). The site has a boat ramp, shoreline fishing access, signs, and parking. *See* Alcoa Generating's April 25, 2006 License Application, Appendix E-18, at 33.

¹²⁴ Riles Creek Recreation Area is also referred to as Riles Creek Picnic and Fishing Access, and as Riles Creek Fishing & Picnic Access Area.

¹²⁵ *See* Appendix C to the Agreement, section I.2, at C-1 and C-2. The Lakemont Access Area, which is owned and operated by North Carolina WRC, is a non-project recreation site (i.e., facilities that Alcoa Generating is not responsible for operating and maintaining). The site has two boat ramps, signs, and parking. *See* Alcoa Generating's April 25, 2006 License Application, Appendix E-18, at 158.

use data. Within 10 years of the effective date of a new license, Alcoa Generating proposes to improve the Falls Dam Canoe Portage Trail, including measures to protect the federally listed Schweinitz's sunflower and its habitat.

115. Alcoa Generating proposes to maintain public access to the project's tailraces and improve the tailrace fishing access areas at the High Rock and the Tuckertown Developments.¹²⁶ Alcoa Generating proposes to improve accessibility at certain project recreation facilities,¹²⁷ but identifies both project and non-project recreation facilities for improvement in its response to a request for additional information from Commission staff.¹²⁸ Further, under the Agreement, Alcoa Generating proposes to develop a new public recreation site with a swimming area and beach at High Rock Reservoir on Alcoa Generating-owned, non-project land,¹²⁹ but later states in its response to a request for

¹²⁶ Alcoa Generating identifies two tailrace fishing access areas only at the Tuckertown Development: (1) High Rock Dam Tailrace Access - Davidson County; and (2) High Rock Dam Tailrace Access - Rowan County. *See* Alcoa Generating's April 25, 2006 License Application, Appendix E-18, at 83. These same two tailrace fishing access areas are identified in Alcoa Generating's April 26, 2007 Filing, Response to Question 2 of Commission staff's March 27, 2007 Letter, at Appendix A; Alcoa Generating's March 31, 2015 Filing, Licensed Hydropower Development Recreation Report (Form 80) at 1; and Alcoa Generating's March 30, 2009 Form 80 Filing at 1.

¹²⁷ *See* Appendix C to the Agreement. The project recreation facilities include: (1) Buddle Creek Boat Access Area (Buddle Creek Boating and Fishing Access); (2) Old Whitney Boat Access (Old Whitney Boat & Fishing Access Area); (3) Badin Boat Access (Badin Lake Boat Access); (4) Riles Creek Recreation Area; (5) Falls Boat Access (Falls Boating Access Area); (6) Highway 601 Access Area; (7) Badin Lake Swim/Picnic Area (Badin Lake Swim and Picnic Area; Badin Picnic & Swimming Area); (8) Flat Swamp Boat Access (Flat Swamp Access - Pebble Beach; Flat Swamp and Swim Access Area); and (9) Southmont Boat Access Area (Southmont Abbotts Creek Boat Access Area).

¹²⁸ *See* Alcoa Generating's October 13, 2006 Filing, Response to Question 19 of Commission staff's September 14, 2006 Letter, at 17. The non-project recreation facilities are Flat Creek Boat Access Area (Flat Creek North Carolina Wildlife Boating Access Area), Circle Drive Boat Access (above elevation 545 feet), and Dutch Second Creek Boat Access. According to Alcoa Generating's April 25, 2006 License Application, Appendix E-18, North Carolina WRC constructed these recreation facilities, and continues to operate and maintain them.

¹²⁹ *See* Appendix C to the Agreement, section II.1, at C-2.

additional information from Commission staff that it intends to donate the land to Rowan County for the county to develop a new public recreation site.¹³⁰

116. In the final EIS,¹³¹ staff recommended that Alcoa Generating prepare a Recreation Plan that includes Alcoa Generating's proposed measures for project recreation facilities and a provision for operating and maintaining the project recreation sites. As discussed in this order,¹³² Alcoa Generating has used multiple names interchangeably, for certain project recreation sites. Article 406 requires Alcoa Generating to prepare a Recreation Plan that identifies and consistently references all existing and new project recreation sites at the High Rock, Tuckertown, Narrows, and Falls Developments, and provides site-specific information on project recreation amenities to ensure that all project recreation sites are located on lands owned or controlled by Alcoa Generating and within the project boundary.

117. As discussed in the final EIS,¹³³ Alcoa Generating proposes to develop up to 10 new dispersed campsites to promote non-motorized boating on the Yadkin-Pee Dee River Trail.¹³⁴ Alcoa Generating, however, recognizes that there are existing unauthorized, dispersed campsites at the project.¹³⁵ Therefore, to promote recreational opportunities and protect environmental resources at the project, Alcoa Generating should determine whether an existing unauthorized, dispersed campsite at the High Rock, Tuckertown, Narrows, and Falls Developments could be converted into a new project dispersed campsite. Based on Alcoa Generating's assessment, the company should develop up to 10 project dispersed campsites within the project boundary, either through the conversion of existing, unauthorized dispersed campsites or through the installation of new dispersed campsites. Additionally, Alcoa Generating should identify: (1) existing, unauthorized dispersed campsites within the project boundary that would not be converted to a project

¹³⁰ See Alcoa Generating's October 13, 2006 Filing, Response to Question 19 of Commission staff's September 14, 2006 Letter.

¹³¹ See final EIS at 311.

¹³² See *supra* at P 21.

¹³³ See final EIS at 208 and 212.

¹³⁴ The Yadkin-Pee Dee River Trail is a 230-mile-long river trail, located on the Yadkin and Pee Dee Rivers that extends from Wilkesboro, North Carolina, to the South Carolina border. The trail has 41 access sites and passes through the project reservoirs as well as the free-flowing sections of the Yadkin and Pee Dee Rivers (e.g., Tillery Reach). See final EIS at 180.

¹³⁵ See Alcoa Generating's April 25, 2006 License Application, Appendix E-18, section 5.3.

dispersed campsite; and (2) measures to restore the area and prevent unauthorized camping. Article 406 requires these measures.

118. Alcoa Generating proposes to replace the existing boat ramp located off Highway 49, in the vicinity of the Highway 49 Bridge, with a similar facility located elsewhere on the lower portion of the Tuckertown Reservoir.¹³⁶ However, it is unclear whether or not the boat ramp is part of Alcoa Generating's existing Highway 49 Boat Access Area, a project recreation site located off Highway 49 at the Tuckertown Reservoir that has two boat ramps, two boat docks, and parking. Therefore, Article 406 requires Alcoa Generating to clarify whether or not the access area located in the vicinity of the Highway 49 Bridge is the licensee-owned existing Highway 49 Boat Access Area, or a different access area.

2. Facility Enhancement Schedule

119. Alcoa Generating proposes recreation facility improvements to be completed within 10 and 20 years of the effective date of a new license. Under the Agreement, at section 3.3.1.1, the 10-year schedule identifies improving accessibility at up to 10 project recreation sites and improving the Falls Dam Canoe Portage Trail. Under the Agreement, at section 3.3.1.1, improving the canoe portage trails at the High Rock, Tuckertown, and Narrows Developments would occur within 20 years of the effective date of a new license. Two factors suggest a potential for increased recreational demand: (1) predicted future population growth of 44 percent (from 2004 to 2030) in the Yadkin Project region;¹³⁷ and (2) improved water quality associated with modified project operations and new DO enhancements. The potential for increased demand heightens the importance of recreation improvements. Commission staff recommended that the recreation enhancements be completed sooner than originally proposed pursuant to a revised schedule. Also, in the license application the company indicated that certain project recreation facilities need to be repaired. A maintenance schedule is needed as part of the Recreation Plan to ensure Alcoa Generating continues to operate and maintain project recreation facilities.¹³⁸

120. Therefore, Article 406 requires Alcoa Generating to prepare a revised schedule for: (1) implementing all project recreation enhancements within 10 years of license

¹³⁶ See Appendix C to the Agreement, section III.1, at C-3. As stated in the Agreement, the current boat ramp is located on lands owned or controlled by Alcoa Generating, and the parking area is located in the North Carolina Department of Transportation's right-of-way.

¹³⁷ See final EIS at 194.

¹³⁸ See Alcoa Generating's April 25, 2006 License Application, Appendix E-18.

issuance, including improvements to the canoe portage trails at the High Rock, Tuckertown, and Narrows Developments based on recreational use data; and (2) completing the necessary repairs and maintenance at the project recreation facilities.

3. Monitoring

121. In the final EIS,¹³⁹ Commission staff found Alcoa Generating's proposal to develop a Recreation Plan did not include a provision for monitoring recreational use during the term of a new license. Recreation use could significantly increase with population growth during the term of a license. Staff found that monitoring recreational use and demand at the project would provide a process for identifying if or when recreation needs are no longer being met. Therefore, Article 406 requires Alcoa Generating to prepare a Recreation Use and Needs Assessment as a component of a recreation report to be filed every 12 years.

C. Sedimentation and Flood Protection at the City of Salisbury, North Carolina's Grant Creek Wastewater Treatment Facility

122. As discussed above,¹⁴⁰ construction of High Rock Dam altered the sediment transport regime in the Yadkin River so that High Rock Reservoir intercepts and traps nearly all the sediment load from upstream areas.¹⁴¹ This sedimentation results in increased flooding at the City of Salisbury's Grant Creek Wastewater Treatment Facility.¹⁴² Alcoa Generating does not propose to address the ongoing effects of sedimentation in High Rock Reservoir, while the City of Salisbury and Rowan County, North Carolina recommend measures to reduce flooding at the Grant Creek Wastewater Treatment Facility, which is located 16.72 river miles upstream of High Rock Dam.

123. Commission staff's analysis of sedimentation and the hydraulic modeling studies in the final EIS considered the City of Salisbury's Grant Creek Wastewater Treatment Facility, as well as the city's water supply intake, pump station, and access road.¹⁴³ As a result, the final EIS recommended Alcoa Generating develop a Flood Protection Plan for the Grant Creek Wastewater Treatment Facility that includes provisions for maintenance dredging and physical modifications to the existing wastewater treatment facility (e.g.,

¹³⁹ See final EIS at 205-206.

¹⁴⁰ See *supra* at P 64.

¹⁴¹ See final EIS at 45.

¹⁴² See final EIS at 78-79; and Appendix B of the final EIS.

¹⁴³ See final EIS at 48-49, 55-59, 77-80; and Appendix B of the final EIS.

installation of a flood protection berm or other feasible options for achieving the same benefits).¹⁴⁴

124. Alcoa Generating contends that the staff-recommended Flood Protection Plan to address flooding at the City of Salisbury's Grant Creek Wastewater Treatment Facility is not supported by valid, substantial evidence. The company further argues that the recommended plan is inconsistent with the FPA, and should not be included in a new license.¹⁴⁵

125. As stated above, High Rock Dam and its operation can affect flooding at the City of Salisbury's Grant Creek Wastewater Treatment Facility. Such flooding could affect public health and safety. Nonetheless, the Commission has no authority to adjudicate claims for, or to require payment of damages for, project-induced adverse effects to property of others. The City of Salisbury can seek redress with Alcoa Generating in state court. Therefore, a license condition requiring a Grant Creek Wastewater Treatment Facility Flood Protection Plan is unnecessary, and is not included in the license.

D. Shoreline Management

126. Currently, shoreline use at the project is guided by Alcoa Generating's existing Shoreline Management Plan¹⁴⁶ including its Shoreline Stewardship Policy.¹⁴⁷ Currently, land use within, or adjacent to, the project boundary is categorized into six classifications:¹⁴⁸

¹⁴⁴ See final EIS at 294-295.

¹⁴⁵ See Alcoa Generating's June 12, 2008 Filing.

¹⁴⁶ On November 9, 2000, the Commission approved the Shoreline Management Plan with modifications to: (1) file for Commission approval any permit application that affects cultural resources for which Alcoa Generating has not obtained concurrence from the North Carolina SHPO; and (2) file a supplement that describes Alcoa Generating's procedures for lap trees. See *Alcoa Power Generating, Inc.*, 93 FERC ¶ 61,152 (2000).

Lap trees are living or dead trees that overhang into the water. The measures regarding lap trees are provided in Alcoa Generating's Procedures for Implementation of Those Portions of the Shoreline Management Plan Relating to the Removal or Relocation of Lap Trees, approved by the Commission in 2001. See *Alcoa Power Generating, Inc.*, 95 FERC ¶ 62,105 (2001).

¹⁴⁷ The Shoreline Stewardship Policy is included in the Shoreline Management Plan at section 8.0.

¹⁴⁸ The existing land use classifications are provided in Alcoa Generating's
(continued ...)

1. Forest - Lands that are undeveloped and allow for timber management.
2. Agriculture - Lands, including cultivated and grazing areas, where a forested buffer of approximately 10 to 100 feet occurs between the field and the project reservoir.
3. Residential - Lands near the shorelines that are, or will be, subdivided for residential development, including seasonal and year-round residences.
4. Commercial - Lands that allow for non-recreational, commercial land use.
5. Industrial - Lands that include the project's electric generating plants, transmission lines, water intakes and discharges, and other industrial/municipal plants.
6. Recreation - Lands that are divided into four sub-categories:
 - a. Private recreation - lands with non-project recreation facilities that are available to members only and are not available to the general public;
 - b. Public recreation - lands with project and non-project recreation facilities that are available to the general public, and operated by Alcoa Generating or the State of North Carolina;
 - c. Commercial recreation - lands with non-project recreation facilities that include concessionaire-operated public marinas and recreational areas providing a variety of recreational services to the public on a fee basis; and
 - d. Golf course - non-project recreation facility located on Narrows Reservoir shoreline and part of a residential community.

127. To protect the scenic quality and environmental resources at the project, Alcoa Generating proposes to revise the current Shoreline Management Plan (section 3.4 of the Agreement); however, Alcoa Generating has not specifically identified how the plan would be revised.

128. Alcoa Generating modified its Shoreline Management Plan in 2002.¹⁴⁹ This action carried through the land use classifications approved in 2000, including the associated shoreline classification maps filed with the relicense application. For multiple reasons, the 2000 land use classification system requires modification. First, the Recreation Land Use Classification is divided in four sub-categories, one of which is a golf course. The golf course sub-category does not provide project recreation and access to the general public, but rather provides recreation to a subset of the public or customers of a commercial operator. For this reason, the golf course is not considered to be project recreation and must be removed as a sub-category. Second, Alcoa Generating did not identify, as one of its land use classifications, North Carolina WRC's-recommended Conservation Zone Land Use Classification¹⁵⁰ to protect environmentally sensitive areas including areas where rare, threatened, and endangered species occur at the project. Third, the Commercial Land Use Classification is unclear as to the meaning of "non-recreational, commercial land use." Last, the existing shoreline classification maps require updating to reflect the project boundary modifications proposed by Alcoa Generating.

129. In the final EIS, staff recommended Alcoa Generating prepare a revised Shoreline Management Plan for the project.¹⁵¹ A revised plan for lands within the project boundary is needed to identify where to enhance the scenic quality, public recreation access, and environmental resources, at the Yadkin Project. Therefore, Article 407 requires Alcoa Generating to prepare a revised Shoreline Management Plan, and replace the current land use classifications with the following six land use classifications:

1. Industrial - Lands reserved for current and potential future operational activities, including hydroelectric generation and project operational uses; and non-project uses such as water intakes and discharges, and other industrial/municipal facilities.
2. Public Recreation - Lands owned by Alcoa Generating for existing and/or future project recreational use, including land developed for recreation with provisions for public access, recreation, open space, and future recreation development.

¹⁴⁹ See Alcoa Generating's May 31, 2002 Filing entitled, "Refinements to the Shoreline Management Plan for the Yadkin Hydroelectric Project No. 2197," which includes Exhibit A, Shoreline Stewardship Policy.

¹⁵⁰ See North Carolina WRC's August 19, 1999 Filing.

¹⁵¹ See final EIS at 224-225 and 315.

3. Commercial Recreation - Lands for non-project uses such as concessionaire-operated public marinas and recreation areas that provide a variety of recreational services to the public on a fee basis.
4. Private - Lands and waters occupied by non-project private facilities, e.g. a private dock for adjacent landowners, none of which can have a habitable structure.
5. Forest - Lands for timber management, including the practice of sustainable forestry that integrates reforestation.
6. Conservation Zone - Lands that remain undeveloped for specific project purposes, including to: protect environmentally sensitive areas; maintain aesthetic qualities; provide for nature study; and prevent overcrowding of partially developed shoreline.

1. Shoreline Stewardship Policy

130. As part of the current Shoreline Management Plan, Alcoa Generating manages shoreline land within the project boundary through its existing Shoreline Stewardship Policy.¹⁵² The Shoreline Stewardship Policy provides guidelines to adjacent property owners for the construction of piers, boat ramps, retaining walls or other shoreline stabilization measures on lands within the project boundary. The permitting process involves on-site meetings with property owners that include a review of the proposed structures, requirements to obtain all necessary permits and approvals from North Carolina WRC, and a post-permitting enforcement policy. Non-project uses of project waters and shoreline lands are subject to permitting by Alcoa Generating and Commission approval where appropriate.¹⁵³

131. Under the Agreement, at section 2.4, Alcoa Generating proposes to modify certain sections of its current Shoreline Stewardship Policy. Those sections are included as Appendix D to the Agreement.¹⁵⁴ However, there are discrepancies between Appendix D and the remaining sections of the Shoreline Stewardship Policy, such as the contour

¹⁵² See final EIS at 224-225.

¹⁵³ Since the license was amended in 1982 to add the Commission's standard land use article as Article 35 of the license, the licensee has been required to maintain a program for permitting the types of use and occupancy of project lands and waters permitted by that article, such as piers, boat ramps, marinas accommodating up to 10 boats, bulkheads, and retaining walls. See Yadkin, Inc.'s February 25, 1982 Filing.

¹⁵⁴ See n. 47, *supra*.

elevation.¹⁵⁵ Moreover, both Appendix D and the policy need to be updated to reflect the correct licensee. Article 407 requires Alcoa Generating to update the Shoreline Stewardship Policy accordingly.

132. Alcoa Generating also manages shoreline land through: (1) Commission-approved procedures for the removal or relocation of lap trees to protect the project's shoreline lands and ensure recreation safety,¹⁵⁶ and (2) aquatic vegetation agreements with adjoining property owners to protect aquatic vegetation at the project.¹⁵⁷ For ease of administration, it would be helpful to have the updated Shoreline Stewardship Policy and the procedures for lap trees expressed in one document. Therefore, Article 407 requires Alcoa Generating to assemble the programs in one document (a revised Shoreline Management Plan). Alcoa Generating need not identify or otherwise discuss the non-project aquatic vegetation agreement in the revised Shoreline Management Plan.

E. Invasive Species Management

133. As an off-license measure, Alcoa Generating intends to provide \$25,000 annually to support North Carolina DWR's and North Carolina WRC's efforts to monitor invasive aquatic species at the project's reservoirs.¹⁵⁸ Under the Agreement, the primary focus of the monitoring efforts would be invasive aquatic species, such as hydrilla, but monitoring would also consider the presence and extent of other invasive species, such as the Chinese mystery snail. If the North Carolina DWR or North Carolina WRC determines that invasive aquatic species are present in any of the project's reservoirs to an extent of management concern, then Alcoa Generating would work cooperatively with the resource agencies to identify and implement measures to control the invasive aquatic species.

134. In the final EIS,¹⁵⁹ Commission staff recommended that Alcoa Generating monitor aquatic invasive species and provide funds to North Carolina DWR and North Carolina

¹⁵⁵ The Shoreline Stewardship Policy uses Yadkin Datum and Appendix D to the Agreement uses USGS Datum. To convert an elevation in Yadkin Datum to USGS Datum, the full pool elevation at High Rock Reservoir, for example, is 655.0 feet Yadkin Datum, which equals 623.9 feet USGS Datum (-31.1 feet). *See* Alcoa Generating's April 25, 2006 License Application, Exhibit A, at A-1.

¹⁵⁶ 95 FERC ¶ 62,105 (2001).

¹⁵⁷ *See* Alcoa Generating's May 17, 2000 Filing at 1-2, which provides a copy of an unexecuted aquatic vegetation agreement.

¹⁵⁸ *See* section 2.5.2 of the Agreement.

¹⁵⁹ *See* final EIS at 308-309.

WRC, given that the Asian clam (*Corbicula fluminea*) and Chinese mystery snail (*Bellamya chinensis*) occur within the project boundary. However, the Commission cannot ensure that the funds provided to these agencies would be used to protect or enhance aquatic resources at the project.¹⁶⁰ Therefore, the license does not require Alcoa Generating to provide \$25,000 annually to North Carolina DWR and North Carolina WRC. Nevertheless, Asian clam and Chinese mystery snail populations which share habitat with freshwater mussels could also occur in the project's tailraces and potentially outcompete native freshwater mussels. Monitoring these mollusk species during Alcoa Generating's proposed freshwater mussel monitoring efforts would provide information about the effects of water quality and project operations on recruitment of these invasive species in the project's tailraces and their effect on native freshwater mussel populations. The monitoring results would assist Alcoa Generating, the resource agencies, and staff in determining whether additions or modifications to the company's protection and enhancement measures for native freshwater mussels are warranted. Therefore, Article 404 (Rare, Threatened, and Endangered Species Management Plan) requires Alcoa Generating to document Asian clam and Chinese mystery snail occurrences as part of the periodic mussel monitoring efforts.

F. Project Transmission Line Corridors

135. Vegetation within the transmission line corridors at Narrows Development and Falls Development is generally a mix of herbaceous and shrub species. A segment of the Narrows Development transmission line borders a scrub-shrub wetland habitat, and the Falls Development transmission line crosses two wetland areas (i.e., a wet meadow, and an emergent marsh), which provide a diversity of habitat for rare, threatened, and endangered species.¹⁶¹

136. Currently, Alcoa Generating maintains the vegetation along the two transmission line corridors using herbicide applications and mechanical methods. Alcoa Generating proposes to develop a Transmission Line Corridor Management Plan that includes: (1) objectives for vegetation (e.g., invasive terrestrial species) and wetland management at the project's two transmission line corridors; (2) a periodic review of application methods and herbicide use to avoid adverse effects on environmental resources; and (3) modifications to its routine maintenance operations to protect existing habitat and associated species.¹⁶²

¹⁶⁰ See *Settlements in Hydropower Licensing Procedures Under Part I of the Federal Power Act*, 116 FERC ¶ 61,270 (2006) at P 26.

¹⁶¹ See final EIS at 143-144.

¹⁶² See Alcoa Generating's April 25, 2006 License Application, Appendix E-10, at 19.

137. In the final EIS,¹⁶³ Commission staff recommended Alcoa Generating prepare a Transmission Line Corridor Management Plan to manage vegetation (e.g., invasive terrestrial species) and wetlands and to protect two rare plants (Heller's trefoil¹⁶⁴ and Pursh's wild petunia), and a rare reptile (timber rattlesnake), which are known to occur along the project's transmission line corridors. Therefore, Article 405 requires Alcoa Generating to prepare a Transmission Line Corridor Management Plan that includes: (1) a description of the transmission line corridors including the acreages, topography, soil types, and existing vegetation and habitat types; (2) a description of the vegetation management goals and objectives, to include, at a minimum, the protection of wetlands, Heller's trefoil and Pursh's wild petunia, and habitat of a rare reptile, timber rattlesnake; (3) a detailed description of vegetation management techniques, including best management practices to (a) promote native species, (b) prevent erosion and the spread of non-native invasive plants, and (c) minimize the use of herbicides; (4) a provision to train staff to identify and report species of management interest; (5) evaluation of the effectiveness of the vegetation management techniques in meeting the goals and objectives; and (6) an implementation schedule, including the frequency of each type of vegetation management activities.

