UNITED STATES OF AMERICA 118 FERC ¶ 62,247
FEDERAL ENERGY REGULATORY COMMISSION

Union Electric Company, dba AmerenUE Project No. 459-128

ORDER ISSUING NEW LICENSE

March 30, 2007

INTRODUCTION

1. On February 24, 2004, Union Electric Company, dba AmerenUE, filed an application for a new license, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),[1] for the continued operation and maintenance of the 176.2-megawatt (MW) Osage Hydroelectric Project. The project is located on the Osage River, in Benton, Camden, Miller, and Morgan Counties, Missouri.[2] The project is located immediately downstream from the U.S. Army Corps of Engineers' (Corps) Harry S. Truman Dam and occupies 1.6 acres of inundated federal lands administered by the Bureau of Land Management.

2. On May 18, 2005, AmerenUE filed a settlement agreement (agreement) on behalf of itself and several agencies.[3] The agreement was signed by AmerenUE, the U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), the Missouri Department of Conservation (Missouri DC), and the Missouri Department of Natural Resources (Missouri DNR). For the reasons discussed below, I approve the agreement and issue a new 40-year license for the project.

BACKGROUND

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[1] 16 U.S.C. §§ 797(e) and 808 (2000).

[2] Because the Osage River is a navigable waterway of the United States (*see* 5th FPC Annual Report 63 (1925)), the project is required to be licensed pursuant to section 23(b)(1) of the FPA, 16 U.S.C. § 817(l) (2000).

[3] AmerenUE filed the Explanatory Statement on August 12, 2005.

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3. The Federal Power Commission issued the original license for the Osage Project on February 25, 1926.[4] The Commission issued the current license for the project to Union Electric Company on April 9, 1981, with a term expiring February 28, 2006.[5] Since then, project operations have continued pursuant to an annual license.[6]

4. On February 24, 2004, AmerenUE filed an application for a new license, prepared using the Commission's alternative licensing procedures.[7] On May 13, 2004, a public notice accepting the application and requesting motions to intervene was issued. Timely motions to intervene were filed by the Southwestern Power Administration, the U.S. Department of the Interior (Interior), the Missouri Public Service Commission, Missouri DC, and Missouri DNR. On January 24, 2005, the Duncan's Point Homeowners and Lot Owners Associations, Inc. (Duncan's Point) filed a motion to intervene out of time, which was granted on June 2, 2005. On September 16, 2005, the American Legion filed a motion to intervene out of time, which was granted on February 8, 2007. None of the intervenors oppose the project.

5. On November 23, 2004, the Commission issued public notice soliciting comments, recommendations, terms and conditions, and prescriptions. Buford Foster, the Osage River Flood Control Association (Flood Control Association), Duncan's Point, Interior, Missouri DC, and Missouri DNR filed comments on the application.

6. The Commission issued notice of the agreement on August 17, 2005. Jack Anderson, Gloria J. Collins, Buford Foster, the American Legion, and the Flood Control Association filed comments on the agreement. The American Legion and the Flood Control Association voiced concerns with certain aspects of, but did not oppose the agreement.

7. Commission staff issued, for public comment, a draft environmental assessment (EA) for the Osage Project on February 7, 2006, and a final EA for the project on August 8, 2006. Staff considered all of the comments filed on the draft EA in preparing

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[4] *See* 6th FPC Annual Report 243. The project began operation on October 16, 1931.

[5] *Union Electric Company*, 15 FERC ¶ 62,038 (1981). The license was backdated to coincide with the termination date of the original license.

[6] *See* Section 15(a)(1) of the FPA, 16 U.S.C. § 808(a)(1) (2000).

[7] 18 C.F.R. § 4.34(i) (2006).

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the final EA. In the EA, staff recommended adopting the measures included in the agreement. AmerenUE filed comments on the final EA September 15, 2006.[8]

8. The motions to intervene, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION AND OPERATION

A. Project Description

9. The Osage Project is located immediately downstream of the Corps' Truman Dam, between river miles (RM) 80.8 and 174.5 on the Osage River in south-central Missouri. The primary project features include Bagnell Dam (located at RM 81.7), the Osage Project powerhouse, and an impoundment (Lake of the Ozarks). These facilities were constructed between 1929 and 1931, and are summarized as follows. A more detailed project description is contained in Ordering Paragraph (B)(2).

10. Bagnell Dam is a concrete gravity-type structure with a total crest length of 2,543 feet and a maximum height above bedrock of 148 feet. The dam consists of: two non-overflow sections, known as the east and west retaining sections; an integral powerhouse; and a gated spillway section that contains 12 radial gates. The powerhouse is equipped with: eight main Vertical Francis turbines and generator units (two of which have been upgraded), with a combined installed capacity of 172 MW; and two auxiliary Vertical Francis turbines and generator units, with a combined installed capacity of 4.2 MW. The project's total authorized installed capacity is 176.2 MW.[9]

11. Lake of the Ozarks is approximately 93 miles long and has a shoreline length of about 1,150 miles.[10] The lake has four major arms, including the Osage, Niangua,

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[8] The Commission issues its final EAs for informational purposes and does not solicit comments on the document or its contents. Nonetheless, I will address AmerenUE's comments on the final EA as appropriate in this order.

[9] There are no primary transmission facilities associated with the project.

[10] There are two parcels of federal land located beneath the impoundment; a 0.6-acre parcel upstream of the Niangua River and a 1.0-acre parcel on the Osage Arm of the lake, upstream of Bollinger Creek. Nothing in the record of this proceeding suggests that these federal lands are "reservations," as defined in FPA section 3(2), 16 U.S.C. § 794(2).

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Gravois, and the Grand Glaize. The lake has a surface area of about 55,342 acres at a normal pond elevation of 660.0 feet.[11]

12. Consistent with its agreement, AmerenUE proposes to upgrade two of the main turbines and the two auxiliary turbines.[12] AmerenUE would also eliminate the flow limitation required by the Commission in its November 13, 2000 order amending license.[13] The proposed turbine upgrades would increase the project's maximum hydraulic capacity by 1,580 cubic feet per second (cfs),[14] resulting in an increase in annual generation of about 41,600 MWh (6.5 percent).[15] The authorized installed capacity would not change.

B. Project Operation

13. AmerenUE operates the Osage Project primarily as a peaking and load-following facility, and as an emergency backup system to meet the electrical needs of AmerenUE's customers and to support the Mid-American Interconnected Network (MAIN). Storage in Lake of the Ozarks is regulated to provide recreational opportunities, protect environmental resources, and manage flood flows. A more detailed description of project operations is contained in the EA.[16]

14. The Corps, through its Truman Dam and five other upstream flood control facilities, controls most of the flow of the Osage River entering the project (about 82 percent). The remaining inflow comes from local tributaries and intervening drainage between the Truman and Bagnell dams. Flow from Bagnell Dam is controlled by turbine

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[11] All Lake of the Ozarks elevations referred to in this order are Union Electric Datum (UED), unless otherwise noted. UED is 0.9-foot higher than mean sea level (msl).

[12] On February 12, 2007, AmerenUE filed revised Exhibits A and B to its license application, providing new information on turbine design (*e.g.*, runner diameter, horsepower, and hydraulic capacity). This order reflects the revised exhibits, where appropriate.

[13] This requirement limited discharge from the generating units to 34,320 cfs during normal operations. *Union Electric Company*, 93 FERC ¶ 61,160 (2000).

[14] The project's existing maximum hydraulic capacity is 35,900 cfs.

[15] EA at 244; average annual generation is currently 636,397 MWh.

[16] EA at 6-8.

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discharge and radial gate operations. Turbine operations change on a daily and hourly basis in response to hydroelectric generation needs, while operation of the radial gates occurs on an infrequent basis following high flow events.

15. The Corps and AmerenUE coordinate the operations of the two projects to facilitate power generation, flow releases, and lake level management.[17] Daily and hourly operations at the Osage Project result in water levels that generally follow an informal guide curve developed for the lake by AmerenUE.[18] During the summer (June 1 to September 1), the project is operated around a target elevation of 659.25 feet to provide recreational opportunities at the lake. Fall drawdowns for flood management begin in September, with lake elevations targeted at about 658.0 feet from September to December and lowering to 654.0 feet by mid-February.

16. The existing license requires that AmerenUE release a year-round minimum flow of 450 cfs to the Osage River downstream from the project.[19]

17. During normal project operations (historically 94 percent of the time), the project is operated based on demand, while providing the required minimum flow when not generating. Outflows from the project vary between the minimum flow and the maximum hydraulic capacity. The lake level may vary between 660.0 feet and 650.0

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[17] For large flood events, AmerenUE and the Corps have a Memorandum of Agreement (MOA), developed in accordance with Article 40 of the existing license (*see* 15 FERC ¶ 62,038 (1981)), that coordinates operations of the projects in the river basin with stages on the Osage and Missouri rivers. Under the MOA, AmerenUE adjusts flows from the Osage Project to help alleviate downstream flooding on the Osage and Missouri rivers. Article 305 of this license requires AmerenUE to continue operating the Osage Project during flood conditions in accordance with the MOA, as modified herein.

[18] The guide curve is a series of target elevations for Lake of the Ozarks that AmerenUE attempts to maintain during the year.