G. Project Boundary

138. Alcoa Generating proposes to modify the project boundary to enclose all existing and new project recreation sites.¹⁶⁵ Accordingly, Commission staff recommended, and Article 204 requires, Alcoa Generating include all Alcoa Generating-owned project recreation sites within the project boundary.¹⁶⁶

139. Additionally, Alcoa Generating proposes to include in the project boundary all islands at the High Rock, Tuckertown, Narrows, and Falls Reservoirs, and donate the non-project Pear Tree Island on Narrows Reservoir to the Forest Service.¹⁶⁷ Commission staff found that Alcoa Generating's proposal to include islands within the project boundary would serve a project purpose by protecting environmental resources,

¹⁶³ See final EIS at 165 and 310.

¹⁶⁴ See Alcoa Generating's April 25, 2006 License Application, Appendix E-14, Table 1, that identifies the plant species as Carolina birdfoot-trefoil/Heller's trefoil.

¹⁶⁵ See Alcoa Generating's April 26, 2007 Filing, Response to Question 2 of Commission staff's March 27, 2007 Letter.

¹⁶⁶ See final EIS at 316-317.

¹⁶⁷ Alcoa Generating proposes to file a revised Exhibit G drawing showing Pear Tree Island as non-project land. See Alcoa Generating's October 13, 2006 Filing, Response to Question 21 of Commission staff's September 14, 2006 Letter.

providing habitat for rare, threatened, and endangered species, and encouraging low impact recreational use.¹⁶⁸ Article 203 requires Alcoa Generating to enclose within the project boundary the islands at the project's reservoirs, except for the non-project Pear Tree Island.

H. Other Issues

140. On September 18, 2009, North Carolina Governor Beverly Perdue filed a motion asking the Commission to recommend that the federal government take over the Yadkin Project and then transfer it to the State of North Carolina. Governor Perdue argued that there would be economic benefits to the state if the project was transferred to it. As justification for a federal takeover and transfer to the state, Governor Perdue contended that Alcoa Generating had failed to maintain the jobs at the Badin aluminum plant, which had been cited as a benefit of licensing the project in 1958, and had failed to be a good trustee and steward of the resources of the Yadkin River, citing to environmental pollution caused by the operation of the aluminum plant and Alcoa Generating's resistance to efforts by state resource agencies to warn the public of the resulting dangers.

141. On October 5, 2009, Alcoa Generating filed an answer to Governor Perdue's motion, arguing that the Governor's request for federal takeover and transfer of the project to North Carolina was untimely and outside the provisions of section 14 of the FPA. The company also noted that the creation and maintenance of jobs at Alcoa Inc.'s aluminum smelting plant is not a factor to be considered in determining whether or not to issue Alcoa Generating a new license.

142. Commission staff agrees. Section 14 of the FPA provides that "[u]pon not less than two years notice in writing from the Commission the United States shall have the right upon or after the expiration of any license to take over and thereafter to maintain and operate any project or projects as defined in section 3 hereof...."¹⁶⁹

143. As noted in the final EIS, no federal agency has recommended federal takeover of the project.¹⁷⁰ Governor Perdue's recommendation does not seek to have the United States takeover, maintain, and operate the Yadkin Project. Rather the Governor would have the federal government acquire the project from Alcoa Generating, without fully compensating the company for the project's value, for the sole purpose of turning over ownership of the project to the State of North Carolina. Such circumstances do not warrant a recommendation for federal takeover.

¹⁶⁸ See final EIS at 219.

¹⁶⁹ 16 U.S.C. § 807 (2012).

¹⁷⁰ See final EIS at 35.

144. On June 26, 2013, Yadkin Riverkeeper filed a petition asking the Commission to reopen the proceeding and allow interested parties to file competing applications for the Yadkin Project. On April 27, 2015, Central Park NC filed a motion for relief which asked the Commission to deny Alcoa Generating's license application and allow other interested parties to file applications for the project.

145. Section 15 of the FPA¹⁷¹ requires that any entity – whether an existing licensee or a competitor – seeking to file an application to relicense a project must do so no later than two years from when the current license will expire.¹⁷² License proceedings must be reopened only where changes in an applicant's plan of development are material, that is, involve changes to a project's physical features such that it should be considered an entirely new project.¹⁷³

ADMINISTRATIVE PROVISIONS

A. Annual Charges

146. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA.

B. Exhibit F and G Drawings

147. The Commission requires licensees to file sets of approved project drawings in electronic file format. Article 202 requires the filing of these drawings.

148. The Exhibit G drawings filed with the license application do not conform to sections 4.39 and 4.41 of the Commission's regulations. The Exhibit G drawings are not stamped by a registered land surveyor, and do not include land ownership and property rights information. Additionally, all insets showing portions of the project boundary must include at least three reference points. The project boundary does not enclose all existing and new project recreation sites, and islands at the project's reservoirs that Alcoa Generating proposes to include within the project boundary. The Exhibit G drawings must include land ownership and property rights information for all lands within the project boundary. The Exhibit G drawings must show and enclose all approved project

¹⁷¹ 16 U.S.C. § 808 (2012).

¹⁷² See, e.g., *Green Island Power Authority*, 110 FERC ¶ 61,034 at P 13-P 14, *reh'g denied*, 110 FERC ¶ 61,331 (2005).

¹⁷³ See, *Erie Boulevard Hydropower, L.P.*, 131 FERC ¶ 61,036 at P 17, P 37; *reh'g denied*, 134 FERC ¶ 61,205 at P 31-P 32; *reh'g denied*, 136 FERC ¶ 61,044 (2011); *summarily aff'd*, *Green Island Power Authority v. FERC*, 497 Fed. Appx. 127 (2d Cir. 2012).

features and lands; therefore, the Exhibit G drawings are not approved. Article 203 requires Alcoa Generating to file revised Exhibit G drawings in conformance with sections 4.39 and 4.41 of the Commission's regulations.

C. Amortization Reserve

149. The Commission requires that for new major licenses, non-municipal licensees must set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

150. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

E. As-Built Exhibits

151. Where new construction or modifications to the project are involved, the Commission requires the licensee to file revised drawings of project features as built. Because the approved turbine/generator modifications would change the authorized installed capacity, Article 206 requires the licensee, within 90 days of completion of construction or any modifications to existing project structures and facilities authorized by the license, to file for Commission approval, revised Exhibits A, F, and G, as applicable, to describe and show those project structures and facilities as built.

F. Use and Occupancy of Project Lands and Waters

152. Requiring a licensee to obtain prior Commission approval for every use of occupancy of project land would be unduly burdensome. Therefore, Article 409 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

G. Review of Final Plans and Specifications

153. Article 301 requires the licensee to consult with the Commission's Division of Dam Safety and Inspections (D2SI)-Atlanta Regional Engineer, if environmental requirements under this license require modifications that may affect project works or operations.

154. Article 302 requires the licensee to file a report describing the effects of revised reservoir operating levels at the project's High Rock Development on upstream and

downstream flooding of non-project properties and structures, and a plan and schedule for implementing any remedial measures that may be needed.

155. Article 303 requires the licensee to file within 6 months a final plan and schedule for completing the turbine/generator modifications. The schedule should be consistent with the schedule in the water quality certification.¹⁷⁴

156. Article 304 requires the licensee to provide the Commission's D2SI-Atlanta Regional Engineer with cofferdam and deep excavation construction drawings.

157. Article 305 requires the licensee to provide the Commission's D2SI-Atlanta Regional Engineer with final contract drawings and specifications, together with a supporting design report, consistent with the Commission's engineering guidelines. The submittal must include a temporary construction emergency action plan, a quality control and inspection program, and a soil erosion and sediment control plan.

H. Commission Approval of Resource Plans and Filing of Amendments

158. In Appendix A, there are certain certification conditions that either do not require Alcoa Generating to file reports with the Commission or do not specify the need for Alcoa Generating to obtain Commission authorization prior to making long-term structural and/or operational modifications at the project. Therefore, Article 401 requires the licensee to file reports with the Commission and to obtain Commission authorization prior to making structural or operational changes to the project.

STATE AND FEDERAL COMPREHENSIVE PLANS

159. Section 10(a)(2) of the FPA¹⁷⁵ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving,

¹⁷⁴ Modifying the turbine/generator units, which is necessary for more efficient operation, would generally coincide with installing aeration units, which may be necessary to improve DO concentrations. Condition 12.B of the certification requires Alcoa Generating to request Commission approval for the three turbine/generator modifications at the High Rock Development within 60 days of receiving a new license, and complete the modifications within 24 months of Commission approval. Condition 12.B of the certification requires Alcoa Generating to request Commission approval for the modifications at the Narrows Development within 60 days of receiving a new license, and complete the modifications within 36 months of Commission approval. Condition 12.D of the certification requires Alcoa Generating to assess the need for a turbine/generator modification at the Falls Development after monitoring DO at the Narrows Development.

¹⁷⁵ 16 U.S.C. § 803(a)(2)(A) (2012).

developing, or conserving a waterway or waterways affected by the project.¹⁷⁶ Under section 10(a)(2)(A) of the FPA, federal and state agencies filed 44 comprehensive plans that address various resources in North Carolina. Of these, Commission staff identified and reviewed 19 comprehensive plans that are relevant to this project.¹⁷⁷ No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

160. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,¹⁷⁸ Commission staff evaluated Alcoa Generating's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. This order accepts staff's findings in each of the following areas.

A. Conservation Efforts

161. Sections 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement programs of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. Nearly all power from the Yadkin Project is sent to the grid. Staff concludes that, given the limits of its ability to influence users of the electricity generated by the project, Alcoa Generating will comply with section 10(a)(2)(C) of the FPA.

¹⁷⁶ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2016).

¹⁷⁷ The list of applicable plans can be found in section 5.3 of the final EIS for the project. In addition to the comprehensive plans reviewed in the final EIS, staff reviewed four additional plans, including: (1) Interstate Fishery Management Plan for Atlantic striped bass (Report No. 24), dated March 1995; (2) Amendment 1 to the Interstate Fishery Management Plan for Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) (Report No. 31), dated July 1998; (3) Amendment 2 to the Interstate Fishery Management Plan for shad and river herring, dated May 2009; and (4) Amendment 3 to the Interstate Fishery Management Plan for shad and river herring, dated February 2010.

¹⁷⁸ 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2012).

B. Compliance History and Ability to Comply with the New License

162. Commission staff has reviewed Alcoa Generating's compliance with the terms and conditions of the existing license. Staff finds that Alcoa Generating's overall record of making timely filings and compliance with its license is satisfactory. Therefore, staff believes that Alcoa Generating can satisfy the conditions of a new license.

C. Safe Management, Operation, and Maintenance of the Project

163. Commission staff has reviewed Alcoa Generating's management, operation, and maintenance of the Yadkin Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. Staff concludes that the dams and other project works are safe, and that there is no reason to believe that Alcoa Generating cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

164. Commission staff has reviewed Alcoa Generating's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Alcoa Generating regularly inspects the project turbine/generator units to ensure they continue to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Staff concludes that Alcoa Generating is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

165. To assess the need for the project's power, Commission staff looked at the needs in the operating region in which the project is located. The Yadkin Project provides hydroelectric generation to meet part of North Carolina's power requirements, resource diversity, and capacity needs. The project as licensed will have an authorized installed capacity of 210.51 MW, and generate approximately 850,113 megawatt-hours (MWh).

166. The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The project is located in the SERC-East Reliability Corporation region of NERC (SERC-E). According to NERC's 2015 forecast, the planning reserve margins in this region for summer are expected to range from 18.9 to 24.5 percent between 2016 and 2025, compared to the planning goal of 15 percent. Peak season demand is expected to increase from 43,370 MW in 2016 to 49,279 MW in 2025.¹⁷⁹ SERC-E anticipates that additional

¹⁷⁹ North American Electric Reliability Corporation. 2015 Long Term Reliability (continued ...)

capacity will be needed to maintain reliability. Staff concludes that power from the Yadkin Project would help meet a need for power in the SERC-E region.

F. Transmission Services

167. The project's primary transmission lines include an approximately 1.5-mile-long, 13.2-kV transmission line and an approximately 2.8-mile-long, 100-kV transmission line that connect the Narrows Development powerhouse and the Falls Development powerhouse, respectively, directly to the interconnection with the grid at the Badin Substation. Alcoa Generating does not propose, and the license does not require, any changes that would affect this project's or other transmission services in the region.

G. Cost Effectiveness of Plans

168. Alcoa Generating proposes to make several facility and operational modifications to both improve project generating capability and enhance environmental resources affected by the project. Based on Alcoa Generating's record as an existing licensee, Commission staff concludes that these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

169. During the previous license period, Alcoa Generating provided facilities to enhance the public use of project lands and facilities, and operated the project with consideration to protect public use of the project's reservoirs. During this relicensing process, the public was invited to participate in meetings and provide comments at each phase of the process. In addition to being responsive to public input that benefits the community, Alcoa Generating uses the project to help meet the power needs of the region.

PROJECT ECONOMICS

170. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,¹⁸⁰ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of

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¹⁸⁰ 72 FERC ¶ 61,027 (1995).

reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

171. In applying this analysis to the Yadkin Project, Commission staff considered three options: no-action alternative, Alcoa Generating's proposal, and the project as licensed herein. Under the no-action alternative, the project would continue to operate as it does now. The project has an installed capacity of 212.44 MW and generates an average of 856,468 MWh of electricity annually.¹⁸¹ When staff multiplies its estimate of average generation by the alternative power cost of \$63.98/MWh,¹⁸² staff gets a total value of the project's power of \$54,796,823 in 2016 dollars. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power.¹⁸³ The average annual project cost is about \$37,924,403, or \$44.28/MWh. Therefore, the project costs \$16,872,420, or \$19.70/MWh, less than the likely cost of alternative power.

172. As proposed by Alcoa Generating, the levelized annual cost of operating the Yadkin Project is \$51,856,893, or \$61.00/MWh.¹⁸⁴ The proposed project would have an installed capacity of 210.51 MW and generate an average of 850,113 MWh of electricity annually. When staff multiplies its estimate of average generation by the alternative power cost of \$63.98/MWh, staff gets a total value of the project's power of \$54,390,230

¹⁸¹ The average annual generation is from Exhibit B of the license application and includes additional generation from the completed upgrades to the turbine/generator units at the Narrows Development.

¹⁸² The alternative power cost of on-peak and off-peak rates in Duke Energy Carolinas, LLC's response to a request for additional information for the Catawba-Wateree Project No. 2232 filed on June 12, 2015, was used to calculate the composite for on-peak and off-peak rates.

¹⁸³ See final EIS at 243-257 for details of staff's economic analysis for the project as licensed herein and for various alternatives. All costs identified in the final EIS were adjusted to 2016 dollars based on the Consumer Price Index for Urban Consumers.

¹⁸⁴ Staff's analysis includes the cost for modifying the ten turbine/generator units proposed by Alcoa Generating and authorized by this license. Staff estimated the cost for modifying the turbine/generator units using the cost data provided in Exhibit D.3-1 of the license application, escalated to 2016 dollars. Staff's estimate for the total cost of the modifications is \$13,694,770 per year. Staff's cost estimate does not include the cost of modifying the three turbine/generator units at the Narrows Development, which were completed under the current license. Instead, this cost was added to the net investment cost for the project provided in Table D.2-2 of the license application.

in 2016 dollars. Therefore, in the first year of operation, the project would cost \$2,533,337, or \$2.98/MWh, less than the likely cost of alternative power.

173. As licensed herein with mandatory conditions and staff-recommended measures, the project would have an authorized installed capacity of 210.51 MW. The levelized annual cost of operating the project would be about \$54,152,198, or \$63.70/MWh. The proposed project would generate an average of 850,113 MWh of electricity annually. When staff multiplies its estimate of average generation by the alternative power cost of \$63.98/MWh, staff gets a total value of the project's power of \$54,390,230 in 2016 dollars. Therefore, in the first year of operation, the project would cost \$238,032, or \$0.28/MWh, less than the likely cost of alternative power.

174. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load; and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil-fuel based generating stations and put them back on line.

COMPREHENSIVE DEVELOPMENT

175. Sections 4(e) and 10(a)(1) of the FPA¹⁸⁵ require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued must be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

176. The EIS for the project contains background information, analysis of effects, and support for related license articles. The project will be safe if operated and maintained in accordance with the requirements of the license.

177. Based on Commission staff's independent review and evaluation of the Yadkin Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EIS, the proposed Yadkin Project, with the staff-recommended measures, is best adapted to a comprehensive plan for improving or developing the Yadkin River.

¹⁸⁵ 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

178. This alternative was selected because: (1) issuance of a new license will serve to maintain a beneficial and dependable source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the 210.05 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

LICENSE TERM

179. Section 15(e) of the FPA¹⁸⁶ provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.¹⁸⁷ Further, it is Commission policy to "coordinate the expiration dates of licenses [in the same river basin] to the maximum extent possible, to maximize future consideration of cumulative impacts at the same time in contemporaneous proceedings at relicensing."¹⁸⁸

180. As noted above, the Commission issued a new license for the Yadkin-Pee Dee Hydroelectric Project No. 2206-030 with a 40-year term, expiring March 31, 2055. To coordinate the license term of the Yadkin Hydroelectric Project with the Yadkin-Pee Dee Hydroelectric Project license order, staff recommends a 38 year, 7 month license term, to coincide with the expiration of the Yadkin-Pee Dee Hydroelectric Project.

The Director orders:

(A) This license is issued to Alcoa Power Generating, Inc. (licensee), for a period of 38 years and 7 months, effective the first day of the month in which this order is issued, to construct, operate, and maintain the Yadkin Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

¹⁸⁶ 16 U.S.C. § 808(e) (2012).

¹⁸⁷ See *Consumers Power Co.*, 68 FERC ¶ 61,077, at 61,383-84.

¹⁸⁸ 18 C.F.R. § 2.23 (2016).

(1) All lands, to the extent of the licensee's interests in these lands, described in the project description and the project boundary discussion of this order.

(2) Project works which include:

High Rock Development consisting of: (1) a 14,400-acre reservoir at pool elevation 623.9 feet U.S. Geological Survey (USGS), with a usable storage capacity of 217,400 acre-feet; (2) a 936-foot-long, 101-foot-high project dam consisting of (i) a 58-foot-long non-overflow section, (ii) a 550-foot-long gated spillway section with ten 45-foot-wide by 30-foot-high Stoney gates; (iii) a 178-foot-long, 125-foot-high powerhouse intake, and (iv) a 150-foot-long non-overflow section; (3) a concrete powerhouse integral with the dam containing three vertical Francis turbine/generator units with a total installed capacity of 40.32 MW; and (4) appurtenant facilities.

Tuckertown Development consisting of: (1) a 2,560-acre reservoir at full pool elevation 564.7 feet USGS, with a usable storage capacity of 6,700 acre-feet; (2) a 1,370-foot-long, 76-foot-high project dam consisting of (i) a 45-foot-long rock filled section, (ii) a 178-foot-long non-overflow section, (iii) a 481-foot-long gated spillway section with eleven 35-foot-wide by 38-foot-high Tainter gates, (iv) a middle 20-foot-long non-overflow section, (v) a 204-foot-long powerhouse intake, (vi) a 100-foot-long non-overflow section, and (vi) a 342-foot-long rock fill section; (3) a 204-foot-long, 115-foot-high powerhouse integral with the dam containing three Kaplan turbine/generator units with a total installed capacity of 28.62 MW; and (4) appurtenant facilities.

Narrows Development consisting of: (1) a 5,355-acre reservoir at full pool elevation 509.8 feet USGS, with a usable storage capacity of 129,100 acre-feet; (2) a 1,655-foot-long project dam consisting of (i) a 366-foot-long non-overflow section, (ii) a 640-foot-long main spillway with twenty-two 25-foot-wide, 12-foot-high Tainter gates and a trash gate, (iii) a 128-foot-long intake structure with four 20-foot by 20-foot gated openings and four 15-foot-diameter penstocks, (iv) a 431-foot-long bypass spillway with ten 33-foot-wide, 28-foot-high Stoney gates, a trash gate, and (v) a 90-foot-long non-overflow section; (3) a 213-foot-long by 80-foot-wide concrete and brick powerhouse located 280 feet downstream of the dam and containing four vertical Francis turbine/generator units with a total installed capacity of 110.7 MW; (4) a 1.5-mile-long, four circuit, 13.2-kilovolt (kV) transmission line extending from the Narrows Development to the Badin Substation, and (5) appurtenant facilities.

Falls Development consisting of: (1) a 204-acre reservoir at full pool elevation of 332.8 feet USGS, with a usable storage capacity of 940 acre-feet; (2) a 748-foot-long, 112-foot-high project dam consisting of (i) a 189-foot-long powerhouse intake section, (ii) a 14-foot-long, 19-foot-high trash gate section, (iii) a 440-foot-long gated spillway with ten 33-foot-wide, 34-foot-high Stoney gates, (iv) a 71-foot-long section with two Tainter gates, one of which is 25-foot-wide and 19-foot-high, and the other of which is

25-foot-wide by 14-foot-high, and (v) a 34-foot-long non-overflow section; (3) a 189-foot-long, 130-foot-high powerhouse integral with the dam containing three generator units with a total installed capacity of 30.87 MW; (4) a 2.8-mile-long, 100-kV transmission line extending from the Falls Development to the Badin Substation; and (5) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below:

Exhibit A: The following sections of Exhibit A filed on April 25, 2006, and amended on January 30, 2015:

Sections A.1 through A.16 describing the mechanical, electrical, and transmission equipment within the license application.

Exhibit F: The following Exhibit F drawings filed on April 25, 2006:

Exhibit F Drawing	FERC No. 2197-	Description
Sheet 1 of 7	1001	High Rock Development, Plan, Elevation, and Sections of Dam
Sheet 2 of 7	1002	Tuckertown Development, Plan, and Elevation of Dam
Sheet 3 of 7	1003	Tuckertown Development, Sections of Dam
Sheet 4 of 7	1004	Narrows Development, Plan of Dam
Sheet 5 of 7	1005	Narrows Development, Elevation of Dam
Sheet 6 of 7	1006	Narrows Development, Sections of Dam
Sheet 7 of 7	1007	Falls Development, Plan, Elevation, and Sections of Dam

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A and F described above are approved and made part of this license. The Exhibit G drawings filed as part of the application for license do not conform to the Commission regulations and are not approved.

(D) This license is subject to the conditions submitted by the North Carolina Department of Environmental Quality under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1) (2012), as those conditions are set forth in Appendix A to this order, with the exception that all conditions in Appendix A are effective as of the date

established by Ordering Paragraph (A) of this license.

(E) This license is also subject to the articles set forth in Form L-10 (Oct. 1975), entitled “ Terms and Conditions of License for Constructed Major Project Affecting the Interests of Interstate or Foreign Commerce” (*see* 54 F.P.C. 1792 *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. Administrative Annual Charges. The licensee must pay the United States annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 212.44 megawatts (MW), until the date by which the licensee is required to commence construction of the new capacity authorized by this license, as may be extended, but in no case longer than four years after license issuance, after which time the authorized installed capacity is 210.51 MW.

Article 202. Exhibit F Drawings. Within 45 days of the date of issuance of this license, as directed below, the licensee must file two sets of the approved exhibit drawings in electronic file format on compact disks with the Secretary of the Commission, ATTN: OEP/DHAC.

Digital images of the approved exhibit drawings must be prepared in electronic format. Prior to preparing each digital image, the FERC Project-Drawing Number (i.e., P-2197-1001 through P-2197-1007) must be shown in the margin below the title block of the approved drawing. Exhibit F drawings must be segregated from other project exhibits, and identified as **Critical Energy Infrastructure Information (CEII) material under 18 CFR § 388.113(c)**. Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-2197-1001, F-1, High Rock Development, Plan, Elevation, and Sections of Dam, MM-DD-YYYY.TIF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY – black & white raster file
 FILE TYPE – Tagged Image File Format (TIFF), CCITT Group 4
 (also known as T.6 coding scheme)
 RESOLUTION – 300 dots per inch (dpi) desired, (200 dpi minimum)
 DRAWING SIZE FORMAT – 22” x 34” (minimum), 24” x 36” (maximum)
 FILE SIZE – less than 1 megabyte desired

Article 203. Exhibit G Drawings. Within 90 days of the effective date of the license, the licensee must file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all principal project works necessary for the

operation and maintenance of the project and for other project purposes, including: (1) all existing and new project recreation sites; and (2) all islands that the licensee proposes to include within the project boundary at the High Rock Reservoir, Tuckertown Reservoir, Narrows Reservoir, and Falls Reservoir. The Exhibit G drawings must be revised to: (1) include at least three reference points for all insets showing portions of the project boundary; and (2) show land ownership and property rights information for all lands within the project boundary. The Exhibit G drawings must be stamped by a registered land surveyor and comply with sections 4.39 and 4.41 of the Commission's regulations.

Article 204. Amortization Reserve. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee must set aside in a project amortization reserve account at the end of each fiscal year one-half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee must deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee must set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee must maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves must be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios must be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity must be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. Headwater Benefits. If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for the benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 206. As-Built Exhibits. Within 90 days of completion of construction of the facilities authorized by this license, including turbine modifications at the High Rock, Tuckertown, Narrows, and Falls Developments, the licensee must file for Commission approval, revised Exhibits A, F, and G, as applicable, to describe and show those project facilities as built.

Article 301. Project Modification Resulting From Environmental Requirements. If environmental requirements under the license require modification that may affect the project works or operations, the licensee must consult with the Commission's Division of Dam Safety and Inspections-Atlanta Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operations.

Article 302. Effects of Revised Reservoir Operating Levels. Within 60 days of license issuance, the licensee must submit one copy to the Division of Dam Safety and Inspections-Atlanta Regional Engineer and two copies to the Commission (one of these must be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a report describing the effects of revised reservoir operating levels at the project's High Rock Development on upstream and downstream flooding of non-project properties and structures. The report must include:

(1) An analysis of historical storms/floods which occurred near High Rock Dam. This could entail preparing a hydrologic model to determine an inflow hydrograph based on historic precipitation data and river basin characteristics.

(2) A flood frequency analysis of flows at the High Rock Dam.

(3) A comparison of the frequency of upstream and downstream flood discharges and its potential impact for flooding in areas upstream and downstream of High Rock Dam caused by existing and revised operation procedures. This would require using a hydraulic model to route flows from historical storms/floods under existing and proposed operation procedures, and assessing impacts by comparing upstream and downstream water levels to adjacent non-project properties and structures.

(4) If applicable, a statement from the licensee's Chief Dam Safety Engineer that the Engineer has reviewed the report and agrees with the proposed change in operations would have no significant impact on upstream and downstream flooding.

(5) If applicable, a plan and schedule for implementing remedial measures if it is determined that the change in operations would result in significant impact on upstream and downstream flooding.

The licensee must not implement the change in reservoir operating levels at the High Rock Development until authorized by the Commission's Division of Dam Safety

and Inspections-Atlanta Regional Engineer.

Article 303. *Start of Construction.* Within 6 months of license issuance the licensee must file a plan and schedule, for Commission approval, for modifying the turbine/generator units authorized in this license, and must complete construction within 4 years from the issuance date of the license.

Article 304. *Cofferdam Construction Drawings and Deep Excavations.* Before starting construction, the licensee must review and approve the design of contractor-designed cofferdams and deep excavations and must make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee must submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI)-Atlanta Regional Engineer and two copies to the Commission (one of these copies must be a courtesy copy to the Commission's Director, D2SI), of the approved cofferdam construction drawings and specifications and the letters of approval.

Article 305. *Contract Plans and Specifications.* At least 60 days prior to the start of any construction, the licensee must submit one copy of its plans and specifications and supporting design document to the Commission's Division of Dam Safety and Inspections (D2SI)-Atlanta Regional Engineer, and two copies to the Commission (one of these must be a courtesy copy to the Director, D2SI). The submittal to the D2SI-Atlanta Regional Engineer must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI-Atlanta Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 401. *Resource Plan Requirements, Notification, and Filing of Amendments.*

(a) Resource Plan Requirements

Conditions found in Appendix A of this license require the licensee to develop a Sedimentation and Flood Protection Plan for the City of Salisbury, North Carolina water intake (Condition 9)¹⁸⁹ and Lake Sediment Monitoring Plan for Narrows Reservoir

¹⁸⁹ Condition 8 of the North Carolina Department of Environmental Quality's certification requires the licensee to provide for the removal of sand and other debris that accumulates at the City of Salisbury's water supply intake, which is consistent with Condition 9.A of the certification. Therefore, Commission staff considers Condition 8 to be part of the Sedimentation and Flood Protection Plan required by Condition 9 of the (continued ...)

(Condition 10.C). The conditions do not provide for Commission approval, nor do they specify when the plans are to be filed for approval by either the North Carolina Department of Environmental Quality (North Carolina DEQ) or the Commission. Therefore, the due date for filing each plan with the Commission is as specific below:

North Carolina DEQ WQC Condition No.	Plan Name	Due Date for Filing the Plan with the Commission
10.C	Lake Sediment Monitoring Plan for Narrows Reservoir	Within six months of license issuance

The licensee must include with each plan filed with the Commission documentation that the licensee developed the plan in consultation with the City of Salisbury, North Carolina; Rowan County, North Carolina; North Carolina DEQ-401 & Buffer Permitting Unit, and North Carolina DEQ-Public Water Supply Section, Mooresville Regional Office; and the North Carolina Wildlife Resources Commission. Each such plan also must include a provision to file resulting reports with the Commission, as well as the appropriate agency or agencies. The Commission reserves the right to make changes to any plan submitted. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan or changes in the project operation or facilities, including any changes required by the Commission.

(b) Requirement to File Reports

One North Carolina DEQ certification condition in Appendix A requires the licensee to file with North Carolina DEQ annually, for 5 years, Contaminant Monitoring Reports for each development's discharge. Because this report relates to compliance with a requirement of this license, and may have a bearing on future actions, it must also be filed with the Commission for information purposes. The report and filing deadlines are as follows:

North Carolina DEQ WQC Condition No.	Description	Due Date for Filing the Report with the Commission
10.B	Contaminant Monitoring Report	By January 31 of each year for the prior calendar year, beginning year 1 after license issuance and continuing through year 5 of the license

certification.

The licensee must file with the Commission documentation of any consultation, and copies of any comments and recommendations made by North Carolina DEQ in connection with the report. The Commission reserves the right to require changes to project operation or facilities based on the information contained in the report and any other available information.

(c) Requirement to File Amendment Applications

Certain conditions in Appendix A contemplate unspecified long-term changes to project operation or facilities for the purposes of complying with state water quality standards (*e.g.*, conditions 10.B and 10.C in Appendix A contemplate monitoring revisions or further mitigation for the presence of contaminants in project discharges and the sediment of Narrows Reservoir). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

Article 402. *Fish Sampling Work Plan for Narrows Reservoir.* The Fish Sampling Work Plan for Narrows Reservoir, referenced in Condition 10.A of Appendix A of this order, and filed with the Commission on May 16, 2016, is approved and must be implemented according to the schedule included in the plan. The results of the sampling must be filed with the North Carolina Department of Environmental Quality (North Carolina DEQ) within 90 days and with the Commission within 120 days following completion of the field studies. The filing with the Commission must include any comments and/or recommendations received from the North Carolina DEQ on the report.

The approved Fish Sampling Work Plan for Narrows Reservoir must not be amended without prior Commission approval. The Commission reserves the right to require changes to the plan.

Article 403. *Reservation of Authority to Prescribe Fishways.* Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior and/or Secretary of Commerce pursuant to section 18 of the Federal Power Act.

Article 404. *Rare, Threatened, and Endangered Species Management Plan.* Within 1 year of license issuance, the licensee must file with the Commission for approval, a Rare, Threatened, and Endangered Species Management Plan. The plan must include, but not be limited to, the following:

(1) Measures to protect the federally listed Schweinitz's sunflower (*Helianthus schweinitzii*), including provisions to: (a) delineate the Falls Dam Canoe Portage Trail located at the Falls Development with signs and rope no later than December 31, 2017, to

direct recreational users to stay on the trail; (b) monitor the population of Schweinitz's sunflower annually and review the project-related effects on the species, including project recreation and vegetation management activities; and (c) develop a report that includes, at a minimum, the method for monitoring the species, a map or maps that delineates the location of the species in relationship to the project boundary, and a discussion that addresses potential threats to the Schweinitz's sunflower stands and its habitat, including encroaching invasive vegetation, any recommendations to protect and enhance the identified stands, and the associated costs. Reports documenting the Schweinitz's sunflower survey results must be filed with the Commission by January 31 of the year following the survey and marked "Project No. 2197-073, Privileged."

(2) Measures to protect the Yadkin River goldenrod (*Solidago plumosa*) and its habitat within the project boundary, including provisions to: (a) identify methods for annual control of non-native invasive vegetation that encroaches on Yadkin River goldenrod locations within the project boundary; (b) maintain signs downstream of Narrows Dam to discourage recreationists from entering the tailrace area and inadvertently trampling the plant; (c) monitor the locations within the project boundary annually to identify effects of project operations and project-related recreation on the species and its habitat, to include standardized enumeration of stems and rosettes combined with georeferenced maps/photographs; and (d) allow the U.S. Fish and Wildlife Service (FWS) and North Carolina Department of Agriculture's Plant Conservation Program staff access to the project area (i.e., near the Narrows Development and the Falls Development) to assist in their efforts to harvest and spread seed to suitable habitat in and near the existing population.

(3) Measures to protect the bald eagle and its nesting habitat within the project boundary, based on Alcoa Generating's existing Bald Eagle Management Plan, approved by the Commission on August 21, 1995 (72 FERC ¶ 62,157 (1995)), and adhering to FWS's National Bald Eagle Management Guidelines, as the guidelines may be modified from time to time.

(4) A provision to continue monitoring bald eagles by conducting annual nesting surveys in the spring of each year, and to determine, in consultation with the FWS and the North Carolina Wildlife Resources Commission (North Carolina WRC) if revising or discontinuing surveys is appropriate. Reports documenting the bald eagle survey results must be filed with the Commission by January 31 of the year following the survey and marked "Project No. 2197-073, Privileged."

(5) Measures to protect and enhance freshwater mussels in the High Rock Development, the Tuckertown Development, the Narrows Development, and the Falls Development tailraces that include provisions for: (a) annually monitoring water quality, freshwater mussels, Asian clam (*Corbicula fluminea*), and Chinese mystery snail (*Bellamya chinensis*) for 10 years after approval of the Rare, Threatened, and Endangered Species Management Plan; (b) preparing an annual report that documents the results of

the monitoring, including (i) a description of the status of project aeration systems and the methodology used to monitor dissolved oxygen (DO), freshwater mussel, Asian clam, and Chinese mystery snail populations (including data on recruitment), (ii) the DO data for each development's tailrace and a description of the effects of the DO concentrations on mussel populations, (iii) a list of freshwater mussel species collected during sampling in each development's tailrace, (iv) a map showing the geo-referenced locations of freshwater mussels collected in relationship to the project boundary, (v) a description of any location(s) that Asian clam and Chinese mystery snail are observed in relation to native freshwater mussels and the project boundary, and (vi) a summary of the flows (instream and generation releases; frequency and duration) in each development's tailrace and a description of the effects of such flows on mussel populations; (c) submission of the annual monitoring report to FWS and North Carolina WRC for review and comment, and filing of the report with the Commission for review; (d) consulting with FWS and North Carolina WRC upon completing the 10 years of monitoring to determine (i) if any improvements in mussel recruitment occurred during the 10 years of monitoring, and (ii) whether additional or modified measures are needed to enhance freshwater mussel habitat and populations within the project boundary; and (e) filing a 10-year monitoring report, with the Commission for review and approval, that summarizes and analyzes the data and information from the annual reports, and documents any additional or modified measures recommended by FWS and North Carolina WRC to protect and enhance mussels populations at the Yadkin Project.

The Rare, Threatened, and Endangered Species Management Plan must be developed after consultation with the FWS and the North Carolina WRC. The licensee must include with the plan documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the entities above, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 405. Transmission Line Corridor Management Plan. Within 2 years of license issuance, the licensee must file a Transmission Line Corridor Management Plan with the Commission for approval, to protect and enhance native plants and wildlife habitats, including wetlands, within the Narrows Development and Falls Development transmission line corridors. The plan must include, but not be limited to, the following:

(1) A description of the transmission line corridors at Narrows Development and Falls Development to be maintained including the acreages, topography, soil types, and existing vegetation and habitat types.

(2) A description of the vegetation management goals and objectives to include, at a minimum, the protection of the following existing terrestrial resources: (a) wetlands, (b) locations of two rare plants, Heller's trefoil and Pursh's wild petunia, and (c) habitat of a rare reptile, timber rattlesnake.

(3) A detailed description of vegetation management techniques (i.e., manual, mechanical, and chemical), including best management practices to: (a) promote growth of native species compatible with project land uses; (b) prevent erosion and the spread of non-native invasive plants during project maintenance, including vegetation management activities; and (c) minimize the use of herbicides in removing or suppressing vegetative growth, including non-native invasive species.

(4) A provision to train staff to identify species of management interest, including rare, threatened, and endangered species and non-native invasive species, and a protocol for reporting the occurrences. If such species are found, the plan must include a provision to suspend non-emergency vegetation management activities until the appropriate control, protection, and/or avoidance measures are developed.

(5) A provision to evaluate the effectiveness of the vegetation management techniques in meeting the plan's goals and objectives.

(6) An implementation schedule, including the frequency of each type of regular vegetation management activities (e.g., mowing, non-emergency tree-trimming and removal, and herbicide application).

The Transmission Line Corridor Management Plan must be developed after consultation with the U.S. Fish and Wildlife Service, the North Carolina Department of Environmental Quality, and the North Carolina Wildlife Resources Commission. The licensee must include with the plan documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the entities above, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 406. Recreation Plan. Within 1 year of license issuance, the licensee must file a Recreation Plan with the Commission for approval. The plan must include, but not be limited to, the following:

(1) Clearly defined and consistent references for all existing and new project recreation sites at the High Rock Development, the Tuckertown Development, the Narrows Development, and the Falls Development, including a description of the recreation facilities (all amenities and associated infrastructure) provided at each site.

(2) A provision to operate and maintain all project recreation sites.

(3) A provision to implement the recreation enhancement measures in the Relicensing Settlement Agreement (Agreement) filed May 7, 2007, as Appendix C, entitled "Yadkin Project Recreation Facility Enhancements," at C-1 through C-3:

(a) A description of the specific improvements to be made at the following recreation facilities: (i) at the High Rock Development: Buddle Creek Boat Access Area, Highway 601 Boat Access Area, Flat Swamp Boat and Swim Access Area, and Southmont Boat Access Area; (ii) at the Tuckertown Development: Riles Creek Recreation Area; (iii) at the Narrows Development: Old Whitney Boat Access Area, Badin Lake Boat Access Area, and Badin Lake Swim and Picnic Area; and (iv) at the Falls Development: Falls Boat Access Area (section I.1). The description must include the licensee's correct name for each recreation site.

(b) A provision to install a portable toilet at York Hill Boat Access located at the High Rock Development and a portable toilet at Riles Creek Recreation Area located at the Tuckertown Development (section I.2).

(c) A provision to construct an accessible fishing pier at the High Rock Reservoir and an accessible fishing pier at the Tuckertown Reservoir (section I.3).

(d) A list of the tailrace fishing access areas at each development to be improved (section I.4) and description of the specific improvements to be made at each area.

(e) A description of the specific improvements to be made to the Falls Dam Canoe Portage Trail at Falls Development (section I.5).

(f) An evaluation of the need for improving the canoe portage trails at the High Rock Development, Tuckertown Development, and Narrows Development, and a description of the specific improvements to be made at each canoe portage trail (section I.5).

(g) A description of the location and acreage of the new recreation site, with a swimming area and beach, at the High Rock Reservoir shown on a map in relationship to the project boundary (section II.1).

(h) A description of the existing unauthorized, dispersed campsites at the High Rock Development, Tuckertown Development, Narrows Development, and Falls Development that includes: (i) a map or maps that identify the existing unauthorized, dispersed campsites at each development in relationship to the project boundary; (ii) a discussion of the area of impact at each existing unauthorized, dispersed campsite (e.g., informal parking, access paths); (iii) a provision to assess the potential for converting an existing, unauthorized dispersed campsite into an authorized dispersed campsite; (iv) a provision to develop up to 10 new dispersed campsites within the project boundary, either

through the conversion of an existing, unauthorized dispersed campsite or through the installation of a new dispersed campsite; and (v) identification of existing, unauthorized dispersed campsites within the project boundary that would not be converted to a project dispersed campsite, and measures to restore the area and prevent unauthorized camping (section II.2).

(i) A description of the specific improvements to be made at the Tuckertown Reservoir boat ramp located off North Carolina State Highway 49, in the vicinity of the Highway 49 Bridge, as determined in consultation with the North Carolina State Department of Transportation (section III); and clarification of whether the location is the licensee-owned existing Highway 49 Boat Access Area, a project recreation site.

(4) A map or maps identifying all existing and new project recreation sites at each development, including the length of any trails (including portages), within the project boundary as licensed herein.

(5) Conceptual drawings and specifications of all project recreation sites where improvements are proposed, as-built drawings for existing recreation facilities, and a schedule for implementing the recreation enhancement measures within 10 years of license issuance.

The Recreation Plan must also include provisions for: (1) the hours of operation for each project recreation site; (2) evaluation of the existing signs at the project recreation sites for accuracy of information as specified in 18 C.F.R. section 8.2 of the Commission's regulations, including a plan and schedule to update the signs as needed; (3) discussion of how the needs of the disabled were considered in the planning and design of the recreation facilities; (4) trash removal at each project recreation site; (5) a description of soil erosion and sediment control measures to be used where project-related ground disturbing activities are proposed; and (6) a detailed description of the site conditions at each project recreation site, including a plan and schedule to make needed repairs at all project recreation facilities.

The Recreation Plan must include a provision to review the plan, every 12 years, and file a report describing whether or not an update to the plan is needed. The report must include: (1) a Recreation Use and Needs Assessment; (2) identification of any proposed measures for, or modifications to, the project recreation sites, with a schedule for implementing such changes; and (3) documentation of consultation with the U.S. Fish and Wildlife Service (FWS), North Carolina Department of Environmental Quality (North Carolina DEQ), and North Carolina Wildlife Resources Commission (North Carolina WRC), including specific descriptions of how the entities' comments are accommodated by the report. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Recreation Plan must be developed after consultation with the FWS, the North Carolina DEQ, and the North Carolina WRC. The licensee must include with the plan documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the entities above, and specific descriptions of

how the entities' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The licensee must discuss how the Recreation Plan was developed in coordination with the Rare, Threatened, and Endangered Species Management Plan (Article 404), so that it is consistent with provisions to protect the federally listed Schweinitz's sunflower, and the freshwater mussels, Yellow River goldenrod, and bald eagle.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 407. Shoreline Management Plan. The licensee must continue to implement the Yadkin Hydroelectric Project Shoreline Management Plan as modified and approved by the Commission on November 9, 2000 (93 FERC ¶ 61,152 (2000)). The current plan will remain in effect until the licensee is notified by the Commission that the revised Shoreline Management Plan required by this article is approved.

Within 2 years of license issuance, the licensee must file with the Commission for approval, a revised Shoreline Management Plan consistent with Condition 13.C of the water quality certification (Appendix A of the license). The revised plan must include, but not be limited to, the following:

- (1) The goals and objectives of the plan.
- (2) A description of the High Rock Development, the Tuckertown Development, the Narrows Development, and the Falls Development, including project operations and the contour elevation Datum consistent with an updated Shoreline Stewardship Policy.
- (3) Identification of the land uses and associated acres within the Yadkin Project boundary according to six classifications: (1) Industrial; (2) Public Recreation; (3) Commercial Recreation; (4) Private; (5) Forest; and (6) Conservation Zone.
- (4) A map or maps that delineate each of the six land use classifications above within the project boundary.
- (5) A description of each land use classification and the allowable and prohibited uses for each of them.
- (6) A description of a vegetative shoreline buffer within the project boundary and delineated on a map or maps for the High Rock Reservoir, Tuckertown Reservoir, Narrows Reservoir, and Falls Reservoir.
- (7) A description of best management practices, including bio-engineering techniques such as water willow and wetland plantings, to minimize soil erosion and sedimentation.

(8) The “Procedures for Implementation of Those Portions of the Shoreline Management Relating to the Removal or Relocation of Lap Trees,” approved by the Commission on May 9, 2001 (95 FERC ¶ 62,105 (2001)).

(9) A provision to update the licensee’s Shoreline Stewardship Policy consisting of pages 1 through 20, approved by the Commission on November 9, 2000, with modifications (93 FERC ¶ 61,152 (2000)). The updated policy must include, but not be limited to: (a) the goals and objectives of the policy; (b) identification of the contour elevation Datum consistent with a revised Shoreline Management Plan; (c) the licensee’s contact information and a provision for updating that information; (d) a description of the permitting program for allowable structures on the shoreline land within the project boundary, including the permit application procedures, monitoring, and a post-permitting enforcement policy; (e) a list of native vegetation for use by adjacent property owners in landscaping and establishing a vegetated shoreline buffer; and (f) a provision to include Ordering Paragraph (C) of the Commission’s Order Amending License, 93 FERC ¶ 61,152 (2000), that requires the licensee to file for Commission approval any permit application that affects cultural resources for which the licensee has not obtained the North Carolina State Historic Preservation Office (North Carolina SHPO) concurrence on measures needed to protect cultural resources.

The Shoreline Management Plan must include a provision to review the plan every 10 years and file a report describing whether or not an update to the plan is needed. The report must include an evaluation of the adequacy of the plan and a statement as to whether or not changes to the plan are warranted. If an update is necessary, the licensee may choose to either provide a schedule for filing an updated plan or incorporate the update in the report (red-line documents are preferred so that plan modifications can be easily identified).