[19] *Union Electric Company*, 15 FERC ¶ 62,038 (1981), order on appeal, 18 FERC ¶ 61,156 (1982). In 1997, AmerenUE and Missouri DC entered into a MOA that allows for a seasonal reduction of minimum flow to 385 cfs (July 15 to September 30) to increase downstream dissolved oxygen (DO) levels. *See* letters dated September 30, 1997, from Kevin P. Madden, Acting Director, Office of Hydropower Licensing, FERC, to Dan Jarvis, Union Electric Company and June 30, 1998, from Ronald Lesniak, Chicago Regional Office Director, FERC, to Dan Jarvis, Manager, Osage Power Plant, Union Electric Company.

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feet. Under these conditions, the project is operated to meet base load, peaking load, or for load following. Off-normal operation (historically 6 percent of the time) is characterized by various combinations of turbine and/or radial gate operations that allow the passage of flood flows, high releases from Truman, or drawdowns in advance of high flows.

18. AmerenUE proposes to continue operating the project as a peaking and load following facility, with several changes in the project's operation to address environmental effects. AmerenUE proposes to: (a) maintain a variable minimum flow regime, with the lowest minimum flow being 900 cfs; (b) institute specific ramping rates of flood flows;[20] (c) formalize the guide curve for Lake of the Ozarks, incorporating constraints for high- and low-level limits, targets for normal operations, an emergency low-level limit, and a 1-foot flood pool; and (d) modify off-normal operations to spread spill flows across 11 of the 12 radial gates. In addition, AmerenUE proposes a variety of measures to address project-related resource effects.

C. Project Boundary

19. The project boundary along the shoreline of Lake of the Ozarks generally follows the full pool elevation of 662.0 feet, except in some areas where it follows either a higher designated contour elevation (ranging between 663.0 and 678.0-foot contours), or irregularly shaped metes and bounds property descriptions. Downstream from the project, the project boundary extends approximately one mile along both banks of the Osage River, and includes a 63.86-acre parcel of land on the west bank of the river, up to elevation 600.0 msl.[21] All existing project facilities, including Bagnell Dam, Osage powerhouse, Lake of the Ozarks, Bagnell Dam Overlook Park, the interpretive signage and bank fishing area located at the base of Bagnell Dam, and Bagnell Dam access (boat

[20] The agreement includes project-specific ramp-down rates for flood flows. In addition to the agreement provisions, AmerenUE also proposes to consult with the Corps to amend the existing MOA to incorporate ramp-down rates after sustained high-flow events.

[21] On May 15, 2006, AmerenUE requested the removal of 116.36 acres, located downstream from project along the west bank of the Osage River, from the project boundary. On August 14, 2006, the Commission issued an order amending the existing license and approving a change in the project boundary for the project. *Union Electric Company*, 116 FERC ¶ 62,127, *reh'g denied*, 17 FERC ¶ 31,301(2006). The order removed 116.36 acres from the project boundary, leaving 63.86 acres of the floodplain (at and below elevation 600.0 msl) within the project boundary.

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launch managed by the Missouri DC) are located within the project boundary. The project provides no other recreation facilities.

20. As part of its license application, AmerenUE proposes to revise the project boundary to a contour-based elevation around the entire project (by modifying the metes and bounds property descriptions on a parcel-by-parcel basis to a contour-based project boundary).[22]

SETTLEMENT AGREEMENT

A. Description of Agreement

21. The Explanatory Statement and Agreement set out the background, purpose, general use provisions, and the specific environmental conditions of the agreement. The settlement agreement parties request that the Commission incorporate appendices A and B to the agreement, without material modification, as license conditions.[23] The Parties also request that the new license not include any articles inconsistent with appendices A and B to the agreement.

22. Section 1 introduces the agreement, identifies the parties, describes the agreement's structure, and sets out the effective date of the agreement.

23. Sections 2 through 6 establish the general terms and conditions that govern the relationship among the parties, as well as the legal framework for implementing the agreement. Section 3 also outlines the proposed license term of 40 years.

1. Appendix A

24. Appendix A of the agreement, composed of 11 sections, outlines AmerenUE's obligations to implement measures to protect, mitigate, and enhance the natural resources

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[22] The proposed modification to the project boundary around Lake of the Ozarks would involve removing large blocks of either privately-owned land or lands owned by the state of Missouri. The new project boundary on the parcels proposed for removal would be redefined to meet the existing contour-based boundary on adjacent properties at that particular location.

[23] The conditions included in appendix B of the agreement are included in the water quality certification. The certification is attached to this license as appendix A. Section 4.6 of the agreement, as well as sections 3 and 11 of appendix A to the agreement are attached for informational purposes as Appendix B of this license.

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affected by the Osage Project. The measures are designed to: (a) address flooding and erosion along the lower Osage River; (b) protect and/or enhance fish, mussel, and wildlife resources including their habitat; (c) enhance water quality and recreational opportunities; (d) improve management of project lands; (e) protect cultural resources and historic properties; and (f) prescribe adaptive management procedures to address on-going resource protection needs.

25. Section 1 provides a list of definitions.

26. Section 2 affords AmerenUE the ability to continue operating the project as a peaking and load following facility. AmerenUE would be able to use the full capability of the station's equipment to change power output and flow as necessary to meet system demand and to comply with flood protection articles. There would be no restrictions on either the up- or down-ramp of the station's output, except as provided for flood control. In addition, section 2 establishes a formal guide curve for Lake of the Ozarks, which incorporates: (a) target elevations for normal operations (between 659.0 and 654.0 feet); (b) lake level constraints and target elevations for high- and low-level limits; (c) an emergency low-level limit (646.0 feet); and (d) a 1-foot flood storage pool between 660.0 and 661.0 feet.

27. Section 3 requires that AmerenUE provide a variable minimum flow regime for the lower Osage River, dependent upon lake inflow and season, with the lowest flow being 900 cfs. Section 3 also: (a) establishes new minimum flow caps and ramping rates for flood events; (b) allows AmerenUE to operate the project with hourly equivalent flows;[24] (c) includes provisions to alter flows to allow farmers' access to islands in the lower Osage River; and (d) outlines monitoring protocols.

28. Section 4 requires that AmerenUE establish a Fish Protection Working Group, composed of representatives from AmerenUE, FWS, Missouri DC, and Missouri DNR, to address fish protection issues at the project. AmerenUE is also required to develop and implement a fish protection plan for the project, in consultation with the aforementioned agencies. At a minimum, the fish protection plan would include the installation of a

[24] An hourly equivalent minimum flow is a flow whereby the volume of water released in response to system demand during a one-hour period is equivalent to or greater than the volume of water that would have been released in that same one-hour period as a result of continuous release of the prescribed minimum flow.

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barrier net in front of the intakes at Bagnell Dam,[25] modification of off-normal operations to spread high flows in excess of station capacity across 11 of the project's 12 spillway gates, and biological monitoring.

29. Section 5 requires AmerenUE to provide $134,000 a year, adjusted pursuant to the methodology set forth in section 7, for capital improvement, operations, maintenance, and personnel associated with the construction and operation of hatchery ponds. The purpose of this measure is to support Missouri DC's fish stocking program in the project area.

30. Section 6 requires AmerenUE to fund ($175,000 a year, adjusted pursuant to the methodology set forth in section 7) lower Osage River protection, enhancement, and aquatic habitat restoration projects. These funds would be provided to the FWS, and would support, at a minimum, projects designed to (a) prevent and reduce erosion, (b) restore/create back and side channel aquatic habitat, and (c) monitor the effectiveness of measures implemented in accordance with this section. In addition, the funds would be used to develop and implement a freshwater mussel propagation program for the lower Osage River.

31. Section 7 provides the procedures for dispensing and adjusting the funds associated with sections 5 and 6 of the Settlement.

32. Section 8 requires that AmerenUE implement various recreational measures to enhance public use of project waters. Under this section, AmerenUE would be required to establish and maintain a scenic viewing area at Willmore Point, as well as continue support and maintenance of several recreational facilities.[26] AmerenUE is also to provide financial support, in the amount of $2.1 million, to the Missouri DNR to improve facilities and environmental resources at Lake of the Ozarks state parks. Finally, AmerenUE would be required to perform a recreation assessment for the project (including water safety) during the term of the new license, and prepare a shoreline erosion assessment for Missouri state park lands within the project boundary.

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[25] Other fish protection measure(s) may be employed if the Fish Protection Working Group determines that such other measure(s) are more appropriate and/or cost effective to implement than the barrier net.

[26] These facilities include (a) the museum in Willmore Lodge, (b) the Bagnell Dam Scenic Overview Park and the public viewing area at Bagnell Dam, and (c) public access to the lower Osage River, which is managed by the Missouri DC.

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33. Section 9 requires AmerenUE to develop and implement a Shoreline Management Plan (SMP) for Lake of the Ozarks. The SMP would incorporate the numerous existing programs AmerenUE already has in place, as well as an updated permitting program, an improved vegetative buffer policy, provisions to protect historic properties, and enhanced SMP enforcement. The SMP is to also include provisions for potential revision and update five years after license issuance and every ten years thereafter.

34. Section 10 addresses AmerenUE's obligations to permit all reasonable access to the project by representatives of the FWS, the Missouri DC, and the Missouri DNR.

35. Section 11 outlines AmerenUE's program for its proposed upgrade of two main turbine units and the two auxiliary units at the Osage powerhouse. AmerenUE would also be permitted to use the project's full hydraulic capacity for power generation.