The Shoreline Management Plan, the 10-year reports, and any plan updates must be developed in consultation with the U.S. Fish and Wildlife Service, the North Carolina Department of Environmental Quality, the North Carolina Wildlife Resources Commission, and the North Carolina SHPO, and filed with the Commission for approval. The licensee must include documentation of consultation with the entities above, and specific descriptions of how the entities’ comments are accommodated. The licensee must allow a minimum of 30 days for the entities to comment and to make recommendations before filing with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee’s reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 408. Programmatic Agreement. The licensee must implement the “Programmatic Agreement Among the Federal Energy Regulatory Commission and the North Carolina State Historic Preservation Officer for Managing Historic Properties that

May be Affected by a License Issuing to Alcoa Power Generating, Inc. for the Continued Operation and Maintenance of the Yadkin Hydroelectric Project in Davie, Davidson, Montgomery, Rowan, and Stanly Counties, North Carolina,” executed on July 30, 2008. Pursuant to the requirements of this Programmatic Agreement, the licensee must file for Commission approval, an HPMP within 1 year of issuance of this order. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee must obtain approval from the Commission and the North Carolina State Historic Preservation Officer before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project’s area of potential effects.

Article 409. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies, for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control

erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than 1 million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must file a copy of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is 5 acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use.

Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project lands and waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article must not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee must serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters relating to that filing. Proof of service on these entities must accompany the filing with the Commission.

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(G) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8251 (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2016). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Ann F. Miles
Director
Office of Energy Projects

Form L-10
(October, 1975)**FEDERAL ENERGY REGULATORY COMMISSION****TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the

Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance

and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually-agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other

signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such

portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 22. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

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Article 23. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

APPENDIX A

**Water Quality Certificate Conditions for the Yadkin Hydroelectric Project
No. 2197-073 Issued by the North Carolina Department of Environmental Quality
on October 23, 2015**

The following definitions are used in this Certification:

- A. **“Daily Average Dissolved Oxygen Water Quality Standard”** or **“Daily Average Standard”** or **“Daily Average DO”** means the standard set forth in 15A NCAC 02B .0211 (6). The continuous dissolved oxygen (DO) monitoring data collected for this Certification at 15 minute intervals shall be averaged every 24 hours in order to calculate the daily average. The Daily Average Standard must be met as measured at the DO monitors placed in the tailraces below the dams regardless of whether or not the generators are operating, and whether or not the DO enhancement equipment is operating.
- B. **“Dams”** mean and include the four dams at the Yadkin Project, specifically High Rock dam, Tuckertown dam, Narrows (aka Badin) dam, and Falls dam.
- C. **“Date that APCI receives the Final FERC License”** is the date on which the New License becomes final and non-appealable.
- D. **“Division”** means the Division of Water Resources or its successor.
- E. **“DO”** or **“Dissolved Oxygen”** means the concentration of oxygen that has been dissolved or otherwise introduced into water.
- F. **“Final and non-appealable”** means either: (1) the thirty-first day after the date FERC issues an order setting forth the New License for the Yadkin Project if no Party seeks rehearing of such order; or (2) if any Party seeks rehearing of such an order, the earliest date upon which no further court appeal of a FERC order issuing a New License for the Yadkin Project, including a Petition for Writ of Certiorari to the Supreme Court of the United States, or action by a court or by FERC with respect to such appeal, is possible.
- G. **“Final FERC License”** or **“New License”** means a new long-term license granted by FERC for the Yadkin Project that is final and non-appealable.
- H. **“Full DO Season”** means May 1 of each year through November 30 of each year.
- I. **“Minimum Instantaneous Dissolved Oxygen Water Quality Standard”** or **“Instantaneous Standard”** or **“Instantaneous DO”** means the standard set forth in 15A NCAC 02B .0211 (6). The Instantaneous Standard must be met 24 hours a day, seven days a week, as measured at the DO monitors placed in the tailraces below the dams regardless of whether or not the generators are operating, and whether or not the DO enhancement equipment is operating.
- J. **“Project”** or **“Yadkin Project”** or **“APCI Project”** means the hydroelectric project

on the Yadkin River in North Carolina operated by APCI pursuant to FERC license 2197.

- K. “**Tailrace**” means the free-flowing section of the Yadkin River downstream from each dam. The length of this section of the river is no less than the length of the river from the dam to the dissolved oxygen monitor located below each dam.

Conditions of Certification:

1. Sediment and Erosion Control for any project-related construction

During any project-related construction, erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices and if applicable, comply with the specific conditions and requirements of the NPDES Construction Stormwater Permit issued to the site:

- A. Design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - B. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - C. Reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.
 - D. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.
2. No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices shall be performed so that no violations of state water quality standards, statutes, or rules occur.
3. Sediment and erosion control measures shall not be placed in wetlands or waters. Exceptions to this condition require application submittal to and written approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, then design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands, stream beds, or banks, adjacent to or upstream and downstream of the above structures. All sediment and erosion control devices shall be removed and the natural

grade restored within two (2) months of the date that the Division of Energy, Mineral and Land Resources (DEMLR) or locally delegated program has released the specific area within the project.

4. This approval is for the purpose and design described in your application and as described in the Public Notice. The plans and specifications for this project are incorporated by reference and are an enforceable part of the Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property, project or license is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. Any new owner must notify the Division and request the Certification be issued in their name.
5. This Certification grants permission to the Director, an authorized representative of the Director, or Department of Environmental Quality (DEQ) staff, upon the presentation of proper credentials, to enter the property during normal business hours.
6. This Certification does not grant or affirm any property right, license, or privilege in any waters or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. No person shall interpose this Certification as a defense in any action respecting the determination of riparian or littoral rights or other water use rights. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded. This Certification is issued with the express understanding of DEQ that pursuant to the Federal Power Act Section 27, 16 U.S.C. § 821, the License does not establish or determine a proprietary right to any use of water. It establishes the nature of the use to which a proprietary right may be put under the Federal Power Act. This Certification shall not be construed as addressing or making a determination with respect to title or ownership of submerged lands or any property associated with the Yadkin Project.
7. Continuing Compliance
Alcoa Power Generating, Inc. (APGI) shall conduct project operations and any construction activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with Section 303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the Division determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the Division may reevaluate and modify this Certification in accordance with 15A NCAC 02H .0507(d). Before modifying the Certification, the Division shall notify Alcoa Power

Generating, Inc. (APGI) and the Federal Energy Regulatory Commission (FERC), provide public notice in accordance with 15A NCAC 02H .0503 and provide the opportunity for a public hearing in accordance with 15A NCAC 02H .0504. Any new or revised conditions shall be provided to Alcoa Power Generating, Inc. (APGI) in writing, shall be provided to the FERC for reference in any permit or license issued by that agency, and shall also become conditions of the FERC License for the project. In addition, if the DO enhancement upgrades as outlined in Condition #12 of this Certification do not result in compliance with the water quality standards for DO or temperature, then this condition shall be triggered to result in requirements for additional measures to meet these standards.

8. Sediment Removal at City of Salisbury Water Supply Intake

APGI shall allow access to and provide for dredging operations to remove sand and other debris that may accumulate at the City of Salisbury's water supply intake in order to manage the accumulation of sand and other debris to maintain the intake in operable condition. If this condition conflicts with any existing arrangements between APGI and other parties, then additional written approval is required from the Division to resolve the conflict.

9. Sedimentation and Flood Plan

APGI shall develop a sedimentation and flood protection plan that includes:

- A. Specific measures to ensure dredging of sufficient volume and frequency such that the City of Salisbury's water intake remains clear of sediments;
- B. Physical modifications to the facilities such as a protective dike for the pump station, improved access to the pump station with the road consistent with the City of Salisbury's design or other feasible option(s) for achieving the same benefits;
- C. Planning level capital and operation and maintenance cost estimates for each alternative;
- D. A recommendation as to which alternative to implement; and
- E. An implementation schedule.

This plan shall be developed in consultation with the City of Salisbury, Rowan County, NC Division of Water Resources – 401 & Buffer Permitting Unit and the NC Division of Water Resources – Public Water Supply Section – Mooresville Regional Office.

10. Additional Monitoring

- A. The Fish Sampling Work Plan for Narrows Reservoir dated December 14, 2007 as prepared by URS Corporation shall be conducted by APGI. The Division shall approve the timing of this sampling.

- B. APGI shall provide yearly monitoring of the discharges from the four lakes for pollutants to include heavy metals and organic pollutants, including volatile organic compounds, acid-extractable compounds, base-neutral compounds, and PCBs using a priority pollutant scan analyzed in accordance with 40 CFR Part 136. Test results shall be reported to Division within 90 calendar days of sampling using a form approved by the Division. This monitoring shall be done annually for a minimum of five years. At the end of five years, APGI may submit a request to the Division for approval to modify the monitoring requirements. If monitoring shows levels of contaminants that violate water quality standards, then APGI shall develop a plan that proposes measures for ensuring compliance with water quality standards. APGI shall submit a plan for the Division's approval within six (6) months of notification by the Division that monitoring showed levels of contaminants that violate water quality standards. Sensitivity levels for these analyses must be at least those used by the Division's Central Laboratory.
- C. APGI shall provide yearly monitoring for lake sediment in a series of transects from the Alcoa Badin Works Plant site to the Narrows dam for those heavy metals and compounds including PCBs and PAHs that are present in the sediment in the swimming area as reported in the Badin Lake Swim/Picnic Area and Badin Boat Access Sediment Assessment, Stanly County. The Division must provide written approval for this study plan. This monitoring shall be done annually for at least five years. At the end of the five years, APGI may submit a request to the Division for approval to modify the monitoring requirements. If movement of contaminated sediment is detected, then APGI shall develop a plan that proposes measures for stopping contaminated sediment transport. APGI shall submit a plan for the Division's approval within six (6) months of notification by the Division that movement of contaminated sediment was detected. Sensitivity levels for these analyses must be at least those used by the Division's Central Laboratory.

11. Financial Assurance

- A. Within thirty (30) calendar days of the issuance of this Certification, APGI shall provide draft language for two surety bonds; one to cover the construction of the planned improvements and upgrades that are required by this Certification (Surety Bond) and one to cover the ongoing monitoring of the Project as required by this Certification (Monitoring Bond).
- B. The "Surety Bond" and "Monitoring Bond" shall be from a surety company that is rated no less than "A-" as rated by A.M. Best and shall be issued in favor of the state of North Carolina. The financial assurance provided must be continuous in nature and must bind APGI as well as its successors-in-interest.
- C. The amount of initial coverage provided by a "Surety Bond" shall be at least 100% of the estimated cost of completing the planned Project upgrades required by this Certification, but not less than \$44,570,000.00.
- D. The amount of initial coverage provided by a "Monitoring Bond" shall be at least

100% of the estimated cost to provide monitoring of the Project as required by this Certification, but not less than \$3,000,000.00.

- E. Within sixty (60) calendar days of the final non-appealable FERC License, APGI shall secure the “Surety Bond” and “Monitoring Bond” and shall provide documentation to the Division.
- F. A “Surety Bond” shall be maintained until all of the improvements and upgrades required by this Certification have been completed. The amount of the “Surety Bond” may be decreased upon written approval from the Division as upgrades required by this Certification are completed. The amount of the “Surety Bond” may be increased if additional work is required in order to bring the Project into compliance with North Carolina water quality standards.
- G. A “Monitoring Bond” shall be issued in the form of an annual bond renewable each year for a minimum of ten (10) years. The “Monitoring Bond” shall be extended annually by the surety via a Continuation Certificate. The amount of the “Monitoring Bond” may be decreased upon written approval from the Division as each year of monitoring as required by this Certification is completed. If the Project is not in compliance with the water quality standards at the end of the initial 10-year period, then the Division may require APGI to continue to provide a “Monitoring Bond.” If the Division determines that the “Monitoring Bond” is no longer required, then the Division will provide written notification to APGI.
- H. The financial assurance must contain a provision requiring the surety company to notify the Division and APGI at least ninety (90) calendar days before canceling the “Surety Bond” or “Monitoring Bond.” APGI must provide a substitute or replacement bond that meets the requirements of this Condition (#11) within ninety (90) calendar days of the surety company’s notice of intent to cancel the bond. The substitute or replacement bond must be in place before the original “Surety Bond” or “Monitoring Bond” is cancelled. If APGI does not provide a substitute or replacement bond before the original “Surety Bond” or “Monitoring Bond” is cancelled, then the Division shall take appropriate action to require APGI to substitute or replace the bond, including filing a civil action for injunctive relief, assessing civil penalties, or both, for the failure to comply with this condition of this Certification.

12. Dissolved Oxygen Enhancements and Monitoring

- A. **FERC Approval.** FERC approval is required before APGI may begin installation or construction of any of the DO enhancements at the Project requiring capital expenditures, and FERC also retains authority regarding operational changes that may affect DO. APGI will file appropriate documentation with FERC requesting FERC's approval of such capital enhancements, when appropriate, including a request for FERC approval for the upgrades to the three generating units at High Rock. Unless and until all necessary FERC and other governmental approvals are received, work on capital DO enhancement technologies cannot proceed. All

deadline dates are contingent upon receipt of FERC approval, which APGI will seek on a timely basis.

B. Installation of Upgrades to Generators at High Rock and Narrows

- i. **High Rock.** Install the through-the-turbine DO enhancement technology for all three generating units at the High Rock powerhouse on the following expedited basis.
 - a. Within thirty (30) calendar days after APGI receives the Final FERC License for the Project, APGI will commence the design engineering process for the upgrade and request FERC approval of the design engineering and casting for the upgrade.
 - b. Within sixty (60) calendar days after APGI receives the Final FERC License, APGI will request FERC approval for the High Rock Unit upgrades, provided such request is determined to be necessary.
 - c. Within one hundred eighty (180) calendar days after APGI receives the Final FERC License, APGI will sign all necessary contracts for engineering work.
 - d. Within eighteen (18) months after APGI receives an order from FERC approving this work, APGI will begin the upgrade process on the first of the three units at High Rock.
 - e. Within twenty-four (24) months after APGI receives an order from FERC approving this work, APGI will complete the upgrade for DO enhancement to the first of the three units at High Rock.
 - f. Within twenty-four (24) months after APGI receives an order from FERC approving this work, APGI will begin the upgrade process on the second unit at High Rock.
 - g. Within thirty (30) months after APGI receives an order from FERC approving this work, APGI will complete the upgrade for DO enhancement to the second of the three units at High Rock.
 - h. Within thirty (30) months after APGI receives an order from FERC approving this work, APGI will begin the upgrade process on the third unit at High Rock.
 - i. Within thirty-six (36) months after APGI receives an order from FERC approving this work, APGI will complete the upgrade for DO enhancement to the third of the three units at High Rock.
- ii. **Narrows Unit 3.** Install the draft tube DO enhancement technology specified in this Certification for Narrows Unit 3 on the following expedited basis.
 - a. Within thirty (30) calendar days after APGI receives the Final FERC License, APGI will commence the engineering process for the upgrade.

- b. Within sixty (60) calendar days after APGI receives the Final FERC License, APGI will request FERC approval for the Narrows Unit 3 upgrades, provided such request is determined to be necessary.
 - c. Within ninety (90) calendar days after APGI receives the Final FERC License, APGI will sign all necessary contracts for engineering work.
 - d. Within sixty (60) calendar days of receiving an order from FERC approving this work, APGI will begin installation of the DO enhancement equipment.
 - e. Within one (1) year of receiving an order from FERC approving this work, APGI will complete the installation of the Unit 3 DO enhancement upgrade.
- iii. **Operation of High Rock and Narrows Generator DO Enhancement Technologies.** As DO enhancement equipment or measures are installed or implemented on the schedule described in this Certification, APGI shall operate the generating units with DO enhancement equipment added on a "first-on-last-off" basis, subject to unit availability, from May 1 of each year through November 30 of each year. If DO enhancement equipment or measures are not associated with generating equipment, once completed, that equipment or those measures shall be operated or implemented as designed from May 1 of each year through November 30 of each year.

C. Installation of Fixed Cone Valves at High Rock, Tuckertown, and Narrows Dams

- i. **High Rock.** Fixed cone (Howell-Bunger) valve DO enhancement technology will be used to improve DO in the tail waters at High Rock.
 - a. **Install two (2) fixed cone valves.** APGI will install two (2) fixed cone valves on two (2) of the three (3) drain valves at High Rock dam on the following expedited schedule.
 - 1. Within thirty (30) calendar days after APGI receives the Final FERC License, APGI will initiate the additional engineering process for the installation of the fixed cone valves.
 - 2. Within sixty (60) calendar days after APGI receives the Final FERC License, APGI will sign all necessary contracts for additional engineering work.
 - 3. Within one hundred fifty (150) calendar days after APGI receives the Final FERC License, APGI will provide proposed engineering plans and specifications for the fixed cone valves to the Division. At the same time, APGI will submit plans and any other required documents to FERC for approval of the installation of the fixed cone valves.
 - 4. Within ninety (90) calendar days of receiving FERC approval of the

installation of the fixed cone valves, APGI will commence installation of the cone valves at High Rock.

5. Within one hundred eighty (180) calendar days of receiving FERC approval of the installation of the fixed cone valves, APGI will complete installation of the fixed cone valves.
 - b. **Operation.** As soon as practicable after the "real-time" DO data monitoring system (see "12-G" below) for the High Rock tailwaters is fully operational, APGI will use those data to adjust operation of the fixed cone valve(s) to improve DO in the High Rock tailwaters in advance of completion of the High Rock turbine upgrades.
 - c. **Evaluation.** APGI will provide DO data to the Division on a quarterly basis. The data will be screened and reviewed in accordance with APGI's QA/QC procedures approved by the Division. Each quarter's DO data will be submitted within thirty (30) calendar days after the last day of the quarter in which it was collected.
 - d. **Potential installation of a third fixed cone valve.** If after one full DO season of operation with the first two fixed cone valves and the other DO Technology at High Rock, integrated and coordinated through the use of "real-time" monitoring data (see "12-G" below), the instantaneous and/or daily average levels of DO fail to meet water quality standards, then the Division may require installation of a third fixed cone valve at High Rock.
 1. Prior to any determination by the Division to require installation of a third fixed cone valve at High Rock, APGI will consult with the Division to determine if adding a fixed cone valve is required to improve DO in the tailwaters.
 2. If after consultation as described above, the Division requires installation of an additional fixed cone valve, APGI shall submit a request for approval for this work to FERC within thirty (30) calendar days of receiving a formal notice from the Division and will complete installation of the additional cone valve ninety (90) calendar days after receiving FERC approval.
- ii. **Tuckertown.** Fixed cone (Howell-Bunger) valve DO enhancement technology will be used to improve DO in the tail waters at Tuckertown.
 - a. **Install one (1) fixed cone valve.** APGI will install one (1) fixed cone (Howell-Bunger) valve at Tuckertown within eighteen (18) months of receipt of the final FERC license.
 - b. **Operation.** As soon as practicable after the "real-time" DO data monitoring system (see "12-G" below) for the Tuckertown tailwaters is fully operational, APGI will use those data to adjust operation of the fixed cone valve to improve DO in the Tuckertown tailwaters in advance of

completion of the High Rock turbine upgrades.

c. **Evaluation and Action.**

1. **Quarterly data.** APGI will provide DO data to the Division on a quarterly basis. The data will be screened and reviewed in accordance with APGI's quality assurance and quality control procedures (QA/QC) approved by the Division. Each quarter's DO data will be submitted within thirty (30) calendar days after the last day of the quarter in which it was collected.
 2. **Report after upgrade to third unit at High Rock.** Within ninety (90) calendar days after the end of the first full DO season after the third unit at High Rock is upgraded, APGI will provide a report (90-day Report) to the Division assessing the performance of (1) the fixed cone valve at Tuckertown and (2) the upgrades and fixed cone valves at High Rock on the DO levels below the Tuckertown dam. APGI will also provide an assessment of the need for additional DO enhancement technologies at Tuckertown in this report. Upon receipt of the report, the Division may request additional information.
 3. **Submit Tuckertown Action Plan.** If the Tuckertown 90-day report shows that the DO instantaneous and/or daily average levels at Tuckertown do not meet the applicable water quality standards, then at the same time APGI submits the Tuckertown 90-day report, APGI will provide an Action Plan for additional DO enhancement at Tuckertown including its recommendation for additional measures or technology and a proposed schedule for installation on an expedited basis (Tuckertown Action Plan).
 4. **Installation of Additional Tuckertown DO Enhancements.** If required, the Tuckertown Action Plan shall propose the installation of oxygen diffuser technology, aeration valves, or other appropriate aeration technology at Tuckertown, on an expedited basis. Installation of the additional appropriate technology after approval of the Tuckertown Action Plan by both the Division and FERC shall begin within ninety (90) calendar days of the later of those approvals and any required FERC order, and shall be completed according to the schedule in the approved Tuckertown Action Plan.
- iii. **Narrows.** The Division may require that APGI install a fixed cone valve at Narrows under the following conditions:
- a. **Evaluation.**
 1. After installation of the draft tube air valve at Narrows Unit 3, APGI will provide DO data to the Division on a quarterly basis. The data will be screened and reviewed in accordance with APGI's quality assurance and quality control procedures (QA/QC) approved by the Division.

Each quarter's DO data will be submitted within thirty (30) calendar days after the last day of the quarter in which it was collected.

2. If after one full DO season after the upgrade of Unit 3 at Narrows dam, integrated and coordinated through the use of “real-time” monitoring data (see “12-G” below), the instantaneous and/or daily average DO fail to meet water quality standards, then the Division may require installation of a fixed cone valve at Narrows.
 3. If the Division requires the installation of a fixed cone valve at Narrows in accordance with the previous paragraph, APGI shall continue to provide DO data after the beginning of operation of the fixed cone valve for the Division's evaluation. The Division may require that APGI install a second fixed cone valve at Narrows.
 4. If APGI and the Division agree, another appropriate aeration technology may be substituted for the fixed cone valve(s), irrespective of whether the upgrade to the DO data monitor has been completed.
- b. **Installation.** If the Division determines that a fixed cone valve or valves should be installed at Narrows, installation will be performed on the following expedited schedule.
1. Within thirty (30) calendar days of receiving formal notification from the Division that a fixed cone valve or valves should be installed, APGI will initiate the additional engineering process for the installation of fixed cone valve(s).
 2. Within sixty (60) calendar days of receiving formal notification from the Division that a fixed cone valve or valves should be installed, APGI will sign all necessary contracts for such additional engineering work.
 3. Within one hundred fifty (150) calendar days of receiving notification from the Division that a fixed cone valve or valves should be installed, APGI will provide proposed engineering plans and specifications for the fixed cone valve(s) to the Division. At the same time, APGI will submit plans and any other required documents to FERC for approval of the installation of the fixed cone valve(s).
 4. Within ninety (90) calendar days of receiving FERC approval of the installation of the fixed cone valve(s), APGI will commence installation of the cone valve(s) at Narrows.
 5. Within one hundred eighty (180) calendar days of receiving FERC approval of the installation of the fixed cone valve(s), APGI will complete installation of the fixed cone valve(s).

D. Assess Need for Installation of DO Enhancement Technology at Falls

i. Reporting Falls DO Information.

- a. **Quarterly data.** Within ninety (90) calendar days after APGI receives the Final FERC License, APGI will provide the Division with DO Data from the Falls DO monitor (following QA/QC review) on a quarterly basis.
 - b. **Report after upgrade to Unit 3 at Narrows.** Within ninety (90) calendar days after the end of the first full DO season after the upgrade of Unit 3 at Narrows, APGI will provide a report (Falls 90-day report) to the Division assessing the performance of the upgrades at Narrows on the DO levels below Falls Dam. APGI will also provide an assessment of the need for DO enhancement technologies at Falls in this report. Upon receipt of the report, the Division may request additional information.
- ii. **Evaluation and Action.**
- a. **Submit Falls Action Plan.** If the Falls 90-day report shows that the instantaneous and/or daily average DO levels at Falls do not meet the applicable water quality standards, then at the same time APGI submits the Falls 90-day report, APGI will provide an Action Plan for DO enhancement at Falls including its recommendation for additional measures or technology and a proposed schedule for installation on an expedited basis (Falls Action Plan).
 - b. **Installation of Falls DO Enhancements.** If required, the Falls Action Plan shall propose the installation of aeration valves, or other appropriate aeration technology at Falls Units 1, 2 and/or 3 on an expedited basis. Installation of the appropriate technology after approval of the Falls Action Plan by both the Division and FERC shall begin within ninety (90) calendar days of the later of those approvals and any required FERC order, and shall be completed according to the schedule in the approved Falls Action Plan.
- E. **Upgrade DO Monitoring Equipment in Tailwaters Below Dams in Yadkin Project**
- APGI will upgrade the DO monitoring equipment below each of the dams in the Yadkin Project to allow for the transmittal of data in 15-minute increments from the DO monitors to the Dispatch Center ("real time" DO data - see "12-G" below).
- i. **Schedule for Upgrades.**
 - a. The DO monitoring station below Narrows has been modified.
 1. APGI will complete the implementation of real time data transmission from the upgraded DO monitor below Narrows within 6 months after APGI receives the Final FERC License.
 - b. The DO monitoring stations below High Rock, Tuckertown, and Falls dams will be modified in the order listed.
 1. APGI will request the necessary approvals, if any, to relocate the DO monitoring stations below High Rock, Tuckertown, and/or Falls within thirty (30) calendar days after APGI receives the Final FERC License.

2. APGI will complete installation of the upgraded DO monitor below High Rock by the date the installation of the first fixed cone valve at High Rock is completed, provided all required approvals, orders and permits have been obtained.
 3. The remaining upgraded DO monitors at Tuckertown and Falls will be completed within twenty-four (24) months after APGI receives the Final FERC License, provided all required approvals, orders and permits have been obtained.
- ii. **Design and Engineering.** FERC and the North American Electrical Reliability Corporation ("NERC ") may impose certain requirements regarding location, connection, or operation of the DO monitors.
- a. Relocation of the DO monitors may require FERC approval.
 - b. Prior to relocating any of the DO monitors, APGI will provide the Division with a summary report and data on which the report is based establishing that the new location for the DO monitor will be representative of the water quality in the tailwaters below the dam.

F. DO Monitoring Plan and QAPP

- i. Within one (1) year of this Certification, APGI will submit to the Division for written approval an updated draft of the DO Monitoring Plan and Quality Assurance Project Plan ("QAPP"), as updates and revisions to the document "*Draft Dissolved Oxygen Monitoring Plan (May 2007)*." This updated document will include, at a minimum: updated contact information; background information; a description of proposed technologies; a discussion of monitoring and reporting procedures for the proposed upgraded "real-time" DO monitoring equipment; and a discussion of how DO meters will be repaired or replaced quickly in the event of malfunction. The DO Monitoring Plan and QAPP will be updated in consultation with the Division and other appropriate state and federal resource agencies. [*In addition to the Division, the other agencies consulted must include, at a minimum, the North Carolina Wildlife Resources Commission, the U.S. Fish and Wildlife Service, and the U.S. Environmental Protection Agency*].
- ii. The primary component of the DO Monitoring Plan will be the operation of four (4) continuous DO/temperature monitors, one in each tailwater below High Rock, Tuckertown, Narrows and Falls, for the period of May 1 through November 30 of each year. The DO Monitoring Plan shall include a schedule for preparing an annual DO and temperature data report. The annual report shall be filed by March 1 of the following year with the Division and with the downstream Licensee of the Yadkin-Pee Dee River Project (FERC No. 2206).
- iii. APGI shall file the DO Monitoring Plan with FERC within thirty (30) calendar days of receiving the Division's written approval of the draft Plan. APGI shall include with the DO Monitoring Plan an implementation

schedule, documentation of consultation, copies of the Division's comments and recommendations on the plan, and specific descriptions of the manner in which the Division's comments have been accommodated by the plan.

G. Optimization of Electrical Generation for DO Enhancement Using Information from the Upgraded DO Monitoring Equipment

- i. **Approval.** APGI will request FERC approval (if needed) within thirty (30) calendar days after APGI receives the Final FERC License, to use "real-time" DO data to optimize operation of the DO enhancement equipment.
- ii. **"Real-Time" Monitoring Data.** For the purposes of this Certification, "real-time" monitoring data mean data collected and recorded every fifteen (15) minutes, for instantaneous reading, with the instantaneous readings being averaged over a 24-hour period to obtain the daily average reading.
- iii. **Use of "Real-Time" Monitoring Data.** APGI will use the "real-time" DO monitoring data to coordinate and optimize the operation of the Project's DO enhancement technology, including turbines, fixed cone valves and any other controllable DO enhancement technology, to meet water quality standards. Such optimization may also include "pulsing" one or more hydroelectric generating units, and/or opening spill (flood) gates to maintain DO levels in the tailwaters at or above the water quality standards.

H. Additional Reporting Requirements

In addition to other requirements for reporting set forth in this Certification, APGI will provide the following:

- i. **Annual Report.** The annual report filed by March 1 of the following year to the Division will summarize the DO data and assess the compliance with North Carolina water quality standards. In addition, the annual report will include a narrative description of the operation of DO enhancement technologies and APGI's use of the "real-time" DO data in operating those DO enhancement technologies. APGI shall include information regarding the QA/QC procedure in its annual report. However, once the QA/QC procedures are approved, and provided that APGI does not change its QA/QC procedures, the annual report may simply refer to and incorporate the QA/QC procedures previously approved by the Division.
- ii. **Data provided on a quarterly basis.** In addition to the annual report, APGI will provide the Division with the "real-time" DO data for each dam on a quarterly basis. Each quarter's data will be submitted to the Division, after being screened and reviewed in accordance with QA/QC procedures, within thirty (30) calendar days after the last day of the quarter in which it was collected. This quarterly reporting requirement will become effective ninety (90) calendar days after APGI receives the Final FERC License.
- iii. **QA/QC.** Within one (1) year of this Certification, APGI shall submit to the Division for approval a written copy of the QA/QC procedures it uses on raw

DO data. Within ninety (90) calendar days, the Division will provide a written response to APGI approving or requesting changes to the QA/QC procedures. APGI shall include information regarding the QA/QC procedure in its Annual Report.

- iv. **Placement of DO monitors.** Every five years, beginning at the end of the calendar year following the year in which APGI receives the Final FERC License, APGI will include in the Annual Report an assessment of the placement of the DO monitors verifying that the chosen location below each of the dams is a representative site at which to measure DO levels in the water under the following conditions: when generators are operating at optimal levels; during periods of low flow; and when the generators are not operating.

I. Notice Provided to the Division

APGI agrees to provide Notices of Initiation and Notices of Completion to the Division for each of the events that APGI agrees to undertake, pursuant to the terms set forth in this Certification. This information will include at minimum the following information: 1) a description of the work being initiated or completed; 2) a reference to the condition in this Certification requiring the work; 3) the effective date of the notice; and 4) the name and contact information for the person providing notice. This information shall be sent, until further notice, to either of the following addresses:

Mailing Address (by US Postal Service)	Physical Address (by delivery service, UPS, FedEx, etc.)
NC DWR, 401 & Buffer Permitting Unit 1617 Mail Service Center Raleigh, NC 27699-1617	NC DWR, 401 & Buffer Permitting Unit 512 N Salisbury Street, Suite 942-E Raleigh, NC 27604

J. Assurance of Compliance

- i. **RSA Consistency.** This Certification shall not require APGI to violate or operate inconsistently with any provisions of the New License or any provisions of the RSA (including the Low Flow Inflow Protocol). To the extent the terms of this Certification provide an expedited schedule and additional conditions appropriate to meet state and/or federal requirements, they are not inconsistent with the RSA.
- ii. **Additional Improvements to Ensure Standards are Met:**
- a. If at any time during the term of the New License, after all the DO Enhancement equipment and measures outlined in the RSA and this

Certification have been installed and implemented, all of the upgraded units are operational, and at least two full DO seasons of monitoring have been completed, APGI is notified by the Division that based on the monitoring data collected under the DO Monitoring Plan, water quality standards are not being met as a result of APGI's hydroelectric operations, APGI shall develop a plan to implement corrective actions. APGI shall file a Dissolved Oxygen Corrective Action Plan (DOCAP) for the Division's approval within six (6) months of notification by the Division that water quality standards are not being met as a result of APGI's hydroelectric operations. APGI shall include with the DOCAP an implementation schedule, documentation of consultation, copies of the Division's comments and recommendations and specific descriptions of the manner in which such comments and recommendations have been accommodated by the DOCAP. Within thirty (30) calendar days of receipt of the Division's written approval of the DOCAP, APGI shall file the DOCAP with FERC.

- b. If, after implementation of the DOCAP in accordance with "a" above, DO levels do not meet water quality standards after completion of all the improvements required by the RSA (including the Low Inflow Protocol) and this Certification, APGI shall propose to the Division additional measures including an implementation schedule to meet water quality standards for DO. Following its review of APGI's proposal, the Division may, in writing, require that APGI implement those additional measures to meet water quality standards for DO.

iii. Tailwater Dissolved Oxygen Enhancement Operations.

If at any time during the term of the New License, after all the DO Enhancement equipment and measures outlined in the RSA and this Certification have been installed and implemented, all of the upgraded units are operational, and at least two full DO seasons of monitoring have been completed, APGI can demonstrate through studies and/or monitoring that water quality standards are met twenty-four hours a day, seven days a week, then APGI may consult with the Division regarding the possibility of reducing the period of DO Enhancement operations (May 1 – November 30). Should any such consultation result in an agreement between APGI and the Division to modify the operation of the Project for purposes of DO enhancement, APGI shall consult with the Division to develop a plan to revise DO enhancement operations. APGI shall include with the plan an implementation schedule, documentation of consultation, copies of the Division comments and recommendations and specific descriptions of the manner in which such comments and recommendations have been accommodated by the plan. Within thirty (30) calendar days of receipt of the Division written approval of the plan, APGI shall file the plan with FERC for any necessary regulatory approval.

13. Additional Conditions

The following conditions, which were included in the February 2007 Relicensing Settlement Agreement (RSA), are set forth separately and independently as

requirements of this Certification.¹⁹⁰

A. Project Operations

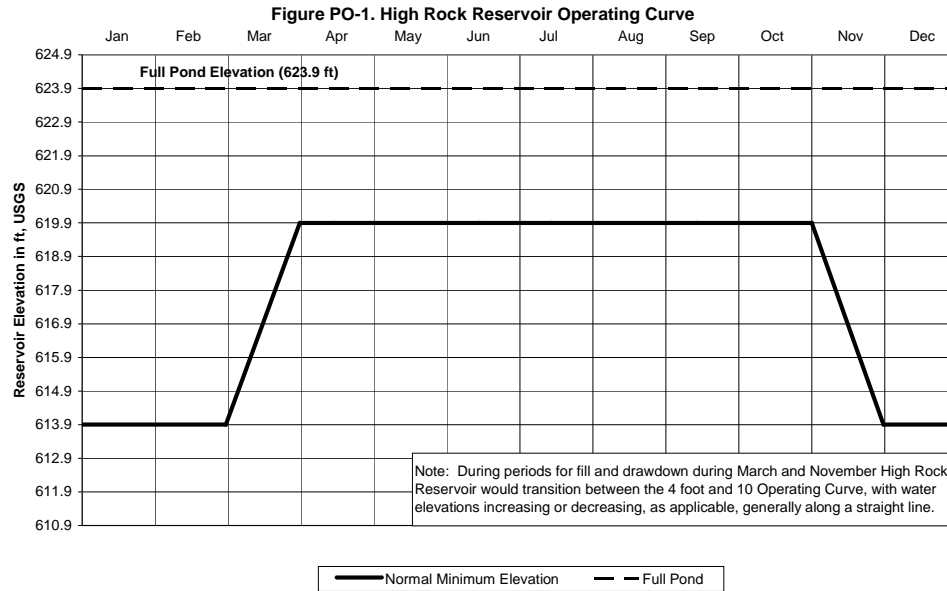
Unless *operating* in accordance with the Hydro Project Maintenance and Emergency Protocol and Low Inflow Protocol, Project minimum flows take priority over reservoir water elevations, as specifically described in Articles PO-1 and PO-2 below.

i. Article PO-1 – Reservoir Operations (RSA Section 3.1.1)

a. High Rock Reservoir Operations

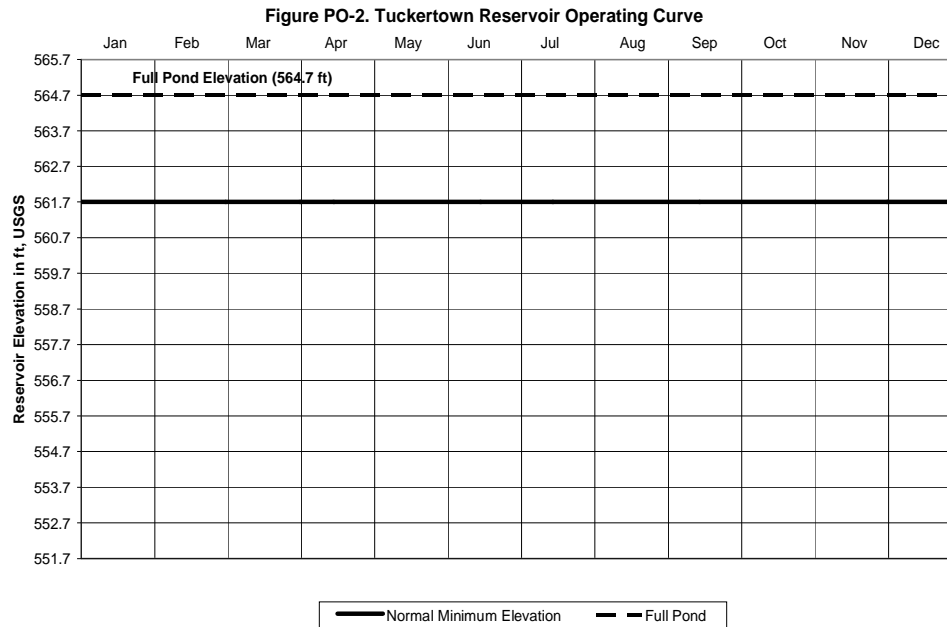
APGI *must* operate High Rock Reservoir at or above the normal minimum elevation (NME) as depicted on the High Rock Operating Curve (Figure PO-1), except as needed in order to maintain minimum flows or as provided under the Low Inflow Protocol (LIP) or the Hydro Project Maintenance and Emergency Protocol (HPMEP). High Rock Reservoir may be drawn down below its NME in order to meet the Required Minimum Instream Flow at Falls, as specified in Article PO-2, only after Narrows Reservoir has reached its NME. If High Rock Reservoir water elevation is below the NME at 12:01 AM on any operating day, where the operating day is defined as 12:01 AM through 12:00 midnight, APGI *must* reduce releases from High Rock Reservoir for that operating day up to a maximum of the daily average flow equivalent of the minimum flow requirement at Falls, as specified in Article PO-2. Under this condition, releases from Falls Dam will be limited to those defined in Article PO-2.

¹⁹⁰ The proposed license articles included in Condition 13 of this water quality certification have been modified, as necessary, to facilitate the Commission's administration of the license. The additions are shown in italics.



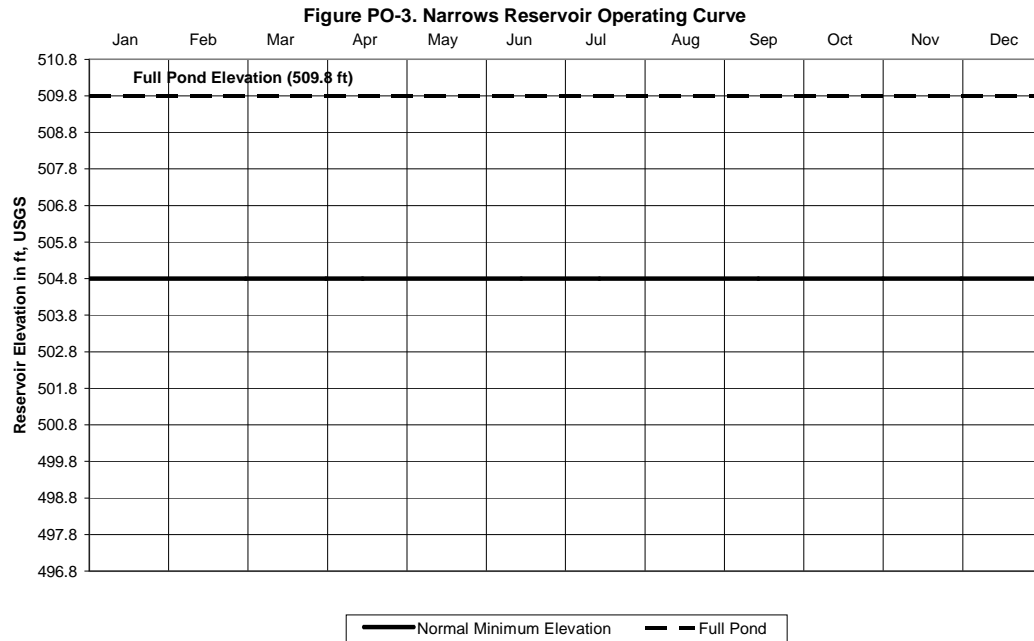
b. Tuckertown Reservoir Operations

APGI *must* operate Tuckertown Reservoir at or above the NME as depicted on the Tuckertown Operating Curve (Figure PO-2), except as provided in the HPMEP.



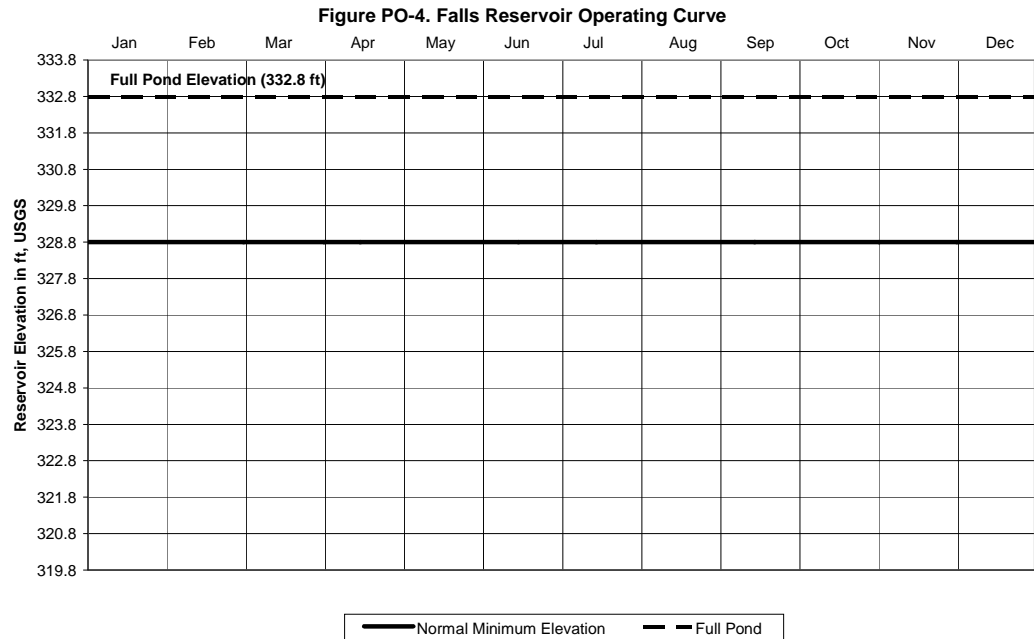
c. Narrows Reservoir Operations

APGI *must* operate Narrows Reservoir at or above the NME as depicted on the Narrows Operating Curve (Figure PO-3), except as needed in order to maintain minimum flows, or as provided under the LIP or HPMEP.



d. Falls Reservoir Operations

APGI *must* operate Falls Reservoir at or above the NME as depicted on the Falls Operating Curve (Figure PO-4), except as provided in the HPMEP.



e. Reservoir Stabilization to Enhance Fish Spawning

From April 15 through May 15 of each year, APGI *must* maintain reservoir water elevations at all four Project reservoirs no lower than -1.0 feet below the elevation of each reservoir on April 15 to enhance conditions for fish spawning in the reservoirs. No later than August 31 of each year, APGI *must* report the resulting reservoir water elevations at each reservoir during

the April 15 through May 15 period in a letter report to the North Carolina Wildlife Resources Commission (NCWRC). The letter report *must* provide an explanation of any circumstances that prevented APGI from maintaining the target water elevations. Within 60 days of filing the letter report with the NCWRC, a copy of the letter report *must* be filed with the Division and FERC. Satisfaction of these reporting commitments constitutes compliance with this Article.

f. Temporary Operational Variances

The lake level requirements outlined in items a through e above may be temporarily modified if APGI is operating in accordance with the Commission-approved LIP and HPMEP. The Licensee must notify FERC, the Division, NCWRC, the U.S. Fish and Wildlife Service, and other interested parties of any such modifications affecting the NME and the spring lake levels in accordance with the LIP or the HPMEP.

In the case of an emergency or unplanned event, APGI must include, as part of its notification to FERC, an incident report. The report must, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also must include: (1) operational data before, during, and immediately after the incident; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from interested parties regarding the incident. Based on the report and FERC's evaluation of the incident, FERC reserves the right to require modifications to the project facilities and operations to ensure future compliance.

ii. Article PO-2 – Project Instream Flows (RSA Section 3.1.2)

a. Required Minimum Instream Flows

Commencing no later than six months from the effective date of the New License and except when operating under the Low Inflow Protocol (LIP) or Hydro Project Maintenance and Emergency Protocol (HPMEP), APGI *must* operate the Project to provide a daily average minimum flow from the Falls Development according to the following schedule:

June 1 – January 31	1,000 cfs
February 1 – May 15	2,000 cfs
May 16 – May 31	1,500 cfs

b. Temporary Operational Variances

The flow requirements outlined in item a above may be temporarily modified if APGI is operating in accordance with the Commission-approved LIP and HPMEP. The Licensee must notify FERC, the Division, NCDWR, NCWRC, SCDNR, USFWS, NMFS, and other interested parties of any such modifications affecting the minimum flows in accordance with the LIP or the HPMEP.