2. Appendix B

36. Appendix B of the agreement sets forth the conditions that would be included in the section 401 water quality certification (certification) issued by the Missouri DNR. The Parties agreed that the conditions detailed in Appendix B would be replaced by those included in the certification. The conditions included in the certification are described in the WATER QUALITY CERTIFICATION section of this order.

B. Discussion

37. The Commission looks with favor on settlements in licensing cases. When parties are able to reach settlements, it can save time and money, avoid the need for protracted litigation, promote the development of positive relationships among entities who may be working together during the course of a license term, and give the Commission, as it acts on license and exemption applications, a clear sense as to the parties' views on the issues presented in each settled case.[27] At the same time, the Commission cannot automatically accept all settlements, or all provisions of settlements. Section 10(a)(1) of the FPA requires that the Commission determine that any licensed project is "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 (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational

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[27] *Settlements in Hydropower Licensing Proceedings under Part I of the Federal Power Act*, 116 FERC ¶ 61,270 at P 2-12 (2006).

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and other purposes referred to in section 4(e)." Consequently, in reviewing settlements, the Commission looks not only to the wishes of the settling parties, but also at the greater public interest, and whether settlement proposals meet the comprehensive development/equal consideration standard.

Lake of the Ozarks Lake Level Management

38. The project is currently operated as a peaking facility, although peaking operations are moderated according to an informal guide curve to maintain relatively stable lake levels. The combined operation of the Osage Project and the Corps' upstream Truman Dam provides flood control through managing flow releases, which result in some level of water level fluctuation in Lake of the Ozarks. Fluctuating lake levels can have effects on a variety of resources, including aquatic habitat, fisheries, wetlands, and recreation.[28]

39. Section 2 of the agreement's appendix A affords AmerenUE the ability to continue operating the Osage Project as a peaking and load following facility, within the constraints of a proposed guide curve governing lake levels in Lake of the Ozarks. Staff evaluated this proposal, including the proposed guide curve, and recommended that they be adopted in a new license.[29] Article 407 requires the proposed lake level guide curve specified in the agreement.

Lower Osage River Flow Regime

40. As previously described, the existing license requires a continuous year-round minimum flow downstream from Bagnell Dam. Under normal operations, discharge from the Osage Project varies between the minimum flow requirement and the existing maximum hydraulic discharge of 35,900 cfs. For flood operations, AmerenUE adjusts project outflow when inflow is greater than 50,000 cfs, in coordination with the Corps, to help alleviate downstream flooding on the Osage and Missouri rivers. Existing flow management at the project offers limited benefits to downstream water quality, aquatic habitat, and recreation, and gives little consideration to effects associated with downstream erosion.

41. Section 3 of the agreement's appendix A requires that AmerenUE provide a variable minimum flow regime from 900 cfs to a maximum of 3,500 cfs, or 40 percent of

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[28] EA at 251.

[29] EA at 250-52. Staff concluded that the proposed lake level management regime would provide stable lake levels during critical periods for environmental and recreational resources.

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the 7-day rolling average lake inflow, whichever is greater, for the lower Osage River, dependent upon lake inflow and season. Section 3 also provides for down ramping following high-flow events and occasional flow reduction to accommodate access to downstream islands for farming. Staff evaluated the minimum flows and other flow measures in the final EA and recommended that they be adopted in a new license.[30] Condition 1.A of the 401 certification and Article 408 require the proposed variable minimum flows and other flow measures specified in the agreement.

Fish Protection Plan and Working Group

42. Fish kills involving a number of species have been documented in the Osage Project area, indicating that the unscreened intakes at Bagnell Dam have the potential to entrain or impinge fish. The Osage Project currently has no fish protection or passage facilities, although the river has historically been the home to several fish species that exhibited substantial movement associated with spawning and rearing.

43. Pursuant to section 4 of the agreement's appendix A, AmerenUE is to develop and implement a fish protection plan for the project that will, as a minimum, include the installation of a barrier net in front of the intakes at Bagnell Dam (or other appropriate device), modifying off-normal operations to spread high flows in excess of station capacity across 11 of the project's 12 spillway gates, and biological monitoring. Staff evaluated these measures in the final EA and recommended that they be adopted in a new license.[31] Article 414 requires the proposed fish protection plan specified in the agreement.

44. Section 4.1 of the agreement's appendix A also requires that AmerenUE establish a Fish Protection Working Group, composed of representatives from AmerenUE, FWS, Missouri DC, and Missouri DNR, to address fish protection issues at the project. Although the license includes the substance of this proposal in Article 414 of the license, I remind the parties to the agreement that the Commission only has jurisdiction over the

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[30] EA at 252-54. Staff concluded that the flows and other flow-related measures would increase aquatic habitat and improve water quality in the lower Osage River, as well as reduce bank erosion, enhance recreation use of the lower river, and provide farmers improved access to islands.

[31] EA at 256-57. Staff concluded that the proposed fish protection measures would reduce fish entrainment and result in a more stable fishery, particularly for the economically important paddlefish.

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licensees, and therefore, can only require the licensee's participation in the working group.

Fish Propagation Plan

45. Under Article 33 of the current license, AmerenUE is responsible for implementing a fish and wildlife management plan. Under the plan, AmerenUE coordinates with the Missouri DC to stock fish in the Lake of the Ozarks and the lower Osage River. Section 5 of the agreement's appendix A requires AmerenUE to provide $134,000 a year to Missouri DC for capital improvement, operations, maintenance, and personnel associated with the construction and operations of hatchery ponds. The purpose of this measure is to support Missouri DC's fish stocking program in the project area. Staff evaluated this measure in the final EA and recommended that it be adopted in a new license.[32]

46. The overall spawning and nursery habitat is limited within the project area,[33] as a result of the lake's physical features (*i.e.*, lack of shallow, near-shore habitat) and water level fluctuations in the lake and lower river.[34] Therefore, I am requiring AmerenUE to take appropriate measures to stock sport fish in the Lake of the Ozarks and the lower Osage River. AmerenUE may choose to accomplish this by providing funds to the Missouri DC, but AmerenUE is ultimately responsible for compliance with this requirement. Article 413 requires AmerenUE to file a fish propagation plan that describes how it will provide for stocking the Lake of the Ozarks and the lower Osage River.

Lower River Enhancement Plan

47. Relicensing studies show that there is limited suitable mussel habitat and a lack of recruitment throughout the lower Osage River[35] due to poor water quality and water level fluctuations caused by project operation. Section 6 of the agreement's appendix A requires AmerenUE to fund ($175,000 annually throughout the license term) lower Osage

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[32] EA at 256. Staff concluded that construction of hatchery facilities would lessen crowding conditions in existing hatcheries, resulting in healthier fish being produced and potentially better recruitment to the fishery after being stocked in the lake and river.

[33] *Id*.

[34] EA at 78.

[35] EA at 258.

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River protection, enhancement, and aquatic habitat restoration projects. These funds would be provided to the FWS, and would support, at a minimum, projects designed to (a) prevent and reduce erosion, (b) restore/create back and side channel aquatic habitat, and (c) monitor the effectiveness of measures implemented in accordance with this section. In addition, the funds would be used to develop and implement a freshwater mussel propagation program for the lower Osage River. Staff evaluated these measures in the final EA and recommended that they be adopted in a new license.[36]

48. I am requiring AmerenUE to take appropriate measures to protect, enhance, and restore aquatic habitat in the lower Osage River. AmerenUE may choose to accomplish this by providing funds to the FWS, but AmerenUE is ultimately responsible for compliance with this requirement. Article 412 requires AmerenUE to file a lower Osage River habitat plan that describes how it will enhance aquatic habitat in the lower Osage River. The plan should include projects designed to (a) prevent and reduce erosion, (b) restore/create back and side channel aquatic habitat, and (c) develop and implement a freshwater mussel propagation program for the lower Osage River. The plan should identify the extent the measures will be one-time measures and not require Commission oversight throughout the life of the license. I will not require one-time measures to be included within the project boundary.

Recreation Enhancements

49. Lake of the Ozarks is a major recreation and tourist attraction, around which a thriving tourism industry has developed. During the past several decades, there has been significant growth in the population and residential development around the lake, which is expected to continue in the future.

50. AmerenUE maintains three day-use recreation sites including Willmore Lodge, Bagnell Dam Fish and Wildlife Observation Area, and Bagnell Dam Overlook.[37] Willmore Lodge, located on a point at the north end of Bagnell Dam was constructed in 1930 as an administration building for dam construction and currently houses a museum and visitor center. It is operated by the Lake Area Chamber of Commerce and was listed

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[36] EA at 258. Staff concluded that the measures identified in the agreement would enhance aquatic habitat, as well as mussel abundance and diversity in the lower Osage River. Also, the FWS' Biological Opinion (BO), prepared to address project effects on two federally listed mussel species, states that implementation of these measures would result in some level of incidental take, but would not likely result in jeopardy.

[37] EA at 177.

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on the National Register of Historic Places in 1998. The Bagnell Dam Fish and Wildlife Observation Area is located adjacent to the powerhouse main office on the downstream side of Bagnell Dam. The Bagnell Dam Overlook, a multi-purpose day-use area, is located on a hill overlooking Bagnell Dam, the lake, and the lower Osage River.