In the case of an emergency or unplanned event, APGI must include, as part of its notification to FERC, an incident report. The report must, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also must include: (1) operational data before, during, and immediately after the incident; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from interested parties regarding the incident. Based on the report and FERC's evaluation of the incident, FERC reserves the right to require modifications to the project facilities and operations to ensure future compliance.

ii. **Flow Adjustment for Enhancement of Downstream Spawning (RSA Section 2.1.1)**

APGI *must* work with the licensee of the Yadkin-Pee Dee River Project, FERC No. 2206, (Downstream Licensee), the North Carolina Division of Water Resources (NCDWR), the North Carolina Wildlife Resources Commission (NCWRC), the South Carolina Department of Natural Resources (SCDNR), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), The Nature Conservancy (TNC), and American Rivers (collectively, Group) to develop a process to allow the Downstream Licensee to provide adjusted flow between February 1 and May 15 to enhance spawning conditions in the lower river downstream of the Blewett Falls development, part of the Yadkin-Pee Dee River Project.

APGI's role in enhancing downstream spawning below Blewett Falls will be limited to:

- a. Attending an annual meeting with the Group, if held, to consider expected flow and hydrologic conditions and to schedule adjusted flow period(s) for the upcoming spawning season, and
- b. Once the schedule for adjusted spawning flow period(s) has/have been established by the Group, APGI *must* communicate its daily generation/flow release schedule during the adjusted spawning flow period(s) to the Downstream Licensee at least one week in advance of the

start of the adjusted spawning flow period(s). If unexpected hydrologic conditions, or other conditions, such as those covered in the Low Inflow Protocol (LIP, Appendix A) or the Hydro Project Maintenance and Emergency Protocol (HPMEP, Appendix B), occur during any adjusted spawning flow period, APGI *must* communicate to the Downstream Licensee any resulting changes in its daily generation/flow release schedule for the remainder of that adjusted spawning flow period.

APGI will not be required to attempt to match Yadkin Project outflow to inflow during any adjusted spawning flow period(s), nor will APGI be required to provide an instantaneous minimum flow release from the Yadkin Project during any adjusted spawning flow period(s).

APGI's participation in enhancement of downstream spawning *must* take place within the confines of the other requirements of the New License and this Certification relating to management of flows and reservoir water elevations, and would not result in any modification of those flow and reservoir management requirements. Specifically, nothing in this section will require or cause APGI to fall below the Project Minimum Flows as described in Article PO-2 or to have to modify its reservoir operations as prescribed in Article PO-1.

If state and federal agencies and the Downstream Licensee are unable to come to an agreement on what measures are to be undertaken by the Downstream Licensee to achieve Flow Adjustment for Enhancement of Downstream Spawning, APGI will be under no obligation to meet the commitments outlined in this Condition [13(A)(iii)].

iii. **Article PO-3 - Flow and Reservoir Elevation Monitoring (RSA Section 3.1.3)**

Within six months of the effective date of the New License, APGI *must* file with the Division a final Flow and Reservoir Elevation Monitoring and Compliance Plan for the Yadkin Project. The Flow and Reservoir Elevation Monitoring and Compliance Plan *must* be developed in consultation with the North Carolina Division of Water Resources (NCDWR), the South Carolina Department of Natural Resources (SCDNR), the U.S. Geological Survey (USGS) and the Downstream Licensee (the Licensee of the Yadkin-Pee Dee River Project, FERC No. 2206), and *must* include detailed provisions for monitoring reservoir water elevations and for monitoring flows from both the Narrows and High Rock developments.

APGI *must* include with the final plan documentation of consultation, copies of comments and recommendations on the draft plan after it has been prepared and provided to the agencies and Downstream Licensee, and specific

descriptions of how comments are accommodated by the final plan. APGI *must* allow a minimum of 30 days for the agencies and Downstream Licensee to comment prior to filing the plan with the Division. If APGI does not adopt a recommendation, the filing *must* include APGI's reasons, based on Project-specific information.

The Division *and FERC* reserve the right to require changes to the plan. Upon Division approval, APGI *must* submit the plan to FERC for approval. *Implementation of the Flow and Reservoir Elevation Monitoring and Compliance Plan must not begin until the licensee is notified by FERC that the plan is approved.* Upon receiving FERC approval, APGI *must* implement the plan, including any changes required by the Division and/or FERC. APGI *must* file the final plan with the Division within 30 days of receiving FERC approval.

a. **Releases from High Rock Development**

Flow monitoring from the High Rock Development will serve as the measure for the flow releases from the High Rock Development required under Article PO-1 or under the Low Inflow Protocol (LIP). Daily average flows within +25% of the applicable maximum flow, measured from 12:01 AM to 12:00 midnight, *will* be considered compliant for each operating day.

b. **Releases from Falls Development**

Flow monitoring from the Narrows Development will serve as the compliance measure for the flow release from the Falls Development required under Articles PO-1, PO-2 or under the LIP. Daily average flows within -5% of the applicable minimum flow, measured from 12:01 AM to 12:00 midnight, *will* be considered compliant for any operating day so long as:

1. Whenever High Rock Reservoir is at or above its normal minimum elevation (NME), the applicable daily average minimum flow is achieved on a weekly average basis, measured from 12:01 AM Saturday to 12:00 midnight Friday.
2. Whenever High Rock Reservoir is drawn down below its NME (when a maximum release from Falls is also applicable), releases from Falls *must* be limited to $\pm 5\%$ of the cfs equivalent of the Required Instream Minimum Flow at Falls, as measured on a weekly average basis from 12:01 AM Saturday to 12:00 midnight Friday.

APGI *must* endeavor to meet the Required Minimum Instream Flows required in Article PO-2, and *must* not routinely use the flow variances

provided above. APGI *must* prepare an annual flow monitoring report documenting its compliance with minimum flow releases, including a record of any days during the year when the daily average required minimum instream flow fell within the -5% and was made up as part of the weekly average, a record of flows during any period when High Rock was below its NME, and a record of any LIP events. By no later than March 31 of the following year, APGI *must* file the report with the Division *and FERC* summarizing its evaluation. If, based on the results of the report, the state of North Carolina has a concern about the frequency or pattern of use of the variance by APGI, the state may request consultation with APGI to discuss APGI's reasons for that use and any practicable alternatives to that use. *FERC reserves the right to require changes to project operations or facilities based on the information in the report.*

iv. **Article PO-4 – Low Inflow Protocol (LIP) (RSA Section 3.1.4)**

This condition highlights the responsibilities of APGI from Appendix A, “Low Inflow Protocol for the Yadkin and Yadkin-Pee Dee River Hydroelectric Projects.” The complete text of the LIP is included by reference in this Certification (see “D” below).

a. **Definitions.** The following definitions shall be applicable to this condition:

1. **Stream Gage Three-Month Rolling Average Flow** – The three-month rolling average of streamflow at the following U.S. Geological Survey (USGS) stream gages:

- Yadkin River at Yadkin College (02116500)
- South Yadkin River near Mocksville (02118000)
- Abbotts Creek at Lexington (02121500)
- Rocky River near Norwood (02126000)

On the last day of each month, APGI *must* calculate the arithmetic mean of (a) the daily flows of the current month and (b) the arithmetic mean of the daily flows of each of the two preceding months. The sum of the three-month rolling average for these four gage stations *must* be compared by APGI to the Historic Stream Gage Three-Month Rolling Average Flow for the corresponding period and a percentage of Historic Three-Month Rolling Average *must* be calculated.

2. **Historic Stream Gage Three-Month Rolling Average Flow** – The historical three-month rolling average flow for each of the four designated USGS stream gages for the period 1974 through 2003 (except for the Abbotts Creek gage, for which the period is 1988

through 2003) are set forth in Table LIP-1 below:

Table LIP-1. Historic Stream Gage Three-Month Rolling Average Flow		
For Evaluation of Flow Trigger on:	Average of daily flows during:	Historic Three-Month Rolling Average Flow, cfs
January 1	Oct-Nov-Dec	4,000
February 1	Nov-Dec-Jan	5,200
March 1	Dec-Jan-Feb	6,250
April 1	Jan-Feb-Mar	7,700
May 1	Feb-Mar-Apr	7,550
June 1	Mar-Apr-May	6,850
July 1	Apr-May-Jun	5,350
August 1	May-Jun-Jul	4,200
September 1	Jun-Jul-Aug	3,600
October 1	Jul-Aug-Sep	3,200
November 1	Aug-Sep-Oct	3,300
December 1	Sep-Oct-Nov	3,550

3. **Full Pond Elevation** – The Full Pond Elevation for each development's reservoir is listed in Table LIP-2.

Table LIP-2. Full Pond Elevations	
Reservoir	Full Pond Elevation (feet, USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8

4. **Normal Minimum Elevation (NME)** – NME for each Project reservoir is listed in Table LIP-3.

Table LIP-3. Normal Minimum Elevations (feet, USGS datum - NGVD 1929)				
Month	High Rock	Tucker-town	Narrows	Falls
Full Pond	623.9	564.7	509.8	332.8
January 1	613.9	561.7	504.8	328.8

February 1	613.9	561.7	504.8	328.8
March 1	transition	561.7	504.8	328.8
April 1	619.9	561.7	504.8	328.8
May 1	619.9	561.7	504.8	328.8
June 1	619.9	561.7	504.8	328.8
July 1	619.9	561.7	504.8	328.8
August 1	619.9	561.7	504.8	328.8
September 1	619.9	561.7	504.8	328.8
October 1	619.9	561.7	504.8	328.8
November 1	transition	561.7	504.8	328.8
December 1-15	613.9	561.7	504.8	328.8
December 16-31	613.9	561.7	504.8	328.8

5. **U.S. Drought Monitor Three-Month Numeric Average** – APGI *must* calculate a three-month rolling average of U.S. Drought Monitor (<http://www.drought.unl.edu/dm/monitor.html>) values by: (a) assigning a numeric value equal to the highest U.S. Drought Monitor designation (e.g., D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of that month; and (b) calculating an arithmetic mean of that numeric value and numeric values correspondingly assigned for the previous two months. A normal condition in the basin, defined as the absence of a drought designation, *must* be assigned a numeric value of negative one (-1).

6. **Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG)** – The YPD-DMAG *must* consist of one representative from each of the following organizations (to the extent that they are willing to participate): Alcoa Power Generating Inc. (APGI), Progress Energy (PE; *now Duke Energy Progress LLC*), North Carolina Department of Environmental Quality (NCDEQ), North Carolina Division of Water Resources (Division) Basin Planning Branch, North Carolina Division of Water Resources (Division) 401 & Buffer Permitting Unit, North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), Duke Power Company, Lake Tillery Homeowners Association, South Carolina Pee Dee River Coalition (SCPDRC) and owners of intakes that withdraw more than one million gallons of water per day from the impoundments of either the Yadkin Project (FERC Project 2197) or the

Yadkin-Pee Dee Project (FERC Project 2206).

b. **Implementation Procedure**

1. Table LIP-4 sets forth the combinations of conditions under which the LIP *must* be implemented. The determination of the applicable LIP Stage *must* be made using the High Rock Reservoir water elevation as of midnight between the last day of the previous month and the first day of the current month in combination with the U.S. Drought Monitor Three-Month Numeric Average and the Stream Gage Three-Month Rolling Average Flow to determine the need to declare or change a Stage of the LIP. The LIP *must* be implemented beginning at Stage 0 and, if the combination of conditions becomes more severe, the Stages *must* increase in one Stage increments.

Table LIP-4. Summary of LIP Triggers					
Stage	High Rock Reservoir Elevation		US Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
0	< NME minus 0.5 ft	and either	Any	or	Any
		or			
	< NME	and either	≥ 0	or	< 48 %
1	< NME minus 1 ft	and either	≥ 1	or	< 41 %
2	< NME minus 2 ft	and either	≥ 2	or	< 35 %
3	< NME minus 3 ft	and either	≥ 3	or	< 30 %
4	< ½ of (NME minus Critical Reservoir Water Elevation)	and either	≥ 4	or	< 30 %

2. The average daily flows set forth in Table LIP-5 *must* be initiated no later than seven days after the determination of the applicable LIP Stage and *must* be in effect for the balance of the month except as provided in the section titled “Recovery from LIP Stages.”

Table LIP-5. LIP Flows⁽¹⁾, cfs
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Stage	High Rock (daily average maximum flow target)			Falls ⁽²⁾ (daily average flow target)		
	Feb 1 - May 15	May 16 - 31	Jun 1 - Jan 31	Feb 1 - May 15	May 16 - 31	Jun 1 - Jan 31
0	2000	1500	1000	2000	1500	1000
1	1450	1170	900	1450	1170	900
2	1080	950	830	1080	950	830
3	770	770	770	770	770	770
4	Additional measures may be determined by consensus of APGI and State Agencies, subject to Division approval.					
<p>⁽¹⁾ Developments shall be operated to achieve the target flows to the extent practicable as a first priority and to supplement inflows equitably from the storage reservoirs as a second priority. For LIP Stages 1, 2, 3 and 4, APGI shall achieve the indicated average daily flows set forth in this table by supplementing Project inflows by drawing proportionally from High Rock and Narrows reservoirs such that the difference between the respective drawdowns below NME of High Rock and Narrows reservoirs shall be approximately one foot.</p> <p>⁽²⁾ For LIP Stages 0-3, the values shown in this table reflect flow targets. These values cannot be met exactly as shown and shall likely vary slightly on a real time basis from the values shown here, but it is expected that the variances from the target flows shall be minimal.</p>						

3. APGI *must* notify via email the NCDWR, *and FERC by letter, phone call, or email*, of LIP implementation or a change in Stage as soon as practicable but no later than (i) three business days after a Stage 0 determination; (ii) two business days after a Stage 1 or a Stage 2 determination; or (iii) 48 hours after a Stage 3 or Stage 4 determination.
4. APGI *must* consult with the YPD-DMAG with respect to issues relating to or arising out of implementation of the LIP, including, but not limited to: (i) notification to the public of the possible effects of and/or continuance of drought; (ii) issues relating to the effects of drought conditions on life, health, property, wildlife, aquatic life; (iii) possible public health concerns; and (iv) short and long term prospects for recovery from drought.
5. APGI *must* develop and provide information on its website to inform the public on reservoir water elevations, Project releases, usability of public access areas, reservoir inflows, meteorological

forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans. *APGI must notify FERC within 30 days of completing this requirement.*

c. Recovery from LIP Stages

1. Recovery from the LIP shall be triggered by the occurrence of any of the three following conditions either separately or in combination:
 - Condition 1: All three triggering conditions associated with a lower numbered LIP Stage, as described in Table LIP-4, are met.
 - OR**
 - Condition 2: High Rock Reservoir water elevations return to at or above the NME plus 2.5 ft.
 - OR**
 - Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.
2. When any of these three conditions occurs, the APGI shall take the following actions as indicated by the particular condition:
 - Condition 1: The LIP recovery shall be a stage-by-stage reversal of the staged approach described in Table LIP-4 above, beginning at the first day of each month.
 - Condition 2: Implementation of the LIP shall be immediately discontinued.
 - Condition 3: Implementation of the LIP shall be immediately discontinued.
3. *APGI must notify the NCDWR via email, and FERC by letter, within 3 business days following attainment of any of the conditions necessary to return to a lower stage of the LIP.*

d. Updating the LIP

During the term of the New License, APGI *must* consult with the YPD-DMAG at least once every five (5) years to review and consider updating the LIP. The use of the period of record 1974 through 2003 to calculate the Historic Stream Gage Three-Month Rolling Average flows set forth in Table LIP-1 of this Article *must* be evaluated every five years during such review. On the basis of such consultation, review and consideration, APGI may propose modifications to this Article for the Division's review and approval. *No change to the LIP may be implemented without prior FERC approval.*

v. **Low Inflow Protocol (RSA Section 2.1.2)**

Assuming the U.S. Geological Survey (USGS) has necessary rights for the License term, APGI *must* continue to provide 100% funding support during the License term for the maintenance of the following USGS standard flow gages that are used in the LIP to determine the Three-Month Rolling Average Flow:

- Yadkin River at Yadkin College (02116500)
- South Yadkin River near Mocksville (02118000)
- Abbotts Creek at Lexington (02121500)

Any substantial increase in funding support due to changes in these flow gages are subject to review by APGI with DEQ. APGI may review and propose changes in the contractor, location, or equipment associated with these gages. Any changes proposed by APGI will require agreement of the Division *and approval by FERC*.

vi. **Article PO-5 – Hydro Project Maintenance and Emergency Protocol (RSA Section 3.1.5)**

If conditions so warrant, APGI *must* operate the Project in accordance with the Hydro Project Maintenance and Emergency Protocol (HPMEP) included as Appendix B, “Yadkin Project Hydro Project Maintenance and Emergency Protocol.” The complete text of the HPMEP is included by reference in this Certification (see “D” below).

B. Water Quality

i. **Total Maximum Daily Load Process (RSA Section 2.2.5)**

APGI agrees to participate in the High Rock Total Maximum Daily Load (TMDL) process for High Rock Reservoir initiated by the State of North Carolina in 2005. APGI will contribute up to \$50,000 in in-kind services for planned water quality sampling efforts, upon notification that the Yadkin-Pee Dee River Basin Association has received federal or state grants of at least \$50,000, for which APGI’s contribution will be used as the required “matching funds.”

If, during the term of the New License, other TMDL processes are required for the Yadkin River or its tributaries, within the Project Boundary of the Yadkin Project, APGI will participate in these processes.

C. Shoreline Management

i. **Article SMP-1 - Shoreline Management Plan (RSA Section 3.4.1)**

APGI *must* file a revised Shoreline Management Plan (SMP) for the Project with FERC within two years of the effective date of the New License. APGI *must* revise the SMP in consultation with state and federal resource agencies

and other interested parties. APGI *must* provide the consulted parties with a 30-day period to review and comment on a draft revised SMP. APGI *must* include with its filing copies of all comments received on the draft revised SMP and a discussion of those comments, including whether APGI adopted the comments or the APGI's rationale for not incorporating the comments in the final revised SMP.

Upon FERC approval, APGI *must* implement the approved SMP, including any changes required by FERC.

- ii. Additional written approval from the Division is needed for this Shoreline Management Plan, notably for those issues related to water quality such as buffer zones and management of shoreline erosion.

D. Incorporation of Appendix A and B by reference

The following Appendices are hereby incorporated by reference as conditions to this Certification and are drawn verbatim from the Relicensing Settlement Agreement. In a few instances, "the Division" should be *included, along with* "FERC" or "Commission" in these appendices – specifically in the sections that describe approval of LIP or HPMEP updates or revisions, and approval of additional stages (level 4 and beyond) to the LIP.

- i. **Appendix A:** Low Inflow Protocol for the Yadkin & Yadkin-Pee Dee River Hydroelectric Projects, *which is included in its entirety as Appendix B to this order.*
- ii. **Appendix B:** Yadkin Project, Hydro Project Maintenance and Emergency Protocol, *which is included in its entirety as Appendix C to this order.*

APPENDIX B

Low Inflow Protocol for the Yadkin & Yadkin -Pee Dee River Hydroelectric Projects

GOAL

The fundamental goal of this Low Inflow Protocol (LIP) is to take staged actions in the Yadkin- Pee Dee River Basin needed to delay the point at which available water storage in the Yadkin Hydroelectric Project (Federal Energy Regulatory Commission – FERC No. 2197) and the Yadkin-Pee Dee Hydroelectric Project (FERC No. 2206) (collectively, projects) reservoirs is fully depleted while maintaining downstream flows. This LIP is intended to provide additional time to increase the probability that precipitation will restore streamflow and reservoir water elevations to normal ranges. The amount of additional time that is gained during implementation of this LIP depends on the diagnostic accuracy of the trigger points, the amount of regulatory flexibility available to operate the projects, and the effectiveness of the projects' operators and the water users in working together to implement required actions and achieve significant water use reductions. It is assumed that water users in the Yadkin-Pee Dee River Basin not subject to this LIP must comply with all applicable State and local drought response requirements.

More specifically, this LIP establishes procedures for adjusting operations during periods of low inflow to the Yadkin Hydroelectric Project owned and operated by Alcoa Power Generating Inc. (APGI) and the Yadkin-Pee Dee River Hydroelectric Project owned by Carolina Power & Light Company and operated by Progress Energy Carolinas, Inc. (PE) (collectively, Licensees) during the term of the new FERC licenses issued for these projects. The provisions of this LIP should be interpreted in a manner consistent with all other provisions of the new FERC licenses.

OVERVIEW

This LIP will be implemented during periods when there is not enough water flowing into the projects' reservoirs to meet the projects' Required Minimum Instream Flows while maintaining reservoir water elevations within Normal Operating Ranges. This LIP provides trigger points and operating procedures that the Licensees will follow for the projects. This LIP also specifies water withdrawal reduction measures for other water users in portions of the Yadkin-Pee Dee River Basin.

The Licensees will provide flow from storage in the projects' reservoirs to support hydroelectric generation and to provide Required Minimum Instream Flows in accordance with their respective new FERC licenses. During periods of normal inflow, reservoir water elevations will be maintained within their Normal Reservoir Operating Ranges.

During times that inflow is not adequate to provide Required Minimum Instream Flows and maintain reservoir water elevations within their Normal Reservoir Operating Ranges, the Licensees will reduce releases for hydroelectric generation. If reservoir storage continues to drop and climatologic or hydrologic conditions worsen until trigger points defined in this LIP are reached, the Licensees will implement additional provisions of this LIP, including meeting with the designated agencies and water users to discuss the need for actions pursuant to this LIP. If conditions worsen, progressive stages of this LIP will allow additional use of the available water storage inventory, while conserving water storage volumes through required reductions in LIP Flows and required reductions in water withdrawals.

Implementation of this LIP and movement between the various stages are based on measurements of Stream Gage Three-Month Rolling Average Flow, U. S. Drought Monitor Three-Month Numeric Average, and the High Rock Reservoir water elevation. The calculation of these triggers and specific thresholds associated with each stage are detailed in this LIP.

Recognizing that improvements to this LIP may be identified during the new FERC license period, this LIP will be re-evaluated as defined in Key Definitions, Facts and Assumptions No. 18.

KEY DEFINITIONS, FACTS, AND ASSUMPTIONS

1. Low Inflow Watch or Low Inflow Condition – A period of time when there is not enough water flowing into the projects' reservoirs to meet the projects' Required Minimum Instream Flows while maintaining reservoir water elevations within Normal Reservoir Operating Ranges.
2. LIP Flows – For the purposes of this LIP, this term refers to the flows defined in Table 6.
3. Required Minimum Instream Flows – For the purposes of this LIP, this term includes the minimum flow requirements included in the new FERC licenses for the projects.
4. Public Information Obligations – The Licensees will develop and provide information on their respective websites to inform the public on reservoir water elevations, project releases, usability of public access areas, reservoir inflows, meteorological forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans.

5. Stream Gage Three-Month Rolling Average Flow – The three-month rolling average of streamflow will be calculated at the following USGS stream gages:

- Yadkin River at Yadkin College (02116500)
- South Yadkin River near Mocksville (02118000)
- Abbotts Creek at Lexington (02121500)
- Rocky River near Norwood (02126000)

This flow will be calculated on the last day of each month by averaging the monthly average of the current month and the two preceding months. The sum of the three-month rolling average for these four gage stations will be compared to the Historic Stream Gage Three- Month Rolling Average Flow for the corresponding period.

6. Historic Stream Gage Three-Month Rolling Average Flow – The daily flow for each of the four designated USGS stream gages has been used to calculate a monthly average flow for the period of record 1974 through 2003. Because the USGS only began gaging flows for Abbotts Creek in 1988, the historical average for this gage will be based on the period 1988 through 2003. The historic three-month rolling average flow for each month of the year, presented in Table 1, was calculated on the last day of each month of the year by averaging the monthly average flow for each month and the preceding two months. The use of the period of record 1974 through 2003 to calculate the historic three-month rolling average flow will be evaluated every five years during the review of this LIP (see Key Definitions, Facts, and Assumptions No. 18).

Table 1. Historic Stream Gage Three-Month Rolling Average Flow

For Evaluation of Flow Trigger on:	Average of daily flows during:	Historic Three-Month Rolling Average Flow, cfs
January 1	Oct-Nov-Dec	4.000
February 1	Nov-Dec-Jan	5.200
March 1	Dec-Jan-Feb	6.250
April 1	Jan-Feb-Mar	7.700
May 1	Feb-Mar-Apr	7.550
June 1	Mar-Apr-May	6.850
July 1	Apr-May-Jun	5.350
August 1	May-Jun-Jul	4.200
September 1	Jun-Jul-Aug	3.600
October 1	Jul-Aug-Sep	3.200
November 1	Aug-Sep-Oct	3.300
December 1	Sep-Oct-Nov	3.550

7. Full Pond Elevation – Also referred to as “Full Pond”, this is the elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that corresponds to the point at which water would first begin to spill from each reservoir’s dam if the respective Licensee took no action. This elevation corresponds to the lowest point along the top of the spillway (including flashboards) for reservoirs without flood gates; and to the lowest point along the top of the flood gates for reservoirs that have flood gates. The Full Pond Elevation for each projects’ reservoirs is listed in Table 2.

Table 2. Full Pond Elevations

Reservoir	Full Pond Elevation (feet, USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8
Tillery	278.2
Blewett Falls	178.1

8. Normal Reservoir Operating Range – The band of reservoir water elevations within which the Licensees normally attempt to maintain a given reservoir on a given day. Each reservoir has its own specific Normal Reservoir Operating Range, bounded by Full Pond Elevation and Normal Minimum Elevation. If net inflows to the reservoir are within a reasonable tolerance of the average or expected amounts, project equipment is operating properly, and if maintenance or emergency operation plans have not been implemented, reservoir water elevation excursions outside of the Normal Reservoir Operating Range should not occur. The new FERC license for the Yadkin Project includes operating curves that establish the Normal Reservoir Operating Range for each Yadkin Project reservoir.
9. Normal Minimum Elevation (NME) – The elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that defines the bottom of the reservoir’s Normal Operating Range for a given day of the year. NME for each of the projects’ reservoirs is listed in Table 3.

Table 3. Normal Minimum Elevations (feet, USGS datum - NGVD 1929)

Month	High Rock	Tucker-town	Narrows	Falls	Tillery	Blewett Falls
Full Pond	623.9	564.7	509.8	332.8	278.2	178.1
January 1	613.9	561.7	504.8	328.8	273.2	172.1
February 1	613.9	561.7	504.8	328.8	273.2	172.1
March 1	transition	561.7	504.8	328.8	275.7	172.1

April 1	619.9	561.7	504.8	328.8	275.7	172.1
May 1	619.9	561.7	504.8	328.8	275.7	172.1
June 1	619.9	561.7	504.8	328.8	275.7	172.1
July 1	619.9	561.7	504.8	328.8	275.7	172.1
August 1	619.9	561.7	504.8	328.8	275.7	172.1
September	619.9	561.7	504.8	328.8	275.7	172.1
October 1	619.9	561.7	504.8	328.8	275.7	172.1
November	transition	561.7	504.8	328.8	275.7	172.1
December	613.9	561.7	504.8	328.8	275.7	172.1
December	613.9	561.7	504.8	328.8	273.2	172.1

10. Public Water System – For the purposes of this LIP, a Public Water System is any publicly or privately owned water system that supplies potable water to the public having an instantaneous withdrawal capacity of one million gallons per day or more, and withdraws from storage in the projects’ reservoirs.
11. Non-Public Water User – For the purposes of this LIP, a Non-Public Water User is any publicly or privately owned water withdrawer that withdraws water for uses other than supplying potable water to the public, having an instantaneous withdrawal capacity of one million gallons per day or more that withdraws from storage in the projects’ reservoirs.
12. U.S. Drought Monitor – A synthesis of multiple indices, outlooks, and news accounts (published by the U. S. Department of Agriculture) that represent a consensus of federal and academic scientists concerning the drought status of all parts of the United States. Typically, the U.S. Drought Monitor indicates intensity of drought as D0-Abnormally Dry, D1-Moderate, D2-Severe, D3-Extreme and D4-Exceptional. The current U.S. Drought Monitor and explanatory material can be found at <http://www.drought.unl.edu/dm/monitor.html>.
13. U.S. Drought Monitor Three-Month Numeric Average – If the U.S. Drought Monitor has a designation ranging from D0 to D4 as of the last day of a month for any part of the Yadkin- Pee Dee River Basin that drains to the Blewett Falls development, the basin will be assigned a numeric value for that month. The numeric value will equal the highest U.S. Drought Monitor designation (e.g. D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of the month. A normal condition in the basin, defined as the absence of a drought designation, will be assigned a numeric value of negative one (-1). A rolling average of the numeric values of the current month and previous two months will be calculated by APGI at the end of the month and designated as the U.S. Drought Monitor Three-Month Numeric Average for purposes of this LIP.

14. Critical Reservoir Water Elevation – The reservoir water elevation (measured in feet, USGS datum [NGVD 1929]) below which a Public Water System intake, Non-Public Water User’s intake, or hydropower plant located on the reservoir cannot operate under normal conditions. Critical Reservoir Water Elevations are defined in Table 4.

Table 4. Critical Reservoir Water Elevation

Reservoir	Critical Reservoir Water Elevation measured at the dam (feet USGS Datum - NGVD1929)	Type
High Rock	599.9 (24 ft below full pool)	Hydropower Production
Tuckertown	560.7 (4 ft below full pool)	Public Water Supply
Narrows	486.8 (23 ft below full pool)	Public Water Supply
Falls	322.8 (10 ft below full pool)	Hydropower Production
Tillery	268.2 (10 ft below full pool)	Public Water Supply
Blewett Falls	168 (10.1 ft below full pool)	Public Water Supply/ Hydropower Production

15. Critical Flow – The flows from the projects that are necessary to prevent long-term or irreversible damage to aquatic communities consistent with the resource management goals and objectives for the affected stream reaches and necessary to provide some basic level of water quality maintenance in affected river reaches. For the purposes of this LIP, the Critical Flows are defined as follows:
- Falls Development – the Critical Flow from the Falls Development is equal to 770 cfs measured on a daily average basis.
 - Tillery Development – the Critical Flow from the Tillery Development is the same as required minimum instream flow as defined in the new FERC license for Yadkin Pee- Dee River Hydroelectric Project.
 - Blewett Falls Development – the Critical Flow from the Blewett Falls Development is 925 cfs measured on a continuous basis.
16. Organizational Abbreviations – Organizational abbreviations include Alcoa Power Generating Inc. (APGI), Progress Energy (PE), NC Department of Environment and Natural Resources (NCDENR),¹⁹¹ North Carolina Division of Water Resources (NCDWR), North Carolina Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental

¹⁹¹ Known now as the North Carolina Department of Environmental Quality.

Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), and South Carolina Pee Dee River Coalition (SCPDRC).

17. Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG) –The YPD-DMAG is established to facilitate implementation and review of this LIP. Members of the YPD-DMAG agree to comply with this LIP. Membership on the YPD-DMAG is open to one representative from each of the following organizations:

- APCI
- PE
- NCDWR
- NCDWQ
- NCWRC
- SCDNR
- SCDHEC
- USFWS
- Duke Power
- HRLA
- BLA
- Lake Tillery homeowners representation
- SCPDRC
- All owners of a Public Water System intake or a Non-Public Water User's intake that withdraw from storage in one of the projects' reservoirs.

The Licensees will share the responsibility to notify NCDWR of a Low Inflow Condition. NCDWR and SCDNR will share responsibility to coordinate with the YPD-DMAG including notifying, setting agendas, leading discussions, and providing call/meeting summaries.

Regardless of the Low Inflow Condition, coordination will include a meeting convened annually by NCDWR during April to discuss issues relevant to this LIP. Membership in the YPD-DMAG may be expanded based on a consensus of the members or at the direction of FERC. The NCDWR will maintain an active roster of the YPD-DMAG, will prepare meeting summaries of all YPD-DMAG meetings.

18. Revising this LIP – During the new FERC license period, the YPD-DMAG will be convened by NCDWR and SCDNR at least once every five (5) years to review and, if necessary, update this LIP. Decisions on modifications to the Licensees' responsibilities under this LIP, if any, will be determined by consensus of the Licensees and the States of North Carolina and South Carolina (specifically

NCDWR, NCDWQ, SCDNR, SCDHEC) after consultation with other members of the YPD-DMAG. Proposed modification to the Licensees' responsibilities will be submitted to FERC for review and approval as necessary. Modifications to the responsibilities of other members (not the FERC licensees) of the YPD- DMAG under this LIP, if any, will be determined by consensus of those members after consultation with the Licensees. Approved modifications will be incorporated through revision of this LIP. The YPD-DMAG may appoint an *ad hoc* committee to consider issues relevant to this LIP. An issue such as the substitution of a regional drought monitor for the U.S. Drought Monitor, if developed in the future, or proportional drawdown of storage reservoirs during LIP stages are examples of items that may be considered.

19. Consensus – The unanimous support of all Parties, or at least no opposition from any Party.
20. Water Withdrawal Data Collection and Reporting – The owners of all water intakes impacted by this LIP are to comply with water use reporting requirements of the appropriate State Agencies. The YPD-DMAG can request and should receive relevant water use information from the appropriate state agency or directly from the owners of individual intakes.
21. Drought Response Plan Updates – All Public Water Supply System owners and Non-Public Water Users subject to this LIP will review and update their drought response plans, or develop a plan if they do not have one, to ensure compliance and coordination with this LIP, including the authority to enforce the provisions outlined herein. Nothing in this LIP is intended to prevent Public Water System owners or Non-Public Water Users from taking more restrictive actions or from complying with any applicable law or regulation.
22. Relationship Between this LIP and Maintenance and Emergency Plans – Maintenance and emergency plans outline the general approach the Licensees will take under certain maintenance, emergency, equipment failure and other situations to continue practical and safe operation of the projects; to maintain operations consistent with the new FERC license conditions to the maximum extent possible; and to communicate with resource agencies and the affected parties. Under these plans, temporary modifications to Required Minimum Instream Flow releases, and the Normal Reservoir Operating Ranges are allowed.
23. Lowering projects' reservoir water elevations caused by situations addressed under maintenance and emergency plans will not invoke implementation of this LIP. Also, if this LIP has already been implemented at the time that a situation covered by these plans is initiated, the Licensee may suspend implementation of this LIP until the

maintenance or emergency situation has been eliminated. Notification will be provided by the Licensees to the State Agencies as soon as practicable.

PROCEDURE

A Low Inflow Watch or Low Inflow Condition, as specifically defined below, will be triggered by the combination of conditions defined in Table 5. This LIP will be implemented at Stage 0 and, if the combination of conditions becomes more severe, the stage will increase in one stage increments. The Licensees and other water users will follow the procedure set forth in this section regarding communications and adjustments to flows and other water demands.

Stage	High Rock Reservoir Elevation		US Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
0	< NME minus	and	any	or	any
	OR				
	< NME	and	□0	or	< 48 %
1	< NME minus 1	and	□1	or	< 41 %
2	< NME minus 2	and	□2	or	< 35 %
3	< NME minus 3	and	□3	or	< 30 %
4	< ½ of (NME minus Critical Reservoir Water Elevation)	and either	□4	or	< 30 %

The LIP Flows set forth in Table 6 will be initiated on a monthly basis and are designed to equitably allocate the impacts of reduced water availability in accordance with the goal of this LIP. Initiation of this LIP will be based on analysis of the trigger conditions on the first day of each month. The High Rock Reservoir water elevation as of midnight between the last day of the previous month and the first day of the current month will be used in combination with the U.S. Drought Monitor Three-Month Numeric Average and the Stream Gage Three-Month Rolling Average Flow to determine the need to declare a Low Inflow Watch or change the stage of Low Inflow Conditions.

Stage	Table 6. LIP Flows⁽¹⁾, cfs								
	High Rock			Falls⁽²⁾			Blewett Falls⁽²⁾		
	(daily average maximum flow target)			(daily average flow target)			(continuous flow target ⁽³⁾)		
	Feb 1– May 15	May 16–Jun 1- 31	Jun 1- Jan 31	Feb 1– May 15	May 16–Jun 1- 31	Jun 1- Jan 31	Feb 1– May 15	May 16–Jun 1- 31	Jun 1- Jan 31
0	2000	1500	1000	2000	1500	1000	2400	1800	1200
1	1450	1170	900	1450	1170	900	1750	1400	1080
2	1080	950	830	1080	950	830	1300	1150	1000
3	770	770	770	770	770	770	925	925	925
4	Additional measures may be determined by consensus of the Licensees and State Agencies. FERC approval of								

- 1 Consistent with the goal of this LIP to conserve water while maintaining downstream flows, projects will be operated to achieve the target flows to the extent practicable as a first priority and to supplement inflows equitably from the storage reservoirs as a second priority.
- 2 The LIP flow values shown in the table above reflect flow targets. These values cannot be met exactly as shown and will likely vary slightly on a real time basis from the values shown here. It is expected that the variances from the target flows will be minimal. In Stages 0-2 the releases from Blewett Falls will be within 5% of the target as measured at the USGS Rockingham gage. In stages 3-4 the releases from Blewett Falls will be between 900-950 cfs as measured at the USGS Rockingham gage.
- 3 Local inflows to Blewett Falls Reservoir may be large even during extended low inflow conditions. If at any time during the implementation of the LIP local inflows to Blewett Falls Reservoir are large enough to fill Blewett Falls Reservoir to full pond, the Downstream Licensee may temporarily increase Blewett Falls generation to avoid spill.

Stage 0 - Low Inflow Watch:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages and will declare a Stage 0 Low Inflow Watch for the month if the following conditions are present on the first day of the month:

- If the High Rock Reservoir water elevation is below the NME minus 0.5 ft under any inflow or drought condition.

OR

- The High Rock Reservoir water elevation is below its NME.

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to zero.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 48% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 0 Low Inflow Watch is declared:

1. The Licensees will notify via email the NCDWR of a Stage 0 Low Inflow Watch as soon as practicable but no later than three business days after the declaration.
2. The NCDWR will activate the YPD-DMAG and initiate monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - Review provisions of this LIP.
 - Clarify communication channels between the YPD-DMAG members.
 - Review hydrological status of the basin.
 - Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - Public communications.

Stage 1 - Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages and will declare a Stage 1 Low Inflow Condition for the month if the following conditions are present on the first of the month:

- The prior month LIP condition was Stage 0;

AND

- The High Rock Reservoir water elevation is more than 1 ft below the NME;

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 1.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 41% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 1 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of declaration of a Stage 1 Low Inflow Condition via email as soon as practicable but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 1 Low Inflow Condition is declared. To meet the LIP Flows for Stage 1 :
 - APGI will supplement Project inflows by drawing first from Narrows Reservoir until the Narrows Reservoir drawdown below its NME matches the High Rock Reservoir drawdown below its NME at the time that the Stage 1 Low Inflow Condition is declared.
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis below the Normal Minimum Elevation (NME).
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.

- c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with weekly updates on reservoir water elevations and inflow of water into the projects' reservoirs.
2. If they have not already done so, NCDWR will coordinate with SCDNR to conduct monthly meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:
 - a. Notify their water customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their water customers implement voluntary water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 5% from the amount that would otherwise be expected. These restrictions may include:
 - Reduction of lawn and landscape irrigation to no more than two days per week (i.e. residential, multi-family, parks, streetscapes, schools, etc).
 - Reduction of residential vehicle washing.
 - c. Provide a status update to the YPD-DMAG on actual water withdrawal trends and discuss plans for moving to mandatory restrictions, if they are required.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 1 Low Inflow Condition is declared:

- a. Notify their employees and/or customers of the low inflow condition,
- b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means, and
- c. Institute in-house conservation consistent with their drought management plan and minimize consumptive uses to the extent feasible.

Stage 2 – Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages and will declare a Stage 2 Low Inflow Condition for the month if the following conditions are present on the first of the month:

- The prior month LIP condition was Stage 1;

AND

- The High Rock Reservoir water elevation is more than 2 ft below the NME.

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 2.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 35% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 2 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of Stage 2 Low Inflow Condition via email as soon as practicable but no later than two business days after the declaration.
 - b. Implement LIP Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 2 Low Inflow Condition is declared. To meet the LIP Flows for Stage:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.

- PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
- c. Update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with updates twice per week on reservoir water elevations and inflow of water into the system.
 - e. Continue participation in monthly or more frequent meeting or conference calls of the YPD-DMAG.
2. NCDWR will coordinate with SCDNR to conduct monthly YPD-DMAG meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
- a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.
3. Owners of Public Water System intakes will complete the following activities within 14 days after the Stage 2 Low Inflow Condition is declared:
- a. Notify their water customers of the continued low inflow condition and movement to more stringent mandatory water use restrictions through public outreach and communication efforts.
 - b. Require that their water customers implement mandatory water use restrictions, in accordance with their drought response plans. At this stage, the goal is to reduce water withdrawals by approximately 10% from the amount that would otherwise be expected. These restrictions may include:
 - Limiting lawn and landscape irrigation to no more than one day per week (i.e. residential, multi-family, parks, streetscapes, schools, etc).
 - Eliminating residential vehicle washing.
 - Limiting public building, sidewalk, and street washing activities except as required for safety and/or to maintain regulatory compliance.
 - Limiting construction uses of water such as dust control.
 - Limiting flushing and hydrant testing programs, except to maintain water quality or other special circumstances.

- Eliminating the filling of new swimming pools.
 - Enforce mandatory water use restrictions through the assessment of penalties.
 - Encourage industrial/manufacturing process changes that reduce water consumption.
 - Provide a status update to the YPD-DMAG on actual water withdrawal trends.
4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after the Stage 2 Low Inflow Condition is declared:
- a. Notify their employees and/or customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their employees and customers conserve water through reduction of water use, electric power consumption, and other means.
 - c. Institute in-house conservation consistent with their required drought management plans and minimize consumptive uses to the extent feasible.

Stage 3 - Low Inflow Condition:

The Licensees will monitor High Rock Reservoir water elevations, the U.S. Drought Monitor and the designated stream gages and will declare a Stage 3 Low Inflow Condition for the month if the following conditions are present on the first of the month:

- The prior month LIP condition was Stage 2;

AND

- The High Rock Reservoir water elevation is more than 3 ft below the NME.

AND EITHER

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 3.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 30% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 3 Low Inflow Condition is declared:

1. The Licensees will:
 - a. Notify NCDWR of a declaration of Stage 3 Low Inflow condition via email as soon as practicable but no later than 48 hours after the declaration.
 - b. Implement LIP Flows to designated Critical Flows as detailed in Table 6 for each project by the seventh day of the month in which a Stage 3 Low Inflow Condition is declared. To meet the Critical Flows:
 - APGI will supplement Project inflows by drawing from High Rock and Narrows reservoirs approximately equally on a foot-per-foot basis.
 - PE will supplement Project inflows by drawing from either Tillery or Blewett Falls as required.
 - c. Update their respective websites as noted in Key Definitions, Facts, and Assumptions No. 4.
 - d. Provide Public Water System intake owners and Non-Public Water Users with bi-weekly (twice each week) updates on reservoir water elevations and inflow of water into the system.
 - e. Continue participation in monthly or more frequent meeting or conference calls of the YPD-DMAG.
2. NCDWR will coordinate with SCDNR to conduct monthly YPD-DMAG meetings or conference calls to be held on the Monday before the second Tuesday. Monthly discussions will:
 - a. Review provisions of this LIP.
 - b. Clarify communication channels between the YPD-DMAG members.
 - c. Review hydrological status of the basin.
 - d. Review the roles of each YPD-DMAG member and discuss their plans for responding if an elevated Low Inflow Condition is declared.
 - e. Review information reporting by YPD-DMAG members, including a storage history and forecast from the Licensees, a water use history and forecast from each water user on the YPD-DMAG, and state-wide drought response status (including, but not limited to, impact to water quality, fisheries, wildlife, etc.) from the member agencies.
 - f. Public communications.

3. Owners of Public Water System intakes will complete the following activities within 14 days after the Stage 3 Low Inflow Condition is declared:
 - a. Notify their water customers of the continued low inflow condition and movement to emergency water use restrictions through public outreach and communication efforts. At this stage, the goal is to reduce water usage by approximately 20% from the amount that would otherwise be expected.
 - b. Restrict all outdoor water use.
 - c. Implement emergency water use restrictions in accordance with their drought response plans, including enforcement of these restrictions and assessment of penalties.
 - d. Prioritize and meet with their commercial and industrial large water customers and meet to discuss strategies for water reduction measures including development of an activity schedule and contingency plans.
 - e. Prepare to implement emergency plans to respond to water outages.

4. Non-Public Water Users on the YPD-DMAG will complete the following activities within 14 days after a Stage 3 Low Inflow Condition is declared:
 - a. Continue informing their customers of the low inflow condition through public outreach and communication efforts.
 - b. Request that their customers conserve water through reduction of water use, electric power consumption, and other means.

Stage 4 - Low Inflow Condition:

The Licensees will monitor reservoir elevations, the U.S. Drought Monitor and the designated stream gages and will declare a Stage 4 Low Inflow Condition for the month if the following conditions are present on the first of the month:

- The prior month LIP condition was Stage 3;

AND

- The High Rock Reservoir water elevation is less than 606.9 ft USGS (November 1 through March 1) or less than 609.9 ft USGS (April 1 through October 1).¹⁹²

AND EITHER

¹⁹² Less than one half the distance between the NME and the Critical Reservoir Water Elevation.

- The U.S. Drought Monitor Three-Month Numeric Average for the Yadkin-Pee Dee River Basin draining to Blewett Falls Development is greater than or equal to 4.

OR

- The Stream Gage Three-Month Rolling Average Flow for the monitored stream gages is less than 30% of the Historic Stream Gage Three-Month Rolling Average Flow.

When a Stage 4 Low Inflow Condition is declared:

1. The Licensees will notify NCDWR via email as soon as practicable but no later than 48 hours after the declaration.
2. NCDWR will request a meeting of the YAD-DMAG within 5 days after the declaration of the Stage 4 Low Inflow Condition for discussion to determine if there are any additional measures that can be implemented to:
 - a. Reduce water withdrawals, reduce water releases from the projects or use additional reservoir storage without creating more severe regional problems.
 - b. Work together to develop plans and implement any additional measures identified above.
 - c. Communicate conditions to the public.

Additional measures may be determined by consensus of the Licensees and State Agencies with FERC approval as necessary.

Recovery from LIP Stages

Recovery from this LIP will be triggered by any of the three following conditions:

- Condition 1: All three triggers associated with a lower numbered LIP Stage are met.

OR

- Condition 2: High Rock Reservoir water elevations return to at or above the NME PLUS 2.5 ft.

OR

- Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.

When any of these three conditions occurs:

1. The Licensees will take the following action:
 - a. Condition 1: The LIP recovery will be a general reversal of the staged approach described above.
 - b. Condition 2: The LIP will be discontinued.
 - c. Condition 3: The LIP will be discontinued.