51. A number of other recreational facilities at the project are operated by public entities.[38] The Missouri DNR maintains two state parks bordering the Lake of the Ozarks. Lake of the Ozarks State Park is Missouri's largest state park, covering 17,203 acres of wooded hills and shoreline. Ha Ha Tonka State Park is a 2,993-acre day-use park adjacent to the lake. The Missouri DC manages six public access sites on Lake of the Ozarks. The Corps manages the West Bledsoe Ferry park, located on the upper end of the lake. An additional boat launch is operated by the city of Warsaw, also on the upper end of the lake. A total of 12 public boat launches provide lake access.

52. Lake of the Ozarks also has a substantial number of commercial operations that support recreation on the lake.[39] There are currently 73 privately operated wharves and marinas providing boat rentals, launching and housing facilities; 135 resorts; and over 1,400 campsites. Commercial marinas have an average of 51.5 slips per facility and resorts and restaurants have an average of 24.5 slips per facility. Commercial permit holders (including marinas, resorts, restaurants, homeowner's/condominium associations, and private facilities) provide a total of 233 boat ramp lanes and 10,201 slips. AmerenUE issues permits for any commercial facilities in excess of 3,000 square feet.

53. Staff found that the existing public and private recreation access facilities were adequate in meeting demand during peak use periods. However, enhancements to some access sites (*i.e.* Brown Bend Access on the Osage Arm, as well as the Pa He Tsi and Passover accesses in Lake of the Ozarks State Park) are warranted.[40]

54. Section 8 of the agreement's appendix A stipulates that AmerenUE is to provide $2.1 million ($350,000 annually for 6 years) to the State Parks Earnings Fund, which may be used for, but is not limited to, improvements at the Lake of the Ozarks State Park, which is managed by the Missouri DNR. Measures can include such things as breakwater construction, restrooms, moorings, and docks. Staff evaluated these

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[38] EA at 181.

[39] *Id*.

[40] EA at 184-85.

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enhancement measures in the final EA and recommended they be adopted in a new license.[41]

55. The recreation enhancements included as part of the agreement would benefit current and future park patrons, but are narrow in focus as they do not address the project as a whole, nor do they address future use in any comprehensive manner.[42] Therefore, staff concluded that a recreation management plan was needed to provide AmerenUE a means to manage future public access for the project (including Lake of the Ozarks and the Osage River) through the license term.

56. Article 416 requires that AmerenUE prepare and file a Recreation Enhancement Plan that includes maps identifying all existing and proposed recreation sites, an assessment of water safety issues, and a monitoring plan to ensure that existing facilities are meeting public recreation needs. Article 416 also requires AmerenUE to undertake certain capital improvements at Lake of the Ozark State Park, which surrounds the Grand Glaize Arm of Lake of the Ozarks. As the capital improvements will not require Commission oversight over the license term, I will not require the facilities to be brought into the boundary.

Shoreline Management Plan

57. Licensees have a responsibility to ensure that shoreline development activities that occur within the project boundary are consistent with license requirements, purposes, and operations. As development and multiple uses of the shoreline grow, licensees face more and more challenges related to the effects of such development on project lands and waters, including public recreational use and environmental resources. A comprehensive shoreline management plan (SMP) aids the licensee in meeting its responsibilities throughout the term of its license. A SMP provides the framework to manage the multiple resources and uses of the project's shoreline in a manner that is consistent with license requirements and project purposes, including protecting and enhancing the project's environmental, scenic, and recreation values, as well as addressing the needs of the public.

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[41] EA at 192. Staff concluded that such improvements at Lake of the Ozarks State Park would enhance existing access by providing new and/or upgraded facilities at sites within the park's boundaries (*e.g.* Pa He Tsi area).

[42] EA at 192-93.

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58. AmerenUE currently has no license requirement for a SMP at the Osage Project. Rather, AmerenUE manages its shoreline under the conditions outlined in the existing license's standard land use article (Article 41);[43] its shoreline permitting program; recreation plan; and relevant Corps, state, and local regulations.[44] AmerenUE's existing program includes a permitting program, as well as various existing remediation activities, such as the Certified Dock Builders, Derelict Dock Removal, Adopt-a-Shoreline, and Flotation programs.

59. Section 9 of the agreement's appendix A and condition 8 of the 401 certification require AmerenUE to develop a SMP for the Osage Project. The SMP is to incorporate (a) an updated permitting program, including measures to assure compliance with federal and state permitting requirements for activities on project lands, (b) commitments to identify and protect sensitive habitat, (c) a vegetative buffer policy, (d) enhanced enforcement, (e) vector (mosquito) control, (f) a certified dock builders program, (g) the Adopt-A-Shoreline cleanup program, (h) the derelict dock removal program, (i) the shoreline protection hotline, and (j) educational programs. Staff evaluated the need for a SMP for Lake of the Ozarks in the final EA and recommended that such a plan be developed as part of a new license.[45]

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[43] AmerenUE, responding to staff's discussion in the final EA about unpermitted encroachments along Lake of the Ozarks (EA at 214-15), states that most of the structures referenced by staff have been in existence for many years with no effect on its ability to operate and maintain the project. AmerenUE states that it will review existing encroachments once any changes to the project boundary have been implemented. AmerenUE also states that it will (a) implement a plan to grandfather older encroachments that have no environmental or adverse project effects, and (b) pursue removal and/or enforcement action on any current violations. I will require that encroachments be addressed as part of any revised SMP filed pursuant to this license.

[44] AmerenUE, in commenting on the final EA, clarifies that the design and construction of on-site wastewater systems are the responsibility of the Missouri DNR or local county Health Department, as these facilities are constructed on private land not subject to AmerenUE's authority. However, to the extent any such facilities cross project land, AmerenUE is required to obtain authorization from the Commission in a timely fashion for non-project uses of project land.

[45] EA at 261-62. In conjunction with its relicense application, AmerenUE filed a draft SMP on August 22, 2005, which staff analyzed in the draft EA. Many local organizations and individuals raised concerns regarding specific components of the proposed plan. Subsequently, AmerenUE withdrew its draft plan, and stated that it would

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60. Lake of the Ozarks has experienced significant local development in recent years and development shows no signs of leveling off in the near future. In light of the continuing challenges to balancing the multiple resources and uses of the shoreline consistent with the license requirements and project purposes, I agree that an SMP is needed for the Osage Project. Article 417 requires that AmerenUE file a shoreline management plan, within one year of license issuance.

Project Access

61. Section 10 of the agreement's Appendix A requires that AmerenUE provide representatives of the Missouri DC, the Missouri DNR, and the FWS reasonable access to project facilities. The purpose of this provision is to allow the resource agencies free and unrestricted access to, through, and across project lands and works, in performance of their official duties, after appropriate advance notification. Article 403 requires that the licensee grant the resource agencies reasonable project access to project facilities.

Turbine Upgrades

62. Section 11 of the agreement's appendix A outlines AmerenUE's program for its proposed upgrade of two main turbine units and the two auxiliary units at the Osage powerhouse. The auxiliary unit upgrade would consist of (a) runner replacement, (b) generator rewind, and (c) replacement of some unit auxiliary equipment. This would allow AmerenUE to enhance the project's generation capability and efficiency, while also providing flows that will benefit aquatic resources in the lower Osage River. These actions would increase the maximum powerhouse discharge from 35,900 cfs to 37,480 cfs.

63. Staff evaluated the proposed turbine upgrades in the final EA and recommended that they be adopted in a new license.[46] I authorize the proposed turbine upgrades, as specified in the agreement. Ordering paragraph (B) and Article 301 authorize these upgrades.

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develop a revised plan, in consultation with agencies and stakeholders. To date, AmerenUE has not filed its revised plan. In light of AmerenUE's withdrawal of its draft SMP, the final EA, rather than analyzing the draft SMP, instead analyzed its existing shoreline management program. Staff also provided guidance on typical components of SMPs (EA at 193 and 213).

[46] EA at 247-48.

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64. In commenting on the draft EA for the Osage Project, Riverview RV Park and the Flood Control Association expressed concern regarding the increased flows in the lower Osage River. Riverview RV Park states that the increased volume of water associated with the turbine upgrades would flood a portion of its property when at full generation. Riverview RV Park recommends remediation measures (*e.g.*, raise the level of the areas that would be flooded) or a cash settlement to offset the loss of income. The Flood Control Association states that water levels at full generation cut off access to many acres of cropland on islands, and at critical times of the year.

65. In the final EA, staff assessed the issue of water level in the lower Osage River. The record shows that river stage at the Route 54 Bridge, which is adjacent to Riverview RV Park, would increase by about 0.8 foot with the additional output from the upgraded turbines. Staff found that the top of the riverbank at the Park was 571.0 feet msl, while the elevation associated with a flow of 42,000 cfs would be slightly higher than 568.0 feet msl. Based on staff's analysis, I conclude that the flows associated with the upgraded turbines, under normal operations, would not cause the river to overtop its bank in the area where Riverview RV Park is located.

66. With regard to the Flood Control Association's concerns regarding access to farmland on the islands in the river, I note that the agreement includes a provision whereby AmerenUE would work with the downstream farmers to adjust flows to facilitate access to the downstream island farmlands. This provision is included in section 3 of the agreement and required by condition 1.A of the 401 certification. I require the 401 certification conditions in ordering paragraph (D) of this license.

WATER QUALITY CERTIFICATION

67. Under section 401(a)(1) of the Clean Water Act (CWA),[47] the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued 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 one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.[48]

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[47] 33 U.S.C. § 1341(a)(1) (2000).

[48] 33 U.S.C. § 1341(d) (2000).

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68. On January 20, 2005, AmerenUE applied to the Missouri DNR for a certification for the Osage Project, which the Missouri DNR received on January 21, 2005. On June 3, 2005, the Missouri DNR issued certification for the Osage Project that includes nine conditions, which are set forth in Appendix A of this order and incorporated into the license (*see* ordering paragraph D).

69. The certification includes requirements for: (a) operational and non-operational measures to attain state water quality standards, including variable minimum flows (condition 1.A[49]) and an Alternative Technology Assessment and Dissolved Oxygen (DO) Enhancement Plan (conditions 1-3); (b) water quality monitoring that includes DO, macroinvertebrates, and other biological monitoring measures (condition 4); (c) reporting requirements (condition 5); (d) water quality sampling in lake coves (condition 6); (e) a Storm Water Pollution Prevention Plan (condition 7); (f) a Permitting and Shoreline Management Plan (condition 8); and (g) additional administrative measures (condition 9).

70. Several water quality certification conditions require AmerenUE to prepare plans for its approval, and implement specific measures or modifications, at its direction, without prior Commission approval.[50] Article 401 requires that AmerenUE file these plans with the Commission for approval.

71. Condition 6 of the 401 certification describes the licensee's obligation towards water quality sampling in Lake of the Ozarks.[51] Condition 5.A would allow the licensee

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[49] Condition 1.A of the certification does not describe the variable minimum flows, but rather incorporates the flow regime outlined in section 3 of the agreement by reference.

[50] For example, condition 2 of the 401 certification requires AmerenUE to prepare an Alternative Technology Assessment and Dissolved Oxygen Enhancement Plan, and condition 4 and 4.a.3 of the certification requires AmerenUE to prepare a water quality monitoring plan and undertake a DO assessment, respectively. Finally, condition 7 of the certification requires AmerenUE to develop and implement a Storm Water Pollution Prevention Plan.

[51] Sampling indicates that fecal coliform levels exceed state standards following substantial rain events and in more developed coves that exhibit periods of high recreational use. EA at p. 56. Staff concluded that bacterial sampling in the coves to establish trends in water quality would help identify areas of concern that may degrade water quality in Lake of the Ozarks. I am requiring this sampling and the filing of annual reports in Article 401.

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to suspend reporting of DO monitoring results. However, the conditions do not provide for Commission notification that (a) condition 6 has been satisfied and (b) DO reporting has been suspended. Therefore, Article 401 requires the licensee to notify the Commission when it completes the activities required under condition 6 and when, or if, it suspends DO reporting pursuant to condition 5.A. Also, there are certain certification conditions that provide for future changes to project operations and/or facilities, as may be required by the Missouri DNR.[52] No such changes may be implemented without prior Commission authorization, as may be granted after the filing of an application to amend the license. Article 401 requires such Commission approval.

SECTION 18 FISHWAY PRESCRIPTION

72. Section 18 of the FPA,[53] 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. By letter filed November 29, 2005, Interior, as delegated to the FWS, requested that the new license be conditioned to reserve authority under section 18 to require such facilities at the Osage Project if needed in the future.[54] Consistent with Commission practice, Article 415 reserves the Commission's authority to require fishways that may be prescribed by the Secretary of the Interior for the Osage Project.

THREATENED AND ENDANGERED SPECIES

73. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)[55] requires federal agencies to ensure that 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 designated critical habitat. When a federal agency determines that a proposed action may affect a threatened or endangered species, it must consult the FWS

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[52] Such future changes could include (a) changes to the Re-aeration Plan and Procedures (Condition 1.A.2), (b) after feasibility assessment, install, if appropriate, modified intakes (Condition 3.B), (c) modifications to turbine design or installation of new turbines (Condition 3.C), (d) changes to water quality monitoring plan (Conditions 4.A.4 and 4.B.4).

[53] 16 U.S.C. § 811 (2000).

[54] Interior's November 29, 2005 reservation of authority supersedes its preliminary fishway prescription filed on February 17, 2005.

[55] 16 U.S.C. § 1536(a) (2000).

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or the National Marine Fisheries Service, as appropriate, and obtain a biological opinion on whether the action is likely to result in a violation of the ESA. After the initiation of formal consultation, section 7(d) of the ESA[56] prohibits an agency from making any irreversible or irretrievable commitment of resources that would foreclose the formulation or implementation of any reasonable and prudent alternative measures that would not violate section 7(a)(2).

74. Federally listed species that occur in the area of, or may be affected by, the Osage Project are pink mucket pearly mussel, scaleshell mussel, gray bat, Indiana bat, bald eagle, pallid sturgeon, and Niangua darter.[57] No critical habitat for any listed species occurs in the project area. The final EA issued for the Osage Project found that relicensing the project would not affect the Niangua darter, would not likely adversely affect the pallid sturgeon, gray bat, Indiana bat, and bald eagle; but would likely adversely affect the pink mucket and scaleshell mussels.[58]

75. On February 8, 2006, Commission staff requested FWS's concurrence on its determinations for the Niangua darter, gray bat, Indiana bat, pallad sturgeon, and bald eagle. In the same correspondence, Commission staff requested formal consultation with the FWS under section 7(a)(2) of the ESA on the pink mucket and scaleshell mussels. On February 23, 2006, the FWS filed its concurrence with Commission staff's determinations for the Niangua darter, gray bat, Indiana bat, pallid sturgeon, and bald eagle.

76. On September 19, 2006, the FWS filed its biological opinion (BO) on relicensing the Osage Project, in accordance with the terms of the agreement. The FWS determined that relicensing the Osage Project, as proposed, would not likely jeopardize the continued existence of the pink mucket and scaleshell mussels. In addition, the FWS stated that, since no critical habitat has been designated, or proposed, for the mussel species none would be affected. The FWS's BO states that it believes that the various terms of the agreement are sufficient to set out the specific methods by which the measures to reduce the impact of incidental take are to be accomplished, and reporting and monitoring requirements are in place to assure adequate oversight of any incidental take as described in the BO. The BO further concluded that no additional reasonable and prudent measures

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[56] 16 U.S.C. § 1536(d) (2000).

[57] EA at 21.

[58] EA at 144-57.

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are needed beyond the provisions of the settlement agreement, and provided no incidental take terms and conditions.[59]

77. The conditions of this license are consistent with the FWS's BO by requiring the licensee to implement the provisions of the 401 certification and the measures outlined in the agreement. The measures related to the protection of mussels include: (a) DO enhancements (401 certification, as implemented by ordering paragraph D); (b) seasonal flow regime and ramping rates (401 certification; Articles 408 and 409); (c) a plan for fish propagation and stocking (Article 413); and (d) lower Osage River protection and enhancement projects, including the development and implementation of a freshwater mussel propagation program (Article 412).[60]

NATIONAL HISTORIC PRESERVATION ACT

78. Under section 106 of the National Historic Preservation Act (NHPA)[61] and its implementing regulations,[62] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register (defined as historic properties) and afford the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

79. To satisfy these responsibilities, the Commission executed a Programmatic agreement (PA), on November 13, 2006, with the Advisory Council and the Missouri SHPO, and invited AmerenUE to concur with the stipulations of the PA. AmerenUE did

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[59] Informal consultation with the FWS began March 1, 2002 when the Commission designated AmerenUE its non-federal representative under ESA, which culminated with the measures included in the agreement.

[60] Article 301 authorizes the licensee to proceed with its plans to upgrade two main turbines and the two auxiliary turbine-generator units. These upgrades, while improving generation efficiency, will also enhance the licensee's capability to pass required minimum flows and improve DO levels in the lower Osage River; thus benefiting the listed mussel species.

[61] 16 U.S.C. § 470, *et seq*. (2000).

[62] 36 C.F.R. Part 800 (2006).

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not sign as a concurring party.[63] The PA requires the licensee to prepare and implement a Historic Properties Management Plan (HPMP) for the term of any new license issued for this project. Execution and subsequent implementation of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 418 requires the licensee to implement the PA and to file its HPMP with the Commission within one year of license issuance.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

80. Section 10(j)(1) of the FPA[64] requires the Commission, when issuing a license, to include conditions based on recommendations by federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act,[65] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project. In response to the November 23, 2004 public notice soliciting comments, recommendation, terms and conditions, and prescriptions, the FWS and Missouri DC timely filed fish and wildlife recommendations pursuant to section 10(j) of the FPA.[66]

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[63] In commenting on the final EA, AmerenUE states that an area of potential effect (APE) was developed during pre-filing consultation. AmerenUE asks that the Commission recognize this effort, since it involved consultation with the Missouri SHPO and other stakeholders. I recognize the efforts of AmerenUE, the Missouri SHPO, and others towards developing an APE. However, the APE developed by the licensee during pre-filing does not fulfill the requirements of 36 CFR section 800.16(d) (2006) because the APE does not take into account the project's indirect effects. The executed PA, required by Article 418, defines the APE as: (a) lands enclosed in the project boundary; (b) attached or associated buildings and structures extending beyond the project boundary that contribute to the eligibility of the generating facilities; and (c) lands or properties outside the project boundary where the project may cause changes in the character or use of Historic Properties, if any such properties exist.