2. The Licensees will notify the NCDWR via email within 3 business days following attainment of any of the conditions necessary to return to a lower stage of this LIP. Changes to less restrictive Stages will be made:
 - a. Condition 1: on the first of each month if a slow recovery is indicated; or
 - b. Condition 2: immediately if High Rock Reservoir elevations are at or above the NME **PLUS** 2.5 ft.
 - c. Condition 3: immediately if High Rock Reservoir elevations are at or above the NME for 2 consecutive weeks.

3. The Licensees will update their respective websites as noted in Key Definitions, Facts and Assumptions No. 4.

APPENDIX C

Yadkin Project (FERC No. 2197) Hydro Project Maintenance and Emergency Protocol

1.0 Overview

Under some maintenance and emergency situations, certain license conditions may be impractical or even impossible to meet and may need to be suspended or modified temporarily. The objectives of this Hydro Project Maintenance and Emergency Protocol (HPMEP) are to define the most likely situations of this type, identify the potentially impacted license conditions, and outline the general approach that Alcoa Power Generating Inc. (Licensee) will take at the Yadkin Project (Project) (Federal Energy Regulatory Commission – FERC No. 2197) to maintain operations consistent with license conditions, to the maximum extent possible, and to communicate with the resource agencies and affected parties.

Due to the potential variability of these abnormal situations, this HPMEP is not intended to give an exact step-by-step solution path. It does, however, provide basic expectations for the Licensee's approach to dealing with the situation. The specific details of each maintenance or emergency situation will vary and will be determined on a case-by-case basis as this HPMEP is implemented.

The Licensee will review the requirements of this HPMEP each time it is used and if it determines revisions are warranted, the Licensee will consult with appropriate resource agencies and shall file with the Commission a revised HPMEP for the Yadkin Project. The Licensee shall include with the revised HPMEP documentation of consultation, copies of comments and recommendations on the revised HPMEP after it has been drafted and provided to the agencies for their review, and specific descriptions of how comments are accommodated by the final revised HPMEP. The Licensee shall allow a minimum of 30 days for the agencies to comment on the revised HPMEP prior to filing it with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on Project-specific information. Upon Commission approval, the Licensee shall implement the revised HPMEP, including any changes required by the Commission.

2.0 Key Definitions, Facts, and Assumptions

1. Required Minimum Instream Flows – For the purposes of this HPMEP, this term refers to the Required Minimum Instream Flow requirements included in the new FERC license for the Project.

2. LIP Flows - For the purposes of this HPMEP, a Low Inflow Protocol (LIP) flow is any flow required under the LIP.
3. Public Information Obligations – The Licensee will develop and provide information on its website to inform the public on reservoir water elevations, Project releases, usability of public access areas, reservoir inflows, meteorological forecasts, Historical and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three- Month Numeric Average calculations, LIP status, flow and drought triggers, and implementation of this HPMEP.
4. Full Pond Elevation – Also referred to as “full pond”, this is the elevation of a reservoir (measured in feet, USGS datum [NGVD 1929] that corresponds to the point at which water would first begin to spill at the dam if the Licensee took no action. This elevation corresponds to the lowest point along the top of the flood gates. The Full Pond Elevations for the Yadkin Project reservoirs are:

<u>Reservoir</u>	<u>Full Pond Elevation (feet, USGS datum – NGVD 1929)</u>
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8

5. Normal Minimum Elevation (NME) – The elevation of a reservoir (measured in feet, USGS datum [NGVD 1929]) that defines the bottom of the reservoir’s Normal Operating Range for a given day of the year.
6. Normal Reservoir Operating Range – The band of reservoir water elevations within which the Licensee normally attempts to maintain a given reservoir on a given day. Each reservoir has its own specific Normal Reservoir Operating Range, bounded by Full Pond Elevation and Normal Minimum Elevation. If net inflows to the reservoir are within a reasonable tolerance of the average or expected amounts, Project equipment is operating properly, the LIP has not been implemented, and this HPMEP has not been implemented, reservoir water elevation excursions outside of the Normal Reservoir Operating Range should not occur. The new FERC license for the Project includes operating curves that establish the Normal Reservoir Operating Range for each Project reservoir.

7. Most Likely Situations - The following table identifies the most likely situations when this HPMEP will be implemented and the license conditions that would most likely be affected:

Situation	Indications	Potentially Affected License Conditions	
		Required Minimum Instream Flows or	Normal Reservoir Operating Range
Hydro Unit or Dam Maintenance	Maintenance may require hydro unit shutdown or gates placed out of service.	X	X
Maintenance of Normal Means of Providing Required Minimum Instream Flow	Maintenance will require interruption of scheduled minimum releases from normal locations.	X	
Safety Emergency	Red Alert or Yellow Alert (i.e. dam failure has occurred, is imminent or a potential failure situation is developing) is declared per Emergency Action Plan or other dam safety concern is identified.	X	X
Voltage or Capacity Emergency	A voltage or capacity emergency is declared by the electric grid security authority.	X	X
Reservoir Drawdown Beyond Normal Minimum Elevation due to maintenance, emergency or other reasons (not due to low inflow)	The reservoir water elevation at a reservoir is significantly below Normal Minimum Elevation	X	X
Expected or existing high inflow event	The reservoir water elevation at a reservoir is significantly below the Normal Minimum Elevation	X	X

8. Returning to Normal - Some of the above situations can impact the Licensee's ability to operate the Project in the most efficient and safest manner for power production. The Licensee will therefore endeavor in good faith to repair existing Project equipment and facilities and return them to service within a reasonable period of time, commensurate with the severity of the equipment / facility repair requirements.
9. Scheduled Maintenance – Maintenance that is planned at least 3 months in advance.
10. Unscheduled Maintenance - Any maintenance activity other than Scheduled Maintenance that arises out of need, generally in response to unexpected conditions or events.
11. Incidental Maintenance – Maintenance of Project works that are very brief or that require minimal, if any, deviation from normal license conditions. For the purposes of this HPMEP, maintenance of Project works that does not require deviation from any license conditions related to Required Minimum Instream Flows, LIP Flows or the Normal Reservoir Operating Ranges or are less than 24 hours in duration are considered Incidental Maintenance and, except for the identified notification for Incidental Maintenance that impact Required Minimum Instream Flows, are exempt from the requirements of this HPMEP.
12. Notification Guidance for Scheduled Maintenance - Once a likely maintenance schedule has been established, the Licensee will endeavor in good faith to provide as much advance notice as possible to the affected parties identified in this HPMEP.
13. Notification Guidance for Unscheduled Maintenance and Emergencies – In the event of an emergency or unscheduled maintenance, it is not possible for the Licensee to assure any level of advance notice. For these situations, the Licensee will endeavor in good faith to inform the affected parties identified in this HPMEP within some reasonable amount of time after the situation has been identified.
14. Preparation for High Inflow Events – With modern forecasting, it is more possible than ever to predict large precipitation events and to increase generation hours to reduce reservoir water elevations in order to mitigate the potential for spilling and downstream high water. Typically, this type of advance action is taken from 1 to 5 days before the expected arrival of a storm. It is assumed that the Normal Reservoir Operating Ranges may not

- provide adequate flexibility (i.e. band width) to allow for this type of reservoir water elevation reduction under heavy inflow circumstances, and therefore, allowances are made in this HPMEP to lower reservoir water elevations below the Normal Minimum Elevations, if needed, in preparation for such events.
15. Relationship Between this HPMEP and the Low Inflow Protocol – The Low Inflow Protocol (LIP) provides for deviations from the Required Minimum Instream Flows and deviation from the Normal Reservoir Operating Ranges when water demands on the reservoirs substantially exceed net inflow. Lowered reservoir water elevations caused by maintenance or emergency situations addressed under this HPMEP will not invoke implementation of the LIP.
 16. Critical Flow – The flow that is considered necessary to prevent long-term or irreversible damage to aquatic communities consistent with the resource management goals and objectives for the affected stream reaches and necessary to provide some basic level of water quality maintenance in affected river reaches. The LIP defines the Critical Flow from the Falls Development as 770 cfs, measured on a daily average basis.
 17. Organizational Abbreviations - Organizational abbreviations include Alcoa Power Generating Inc. (APGI), Progress Energy (PE), North Carolina Department of Environment and Natural Resources (NCDENR),¹⁹³ North Carolina Division of Water Resources (NCDWR), North Carolina Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), the United States Fish and Wildlife Service (USFWS).
 18. Voltage and Capacity Emergencies – The Yadkin transmission system is interconnected to the Duke Power transmission system and the Progress Energy transmission system. If system reliability is at risk due to Voltage and Capacity Emergencies, the ability to provide secure and continuous electric service becomes compromised. The electric grid security authority continuously monitors the electric transmission system. Therefore, for the purposes of this HPMEP, a voltage or capacity emergency shall exist when declared by the electric grid security authority.

¹⁹³ Known now as the North Carolina Department of Environmental Quality.

19. Human Health and Safety and Electric System Integrity are of Utmost Importance – Nothing in this HPMEP will limit the Licensee’s ability to take any and all lawful actions necessary at the Yadkin Project to protect human health and safety, protect its equipment from major damage, and ensure the stability of the regional electric grid. It is recognized that the Licensee may take the steps that are necessary to protect these things without prior consultation or notification.
20. Large Water Intake – For the purposes of this HPMEP, a Large Water Intake is any intake (e.g. public water supply, industrial, agricultural, power plant, etc.) having a maximum instantaneous capacity greater than or equal to one Million Gallons per Day (MGD), the FERC approval level for new intakes.
21. Critical Reservoir Water Elevation – The elevation of water in a reservoir (measured in feet, USGS datum [NGVD 1929]) below which a Large Water Intake or hydropower plant located on the reservoir cannot operate under normal conditions. The Critical Reservoir Water Elevations are the Critical Reservoir Water Elevations defined in the LIP.

3.0 General Approach to Abnormal Situations

A. Powerhouse and Dam Maintenance

1. Mitigating Actions

a. Scheduled Maintenance

Scheduling - To the extent practical, the Licensee will avoid scheduling unit maintenance that would impact Required Minimum Instream Flows or LIP Flows, unless it is likely that the equipment condition will cause damage or unscheduled unit maintenance if repairs are delayed.

b. Unscheduled Maintenance

Required Minimum Instream Flow Releases – If the Unscheduled Maintenance affects equipment that provides the normal method of providing Required Minimum Instream Flows or LIP Flows, then the Licensee will endeavor in good faith to restore some or all of the Required Minimum Instream Flows or LIP Flow as soon as practicable.

2. Communication with Resource Agencies and Affected Parties

a. Scheduled Maintenance

- 1) Direct Consultation - If the Scheduled Maintenance will affect any Required Minimum Instream Flow release or Normal Reservoir Operating Range, the Licensee will consult with NCDENR, NCWRC, PE, and USFWS, as soon as approximate maintenance schedule dates are determined, but at least 10 days prior to beginning any reservoir drawdown for the unit maintenance. If the scheduled maintenance is expected to result in a drawdown of any of the Project reservoirs below the Critical Reservoir Water Elevation, the Licensee will consult with the North Carolina State Historic Preservation Office (NCSHPO). The Licensee will notify FERC after consultation with agencies. If the maintenance will require a reservoir drawdown below the Critical Reservoir Water Elevation (as defined in the LIP) the Licensee will notify the owner of any Large Intakes located on the reservoir of the maintenance and drawdown schedule. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the maintenance.
- 2) General Notification – If the Scheduled Maintenance will affect any downstream Required Minimum Instream Flow release or Normal Reservoir Operating Range, at least 10 days before beginning any reservoir drawdown or the unit maintenance, the Licensee will add the appropriate messages to its public information website and/or its reservoir water elevation phone system to inform the general public of the maintenance and drawdown schedule.

b. Unscheduled Maintenance

- 1) Direct Notification - If the Unscheduled Maintenance will affect any Required Minimum Instream Flow, LIP Flow, or Normal Reservoir Operating Range, the Licensee will notify NCDENR, NCWRC, PE, USFWS, and FERC as soon as possible after the unscheduled maintenance begins, but no longer than 72 hours afterwards. If the maintenance will require a reservoir drawdown below the Critical Reservoir Water Elevation (as defined in the LIP), the Licensee will notify the owner of any Large Intakes located on the reservoir of the maintenance and drawdown schedule.
- 2) General Notification – If the Unscheduled Maintenance will affect any Required Minimum Instream Flow, LIP Flow or Normal

Reservoir Operating Range, as soon as possible after the unscheduled maintenance begins but no longer than 72 hours afterwards, the Licensee will add the appropriate messages to its public information website and its reservoir water elevation phone system to inform the general public of the maintenance and drawdown schedule.

- 3) Direct Consultation – If the Unscheduled Maintenance will affect any Required Minimum Instream Flow, LIP Flow, or Normal Reservoir Operating Range, the Licensee will consult with NCDENR, NCWRC, PE, USFWS as soon as possible after the unscheduled maintenance begins, but no longer than 10 days afterwards. If the Unscheduled Maintenance is expected to result in a drawdown of any of the Project reservoirs below the Critical Reservoir Water Elevation, the Licensee will consult with the NCSHPO. The Licensee will notify FERC after consultation with agencies. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the maintenance.

B. Maintenance of the Normal Means of Providing Required Minimum Instream Flow

1. Mitigating Actions

a. Scheduled Maintenance

- 1) Scheduling - To the extent practical, the Licensee will avoid scheduling maintenance that would impact the ability to release Required Minimum Instream Flows from the Project, unless it is likely that the equipment condition will cause damage or an unscheduled maintenance condition if repairs are delayed.
- 2) Required Minimum Instream Flows - If the Scheduled Maintenance cannot avoid impacting Required Minimum Instream Flows from the Project, then the Licensee will endeavor in good faith to restore some or all of the Required Minimum Instream Flows as soon as practicable.
- 3) Critical Flow – To the extent practical, the Licensee will avoid falling below the Critical Flow (as defined in the LIP). If it is determined that 100% exceedance of the Critical Flow cannot reasonably be achieved, the Licensee will work with the resource agencies to monitor any potential aquatic species impacts in the affected reach below Falls Dam.

- b. **Unscheduled Maintenance**
 - 1) Required Minimum Instream Flows - If the Unscheduled Maintenance cannot avoid impacting Required Minimum Instream Flows or LIP Flows, then the Licensee will endeavor in good faith to restore some or all of the Required Minimum Instream Flows or LIP Flows as soon as practicable.
 - 2) Critical Flow – To the extent practical, the Licensee will avoid falling below the Critical Flow (as defined in the LIP) as noted above. If it is determined that 100% exceedance of the Critical Flow cannot reasonably be achieved, the Licensee will work with the resource agencies to monitor any potential aquatic species impacts in the affected reach below Falls Dam.
2. **Communication with Resource Agencies and Affected Parties**
 - a. **Scheduled Maintenance**
 - 1) Direct Consultation – If the Scheduled Maintenance cannot avoid impacting Required Minimum Instream Flows from the Project, the Licensee will consult with NCDENR, NCWRC, PE, and USFWS, as soon as approximate maintenance schedule dates are determined, but at least 10 days prior to beginning the maintenance. The Licensee will notify FERC after consultation with the agencies. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the maintenance.
 - 2) General Notification – If the Scheduled Maintenance will affect any Required Instream Minimum Flow, at least 10 days before beginning the maintenance, the Licensee will add the appropriate messages to its public information website and its reservoir water elevation phone system to inform the general public of the maintenance.
 - b. **Unscheduled Maintenance**
 - 1) Direct Notification - If the Unscheduled Maintenance cannot avoid impacting Required Minimum Instream Flows from the Project, the Licensee will notify NCDENR, NCWRC, PE, USFWS, and FERC as soon as possible after the unscheduled maintenance begins, but no longer than 72 hours afterwards.

- 2) Direct Consultation – If the Unscheduled Maintenance cannot avoid impacting Required Minimum Instream Flows or LIP Flows, the Licensee will consult with NCDENR, NCWRC, PE, USFWS as soon as possible after the Unscheduled Maintenance begins, but no longer than 10 days afterwards. The Licensee will notify FERC after consultation with agencies. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the maintenance.

C. Dam Safety Emergency

1. Actions

Safety Must Come First – If a Red Alert or Yellow Alert is declared per the Licensee’s Emergency Action Plan, or other dam safety concerns arise, the Licensee can take any and all steps necessary to restore the dam to a safe condition.

2. Communication with Resource Agencies and Affected Parties

- a. Direct Notification – Notification of any dam safety emergency will be conducted strictly in accordance with the Licensee’s Emergency Action Plan. In cases where dam safety concerns arise that are not a Red Alert or Yellow Alert per the Licensee’s Emergency Action Plan, consultation with resource agencies and affected parties will occur as soon as possible, after the dam safety concern arises.
- b. Once Dam Safety Conditions Have Stabilized – The Licensee will add the appropriate messages to its public information website and/or its reservoir water elevation phone system to inform the general public of the situation and any expected return to normal operation.

D. Voltage and Capacity Emergencies

1. Actions

- a. Normal Reservoir Operating Range – If a Voltage or Capacity Emergency (as defined above) occurs, the Licensee may take any and or all steps necessary to aid in restoring the electric grid to a stable condition.
- b. Conserving Water for Power Generation - If a Voltage or Capacity

Emergency is expected to continue for two weeks or more, the Licensee may reduce Project outflow below Required Minimum Instream Flows or LIP Flows to the Critical Flow (as defined in the LIP) if taking such action is necessary to maintain the water inventory in Project reservoirs for use during the voltage and capacity emergency. During a voltage and capacity emergency, the Licensee will not conserve water for power generation strictly as a cost avoidance measure, but only to assist in addressing the emergency.

2. Communication with Resource Agencies and Affected Parties

- a. Direct Notification - The Licensee will notify NCDENR, NCWRC, PE, USFWS and FERC as soon as possible following a deviation from license conditions for Voltage or Capacity Emergency reasons. If the Voltage or Capacity Emergency is expected to result in a drawdown of a reservoir below its Critical Reservoir Water Elevation, the Licensee will notify NCSHPO.
- b. General Notification - Within 72 hours following the start of the emergency deviation, the Licensee will add the appropriate messages to its public information website and its reservoir water elevation phone system to inform the general public of the situation and any expected dates for return to normal operations.
- c. Direct Consultation – The Licensee will consult with NCDENR, NCWRC, PE, and USFWS as soon as possible following a deviation from license conditions for voltage or capacity emergency reasons. The Licensee will consult with downstream water users if they are affected by the Voltage and Capacity Emergency through reduction of the Required Minimum Instream Flow or LIP Flow to the Critical Flow. If the voltage or capacity emergency is expected to result in a drawdown of any of the Project reservoirs below the Critical Water Elevation, the Licensee will consult with NCSHPO. The Licensee will notify FERC after consultation with agencies. If the emergency requires a reservoir drawdown below the Critical Reservoir Water Elevation the Licensee will notify the owner of any Large Intakes located on the reservoir of the nature of the emergency and the anticipated drawdown schedule. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the emergency.

E. Reservoir Drawdown

1. Actions

a. Planned Drawdowns

- 1) Scheduling - To the extent practical, the Licensee will avoid scheduling reservoir drawdowns needed for maintenance purposes that would impact the ability of the Licensee to release Required Minimum Instream Flows from the Project.
- 2) Required Minimum Instream Flows - If a Planned Drawdown cannot avoid impacting Required Minimum Instream Flows from the Project, then the Licensee will endeavor in good faith to restore some or all of the Required Minimum Instream Flows as soon as practicable.
- 3) Critical Flow – To the extent practical, the Licensee will avoid falling below the Critical Flow (as defined in the LIP). If it is determined that 100% exceedance of the Critical Flow cannot reasonably be achieved, the Licensee will work with the resource agencies to monitor any potential aquatic species impacts in the affected reach below Falls Dam.

b. Unplanned Drawdowns

- 1) Required Minimum Instream Flows - If an Unplanned Drawdown cannot avoid impacting Required Minimum Instream Flows from the Project, then the Licensee will endeavor in good faith to restore some or all of the Required Minimum Instream Flows as soon as practicable.
- 2) Critical Flow – To the extent practical, during an Unplanned Drawdown, the Licensee will avoid falling below the Critical Flow (as defined in the LIP). If it is determined that 100% exceedance of the Critical Flow cannot reasonably be achieved, the Licensee will work with the resource agencies to monitor any potential aquatic species impacts in the affected reach below Falls Dam.

2. Communication with Resource Agencies and Affected Parties

a. Planned Drawdowns

- 1) Direct Consultation – If the Planned Drawdown will cause the reservoir to be out of the Normal Reservoir Operating Range, the Licensee will consult with NCDENR, NCWRC, PE, and USFWS as soon as approximate dates of a planned drawdown are determined, but at least 10 days prior to beginning the drawdown. If the Planned Drawdown is expected to draw the reservoir below the Critical Reservoir Water Elevation, the Licensee will consult with NCSHPO. If the Planned Drawdown is expected to go below the Critical Reservoir Water Elevation (as defined in the LIP), the Licensee will consult with the owners of any Large Intakes located on the reservoir. The Licensee will notify FERC after consultation with agencies. The licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the drawdown.
- 2) General Notification – If the Planned Drawdown will cause the reservoir to be out of the Normal Reservoir Operating Range, at least 10 days before beginning any drawdown, the Licensee will add the appropriate messages to its public information website and its reservoir water elevation phone system to inform the general public of the planned drawdown schedule.

b. Unplanned Drawdowns

- 1) Direct Notification - If an Unplanned Drawdown causes the reservoir to be out of the Normal Reservoir Operating Range or the unplanned drawdown cannot avoid impacting Required Minimum Instream Flows or LIP Flows, the Licensee will notify NCDENR, NCWRC, PE, USFWS, and FERC, of the Unplanned Drawdown as soon as practicable, but no longer than 72 hours afterwards.
- 2) Direct Consultation – If the Unplanned Drawdown cannot avoid impacting Required Minimum Instream Flows or LIP Flows, the Licensee will consult with NCDENR, NCWRC, PE, and USFWS as soon as possible, but no longer than 10 days afterwards. The Licensee will notify FERC after consultation with agencies. The Licensee will consider options suggested by the identified agencies and organizations that could lessen the impact of the drawdown.

F. Expected or Existing High Inflow Event

1. Actions

In preparation for an expected high inflow event or in response to an ongoing high inflow event, the Licensee may reduce reservoir water elevations significantly below the Normal Minimum Elevation, in order to minimize the effects of spilling. The reservoir water elevation may be below Normal Minimum Elevations for as long as necessary to minimize the effects of spilling and to manage reservoir elevations during high inflow events.

2. Communication with Resource Agencies and Affected Parties

- a. Direct Notification - The Licensee will notify NCDENR, NCWRC, PE, USFWS and FERC as soon as practicable following a deviation from the Normal Reservoir Operating Range for an existing or expected high inflow event. If the drawdown is anticipated to go below Critical Reservoir Water Elevation (as defined in the LIP) of the reservoir, the Licensee will notify the owners of any Large Water Intakes on the reservoir.
- b. General Notification – As soon as practicable after the Licensee determines that deviation from Normal Reservoir Operating Range is needed due to an ongoing or expected high inflow event, the Licensee will add the appropriate messages to its public information website and its reservoir water elevation phone system to inform the general public of the situation and any expected dates for return to normal operations.

Document Content(s)

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