[64] 16 U.S.C. § 803(j)(1) (2000).

[65] 16 U.S.C. § 661, *et seq*. (2000).

[66] By letter dated December 23, 2004, staff granted an extension to the deadline for filing comments and recommendations to February 18, 2005. The FWS and Missouri DC filed recommendations on February 17, 2005.

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81. The aforementioned agencies, which have authority to recommend terms and conditions under section 10(j), are signatories to the agreement. The agreement, signed by the Missouri DC and the FWS stated that "… the recommendations submitted by the State and Federal Agency Parties pursuant to FPA Sections 10(a) and 10(j), shall be deemed to have been modified and superseded by the terms of this Settlement, including Appendix A and Appendix B." The license includes measures consistent with the agreement.

ADDITIONAL MEASURES

A. Erosion Control Measures

82. Lake of the Ozarks is situated in a wide river valley, characterized by stable shorelines that limit the potential for erosion. Under normal operations, the lake experiences little fluctuations, though it is drawn down in the late fall and early winter (1 foot) and again from January through May (5-7 feet).[67] The effects of any drawdown or water level fluctuation on erosion are not significant, as lake levels are relatively stable and the rate of change in water levels is gradual. However, there are localized areas of erosion along the lake's shoreline. These areas are likely affected by boat wakes, wind and wave action, and adjacent shoreline development.[68]

83. To address the effects associated with shoreline development at the project, AmerenUE proposes to develop and implement a SMP. In the final EA, staff concluded that the SMP should include measures and other provisions to minimize shoreline erosion from future development and other land use practices. I agree and will require that AmerenUE identify measures to minimize shoreline erosion as part of the SMP filed pursuant to Article 417 of this license. Also, I will require, as part of the SMP filed under Article 417, AmerenUE to undertake an erosion assessment for Missouri state park lands that abut the shoreline of Lake of the Ozarks, and file a report of the findings with any measures needed to address identified erosion problems within those areas. This measure

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[67] EA at 26.

[68] The Grand Glaize Arm of Lake of the Ozarks, which lies within the Lake of the Ozarks State Park, receives considerable boat traffic from boats entering and exiting Anderson Hollow, or "Party Cove." EA at 181. This level of boating activity creates boat wakes that may lead to isolated areas of erosion, as well as damage to boat docks and bulkheads. Also, shoreline development and tree clearing on the lakeshore may potentially result in concentrated erosion of upland or wetland soils and sedimentation.

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will help inform future shoreline management decisions at the project, with emphasis on erosion occurring on state park lands.

84. Active erosion along the lower Osage River is well distributed along its entire 82-mile length, and there is no clear concentration pattern.[69] Staff's analysis in the final EA shows that there is a stronger correlation between bank erosion and natural floods and precipitation than between erosion and hydropower peaking operations. Nonetheless, the record does indicate that project operations can have a measurable effect on erosion along the lower Osage River.[70] AmerenUE proposes to implement a variety of measures to address downstream erosion, including (a) consulting with the Corps regarding amending the existing MOA to incorporate ramp-down rates from Truman Dam after sustained high-flow events, (b) preparing an erosion report,[71] and (c) monitoring river width every 10 years over the term of the license and file reports documenting the findings.

85. Staff analyzed the aforementioned erosion measures in the final EA. Staff concluded that implementing ramp-down rates at Truman and Bagnell dams would substantially reduce downstream erosion and associated deleterious effects on aquatic habitat, recreation, and land use along the lower river.[72] Staff also concluded that AmerenUE's proposed erosion report would enhance the public's understanding of erosion and erosion control measures; thereby increasing the amount, success, and quality of bank stabilization projects along the lower river.[73] Taken together, these measures would help reduce downstream erosion, while not compromising generation. Therefore, I will require they become part of this license, and include them in Articles 305, 409, and 404.

86. AmerenUE's erosion monitoring proposal would address erosion by providing a mechanism for identifying erosion concerns or detecting changes in erosion rates, as well

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[69] EA at 27.

[70] EA at 248.

[71] The erosion report would summarize the mechanisms of erosion along the lower Osage River, as well as the biological and physical remediation measures (including identifying a source of shrub willow) available to landowners for use in erosion control projects.

[72] EA at 249.

[73] EA at 34.

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as potentially provide insight into the causes and effects of bank erosion.[74] Based on its analysis, staff recommended this measure, but recommended that monitoring occur 2, 5, and 10 years after license issuance and every 10 years thereafter. I agree with the need to periodically monitor erosion along the lower Osage River. I also agree with staff's recommended monitoring frequency. More frequent monitoring within the first ten years after license issuance would have the added benefit of being able to detect unanticipated changes in erosion rates associated with changes to project operations (*e.g.*, increase in peak flows related to the turbine upgrades).[75] Therefore, I will require that AmerenUE, as part of Article 404, monitor river width along the lower Osage River and file reports documenting its findings.

B. Project Operations and Flow Monitoring Plan

87. The agreement includes specific provisions for monitoring compliance with the proposed lake level guide curve and downstream flows. In the final EA, staff recommended that the licensee develop and implement a project operations and flow monitoring plan, which would include, at a minimum, the measures proposed by AmerenUE. Staff concluded that such a plan would establish a framework to periodically confirm that the project is operated in compliance with a new license, and provide important data needed for the licensee and the resource agencies to evaluate what effects, if any, the required water levels and minimum flows will have on water quality and habitat restoration efforts in the lower Osage River. I agree with the need for a formalized plan to document compliance with project operations. Article 411 requires that AmerenUE develop and implement such a plan.

C. DO Enhancement Plan and Water Quality Monitoring Plan

88. Lake of the Ozarks stratifies in the summer and has low levels of DO in the lake's deeper water.[76] When the lake is stratified and the project is operated at maximum

[74] EA at 35.

[75] The additional erosion monitoring requirements required as part of this license would help identify if erosion worsens over time as a result of the proposed turbine upgrades. If a problem is identified, the Commission could require additional remedial measures, as appropriate.

[76] EA at 45.

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generation, cool, DO-poor water is drawn from the lake and passed downstream. The result is DO levels that often fall below state standards, with potential adverse effects to the downstream fishery. To address these issues, AmerenUE is required by the 401 certification to develop and implement a DO enhancement plan and a water quality monitoring plan.

89. The DO enhancement plan required by the 401 certification includes an Alternative Technology Assessment that deals with the feasibility of implementing various DO enhancement measures. Based on its analysis in the final EA, staff recommended that this measure be included in any license issued for the project. In addition, staff recommended that water temperature be considered as a component of the technology feasibility assessment.[77] I agree that developing a DO enhancement plan has the potential to substantially improve DO conditions and enhance the quality of habitat and aquatic life in the lower Osage River. In addition, staff's additional recommendation would help ensure that the temperature regime in the lower Osage River more closely resembles a typical warm-water river in the region, and that habitat conditions support the river's native aquatic community. Therefore, I will require the DO enhancement plan and staff's recommended addition to the plan in Article 405 of this license. [78]

90. In addition, staff recommended certain modifications to the water quality monitoring program outlined in the 401 certification.[79] Specifically, staff recommends

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[77] EA at 254 and Appendix A-4.

[78] AmerenUE, in its comments on the final EA, contends that the EA does not acknowledge completion of the multi-level intake feasibility study. In the final EA, staff noted that AmerenUE prepared a Phase 1 feasibility assessment, which was filed with the Commission on May 19, 2006 (Devine Tarbell & Associates, *et al*. 2005. Dissolved Oxygen Enhancement Feasibility Assessment. Report prepared for AmerenUE, St. Louis, MO. November 2005). The report concluded that a Phase 2 study should be conducted to further evaluate the cost and effectiveness of turbine venting methods and two different surface withdrawal systems. However, to date, the Phase 2 study report has not been filed with the Commission and is not part of the record for this proceeding. Therefore, the final EA could not conclude that the technology assessment had been completed.

[79] EA at 255 and Appendix A-3; DO concentrations can change rapidly in response to hydrologic changes in the lower Osage River, particularly with the onset or cessation of generation discharge. Staff's review indicates that the 1-hour DO monitoring period, as required in the 401 certification would likely be inadequate to capture these periods of rapid DO change. In addition, certain of the DO enhancement

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that a 15-minute monitoring interval instead of a 1-hour interval, as well as total dissolved gas (TDG), be incorporated in the monitoring program. I agree with staff's assessment and require the plan, as well as staff's recommended modifications to the plan, in Article 406 of this license.

D. Project Boundary

91. Project boundaries are used to designate the geographic extent of the lands, waters, works, and facilities that the license identifies as comprising the licensed project and for which the licensee must hold the rights necessary to carry out the project purposes.[80] A project boundary does not change property rights, nor does the conveyance of a property right change a project boundary.[81] If a licensee wishes to remove lands from a project (*i.e.*, from the Commission's regulatory control as defined in the project license), it files an application to delete the lands from the license and from the project boundary.[82]

92. Any application to remove lands from a project boundary will be approved only if the Commission determines that the lands are no longer necessary or appropriate for project purposes; that is, that all project purposes will continue to be satisfied in the absence of the lands at issue. If the Commission deletes a parcel of land from the project and its boundary, the Commission is placing that land outside of its jurisdiction and regulatory reach. As a consequence, it can neither impose nor enforce any conditions on the lands removed, nor any covenants running with the land.

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measures outlined in the agreement may cause exceedances of TDG standards, which can have fatal effects on fish.

[80] The current regulations provide that a project boundary generally be no more than 200 feet from the exterior margin of reservoirs, unless additional lands are "necessary for project purposes, such as recreation, shoreline control, or protection of environmental resources." 18 C.F.R. § 4.41(h)(2)(i)(B) (2006).

[81] *See, e.g.*, *Niagara Mohawk Power Corp.*, 77 FERC ¶ 61,306 (1996). Property rights are governed by state law, whereas project boundaries are determined by the Commission.

[82] Generally, these are applications to amend the license by revising the license's description of project lands and the exhibits showing the project works and (if applicable) boundaries (both referenced in a license's ordering paragraphs). *See* 18 C.F.R. §§ 4.200 - 4.202 (2003).

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93. Currently, 72 percent of the project boundary is defined by contour elevation. The contour elevations range from 662.0 to 678.0 feet UED.[83] The remaining 28 percent of the project boundary follows property lines, which are defined by metes and bounds.[84] AmerenUE proposes to modify the project boundary around the lake so that parcels of properties[85] that are currently defined by metes and bounds would be eliminated from the project boundary and the boundary would instead match the contour elevation of the adjacent properties. These proposed areas are widely distributed throughout the project area. The project includes about 32,000 acres of land around the lake. The licensee is proposing to eliminate approximately 31,000 of these acres from the project, leaving 1,000 acres of project land along the project's 1,150-mile shoreline.

94. AmerenUE's proposal would not have a significant direct effect on aquatic resource habitat[86] or wildlife around the lake.[87] The wetlands associated with aquatic habitat and wildlife habitat are primarily located in low-lying areas around the impoundment perimeter and river shoreline below the 662.0-foot elevation, which is at or below where the contour-based project boundary modifications would occur. However, there are several locations where the 662.0-foot contour would appear to bisect lakeside wetlands, including both lacustrine and palustrine wetlands that are likely influenced by the lake's water levels.[88] The proposed action would effectively remove them or portions of them from the project boundary, if they are, in fact, within lands currently defined by a metes and bounds. Removing lakeshore wetlands from the project boundary would potentially negatively affect these wetlands, because they would not be afforded protection by AmerenUE's existing permitting program and any potential provisions that

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[83] Nearly half of the boundary is set at a contour between elevation 662.0 and 664.0, and nearly a quarter of the boundary at a contour between elevation 665.0 and 678.0.

[84] This amounts to approximately 347 miles of shoreline.

[85] These parcels of land are owned by private individuals and the state of Missouri. *See* letter from Mark C. Jordan, AmerenUE to Magalie R. Salas, Commission Secretary, filed June 20, 2006.

[86] EA at 100-01.

[87] EA at 122.

[88] EA at 122-23.

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may be included in a revised SMP. If removed, these wetlands may be subject to effects related to development adjacent to, and/or within, the wetlands.

95. Given that the Commission does not have before it for consideration a shoreline management plan, it is premature to approve removal of these lands at this time. AmerenUE may resubmit its request for amendment of the license to remove these parcels of land at such time as it files its SMP. If it resubmits its request, it must show the location of the lands proposed to be removed and their shoreline classification, which will include wetland designations, on a copy of the shoreline classification map required by Article 417.

96. Furthermore, as discussed earlier in this order, I am requiring that Willmore Lodge and its affiliated scenic viewing area be added as project features. Therefore, the project boundary will need to be expanded to incorporate these facilities. Article 203 requires that the licensee file revised Exhibit G drawings to reflect this change.

E. Cultural Resources and Comments on the Programmatic Agreement

97. The Advisory Council, in its letter filed November 13, 2006 transmitting the executed PA, commented that it had reviewed a draft of the SMP and is concerned about the SMP's adequacy in addressing historic properties, primarily the effects of erosion along the project's shoreline. The Advisory Council stated that the resource plans required for the project should be coordinated so that an effective and integrated management approach for managing historic properties can be developed for the project. The Advisory Council also stated that it wants to work closely with AmerenUE in developing the HPMP. Thus, the Advisory Council asked to be a participant in the development of the SMP and the HPMP.

98. The Commission recognizes the importance of coordinating the development of the resource management plans, including the HPMP, required for the project, and having interested entities participate in the development of such plans. The PA requires that AmerenUE develop the HPMP in coordination with other resource management plans. The PA further requires that AmerenUE develop the HPMP in consultation with the Missouri SHPO, the Osage Nation of Oklahoma, the Otoe-Missouri Tribe of Indians of Oklahoma, the Iowa Tribe of Oklahoma, the Kaw Nation of Oklahoma, and owners of properties that are eligible for the National Register of Historic Places. The PA stipulates that the HPMP will be provided to the Advisory Council for review and concurrence prior to Commission approval.

99. The Advisory Council's participation in the development of the SMP and the HPMP will provide an opportunity for early input and could expedite the process of developing the respective plans for the project. Therefore, I am requiring that, as part of

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Article 418, AmerenUE consult with the Advisory Council, and the other parties mentioned above, in the development of the HPMP. In addition, Article 417 requires that AmerenUE consult with the Advisory Council in the development of the SMP.

F. Administrative Conditions

Annual Charges

100. The Commission collects annual charges from licensees for administration of the FPA and for recompensing the United States for the use, occupancy, and enjoyment of its lands. Article 201 provides for the collection of funds for administration of the FPA and compensation to the United States.

Exhibit F and G drawings

101. The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. Because I am not approving the boundary change requested by AmerenUE and requiring the addition of Willmore Lodge, I am not approving the Exhibit G drawings. Articles 202 and 203 require the licensee to file revised exhibit drawings.

Amortization Reserve

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

Headwater Benefits

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

Use and Occupancy of Project Lands and Waters

104. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 419 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.

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Review of Final Plans and Specifications

105. Where new construction or modifications to the project are involved,[89] the Commission requires a licensee to file revised drawings of project features as built. Article 302 provides for the filing of these drawings.

STATE AND FEDERAL COMPREHENSIVE PLANS

106. Section 10(a)(2)(A) of the FPA[90] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[91] Under section 10(a)(2)(A), federal and state agencies filed eight comprehensive plans that address various resources in Missouri. Staff reviewed these comprehensive plans as relevant to this project.[92] Except for one plan discussed below, no inconsistencies were found.

107. Missouri DC's *East Osage River Basin Watershed Inventory and Assessment* identifies six goals for the East Osage River basin.[93] This document cites the existence and operation of the Osage Project as impediments to achieving some of the identified goals,[94] as well as compares existing conditions to pre-project conditions.

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[89] This license authorizes the upgrade of two main turbines and the two auxiliary units, as well as the installation of (a) flow and lake-level monitoring equipment, as necessary, (b) water quality monitoring stations, (c) DO enhancement measures, (d) fish propagation and protection measures, and (e) recreation enhancements.

[90] 16 U.S.C. § 803(a)(2)(A) (2000).

[91] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19.

[92] The list of applicable plans can be found in section IX of the final EA for the project.

[93] EA at 267-68.

[94] Goal 1 of the watershed inventory is "*Protecting and improving water quantity and quality so that all streams are capable of supporting native aquatic communities*." An objective under this goal is "*Work with AmerenUE, USACE and other basin water regulators, during and following the FERC relicensing process, to improve aquatic habitat and recreational use by changing Osage Project operation to natural run-of-river*

(continued)

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108. The proposed action is inconsistent with the run-of-river objective because the licensee would continue to operate the project as a peaking and load-following facility. However, this license includes measures to improve aquatic habitat and recreation use in the project area and downstream in the lower Osage River. Such measures include (a) lake level restrictions, (b) variable minimum flows, (c) ramping rates, (d) a DO enhancement program, (e) fish protection measures, (e) measures to enhance aquatic habitat in the lower Osage River, including reducing erosion and sedimentation, and a (f) recreation enhancement plan for the project. Also, the Missouri DC, author of the plan, is a signatory to the agreement. Therefore, the license as issued will adequately protect aquatic habitat and recreation at the project.

APPLICANT'S PLANS AND CAPABILITIES

109. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,[95] Commission staff evaluated AmerenUE's record as a licensee with respect to the following: (1) conservations efforts; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission service; (7) cost effectiveness of plans; and (8) actions affecting the public. I accept the staff's finding in each of the following areas.

A. Conservation Efforts

110. Section 10(a)(2)(C) of the FPA requires the Commission to consider the extent of electricity consumption efficiency improvement programs in the case of license applicants primarily engaged in the generation or sale of electric power, like AmerenUE. AmerenUE has several programs to promote conservation and energy efficiency for residential, commercial, industrial, and agricultural customers. AmerenUE (a) participates in a Low Income Weatherization Assistance Program, contributing millions of dollars to the program, (b) provides the public with seasonal energy saving tips through news media, (c) distributes weatherization kits to low income residents, (d) provides grants to non-profit organizations for replacing lighting of public areas with energy efficient bulbs, and (e) participates in other activities that promote energy conservation. These programs show that AmerenUE is making an effort to promote

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(non-peaking) operations, or obtain mitigation measures which will result in equivalent or more benefits to natural resources and recreation."

[95] 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2000).

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conservation of electricity and has made a satisfactory good faith effort to comply with section 10(a)(2)(C) of the FPA.

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

111. Based on a review of AmerenUE's compliance with the terms and conditions of the existing license, staff finds that AmerenUE's overall record of making timely filings and compliance with its license has been less than satisfactory. For example, the licensee took more than 9 years to finalize and file an agreement with the Corps.[96] Also, the licensee was late by 2 years to file a Memorandum of Agreement with the Missouri SHPO to address any adverse effects on historic properties or facilities associated with the replacement of two of the project's main turbines. The licensee did not timely file Emergency Action Plan updates and Part 12 reports.[97] Finally, there were several other violations of the license, such as (a) permitting construction and improvements of boat docks and use of easements within the project boundary without Commission approval, (b) lack of consultation and cooperation with relevant agencies regarding a fish kill in 2002, and (c) improper lake level management and shoreline management that has resulted in numerous, continuing complaints. The instances of non-compliance occurred between January 1990 and July 2006.

112. The compliance record described above does not warrant the denial of AmerenUE's application for a new license. Due to AmerenUE's history of non-compliance, though, special consideration must be given to license requirements to ensure that AmerenUE complies with the terms and conditions of the new license. Therefore, I am including Article 501 as part of this license. Article 501 requires AmerenUE to develop and file, for Commission approval, a Hydropower Compliance Management Program and Plan that will ensure conformity with the terms and conditions of the new license.

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

113. Staff has reviewed AmerenUE's management, operation, and maintenance of the Osage Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's

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[96] Article 40 of the existing license required the licensee to file its MOA with the Corps within 2 years of license issuance.

[97] Emergency Action Plan updates were not timely filed in 1991 and 1993. The Part 12 report (Safety Incident Report) and Part 12D report (Independent Consultant Inspection) was not filed in a timely manner in 1991.

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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 AmerenUE can not continue to safely manage, operate, and maintain these facilities under a new license.

114. AmerenUE proposes certain operational changes at the Osage Project that could have an effect on PMF (Probable Maximum Flood) peak water levels. To address any such effect, I am including Articles 303 and 304 in this license. Article 303 requires the licensee to file a report describing the effects of the new reservoir guide curve on the project's spillway adequacy. Article 304 requires the licensee to file an Operating Manual describing how the project will be operated to achieve the desired target elevations.

D. Ability to Provide Efficient and Reliable Electric Service

115. Commission staff reviewed AmerenUE'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 AmerenUE has been operating the project in an efficient manner within the constraints of the existing license. AmerenUE regularly inspects the project turbine generator units to ensure they continue to perform in an optimal manner and schedules maintenance to minimize effects on energy production. Since the project has been in operation, AmerenUE has undertaken initiatives to ensure that the project is able to operate reliably into the future (*e.g.*, evaluating capacity expansions). AmerenUE also coordinates day-to-day operation of the Osage Project with the Corps and its operation of six upstream flood control dams. Staff concludes that AmerenUE is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

116. AmerenUE is an operating company and subsidiary of Ameren Corporation, one of the nation's largest investor-owned electric and gas utilities.[98] AmerenUE owns generation assets, totaling about 10,000 MW,[99] in Missouri, Illinois, and Iowa, and

[98] Ameren Corporation is the largest electric utility in Missouri and second largest in Illinois. Ameren companies provide energy services to about 2.4 million electric customers and 1 million natural gas customers. Data obtained from http://www.ameren.com/AboutUs/ADC_AU_AmerenCorp.asp and http://www.ameren.com/AmerenEnergy; accessed January 20, 2007.

[99] Obtained from http://ameren.com/AmerenEnergy; accessed January 20, 2007.

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provides service to customers in eastern Missouri (1.2 million electric customers and 110,000 gas customers).[100] About 70 percent of the company's capacity is thermal electric (7,000 MW coal, oil, and natural gas).[101] The remainder of AmerenUE's generating capability is composed of 26 percent nuclear (2,600 MW) and 4 percent hydro (400 MW). AmerenUE's hydro assets are located in Missouri and Iowa.

117. The 176.2-MW Osage Project, which represents about 44 percent of AmerenUE's hydro capacity, generates approximately 636,397 MWh of electricity annually. In addition, the project provides emergency, peaking power and load-following capabilities, as well as supports the MAIN[102] throughout the year. For example, the project supports the MAIN during capacity shortages, supplementing power to Illinois and portions of Missouri, Wisconsin, Iowa, Minnesota, and Michigan.

118. The Osage Project is located in the MAIN region of the North American Electric Reliability Council (NERC) and operates within the Eastern Interconnection. The Energy Information administration (EIA) forecasts electrical supply and demand in the MAIN region for a 22-year period. EIA's most recent report, for the period 2003 through 2025, projects an average growth in electrical peak load (demand) of 1.5 percent annually. Each year, the NERC provides a 10-year reliability assessment of bulk electric systems in North America. In its latest report, NERC projects that generation resources within the MAIN will be adequate over the next 10-year period, based on a 1.5-percent annual growth rate.

119. Power from the Osage Project, as well as the project's ancillary benefits, can continue to meet AmerenUE's customers' growing needs, as well as meet part of the regional need for power. The project displaces fossil-fueled electric power generation that the regional utilities currently use and, thereby, reduces the emission of noxious byproducts caused during the combustion of fossil fuels.

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[100] Obtained from http://ameren.com/AboutUs/ADC_AU_AmerenUE_home.asp; accessed January 20, 2007.

[101] Obtained from http://ameren.com/aboutus/adc_au_AmerenUE_Plants.asp; accessed January 20, 2007.

[102] Mid-American Interconnected Network.

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F. Transmission Services

120. FPA section 15(a)(1)(3)(A) requires that the Commission consider existing and planned transmission services of the applicant. There are no primary transmission lines included in the Osage Project. Power from the project is fed into AmerenUE's interconnected transmission system at the project switchyard. None of the proposed upgrades will have an effect on AmerenUE's transmission system.

G. Cost Effectiveness of Plans

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

H. Actions Affecting the Public

122. In using the ALP to relicense the Osage Project, AmerenUE provided opportunity for public involvement in the development of the application for a new license for the project. During the previous license period, AmerenUE provided facilities to enhance the public use of project lands and facilities, and operated the project with consideration to protecting public use of Lake of the Ozarks, as well as downstream uses of the lower Osage River. AmerenUE uses the project to help meet its power needs and pays taxes that contribute to the cost of public services provided by local governments.

PROJECT ECONOMICS

123. 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.*,[103] 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 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.

[103] 72 FERC ¶ 61,027 (1995).

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124. In applying this analysis to the Osage Project, we have considered two options: AmerenUE's proposal and the project as licensed herein.[104] As proposed by AmerenUE, the levelized annual cost of operating the Osage Project is $28,984,073, or $42.75/MWh. The proposed project would generate an estimated average of 677,990 MWh of energy annually.[105] Multiplying the estimated average generation by the alternative power cost of $43.30/MWh,[106] gives a total value of the project's power of $29,356,967 in 2005 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. Therefore, in the first year of operation, the project power would cost $372,895, or $0.55/MWh, less than the likely alternative cost of power.

125. As licensed herein, with the mandatory conditions and staff measures, the levelized annual cost of operating the project would be about $29,004,412, or $42.78/MWh. Based on an estimated average of 677,990 MWh as licensed, the project would produce power valued at $29,356,967 when multiplied by the $43.30/MWh value of the project's power. Therefore in the first year of operation, project power would cost $352,555, or $0.52/MWh, less than the likely cost of alternative power.

126. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system

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[104] The project economics, as presented herein, accounts for AmerenUE's actual bid award price of $12 million for the upgrade of the two main turbines, as well as the original estimate of $5.2 million, with a one-time cost of $300,000, for the upgrades to the two auxiliary units. The economic analysis also reflects the costs provided by AmerenUE for DO enhancement measures, without escalation. While staff did include the lower range estimate filed by AmerenUE for its Phase 2 DO assessment costs, staff did not include the upper range figure because it lacked the information from the Phase 2 report, which has not yet been filed with the Commission.

[105] The proposed turbine upgrades would result in an increase in annual generation of about 41,600 MWh.

[106] The annual power value was calculated using the Commission's Economic Model for Utility Projects, which determines a levelized annual power value of project power over a period of 30 years based on average annual generation and the project capacity value. Using a capacity value of $13.82/kW-yr (as reported by AmerenUE, *see* Updated Developmental Analysis filed on August 26, 2005) and an annual generation of 677,990 MWh, staff estimated the annual power value to be $29,358,430. The annual power value was divided by the annual generation of 677,990 to get $43.30/MWH.

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(ancillary service benefits). These benefits include their capability to provide an almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting the Osage Station and other fossil-fuel based generating stations back on line following a major utility system or regional blackout.

COMPREHENSIVE DEVELOPMENT

127. Sections 4(e) and 10(a)(1) of the FPA[107] 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 shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

128. The final EA for the Osage Project contains background information, analysis of effects, and support for related license articles. I conclude based on the record of this proceeding, including the EA and the comments thereon, that licensing the Osage Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of this license.

129. Based on staff's independent review and evaluation of the project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EA and supplemented herein, I am selecting the proposed project, with the staff-recommended measures, as best adapted to a comprehensive plan for improving or developing the Osage River. I have selected this alternative because: (1) issuance of a new license will serve to maintain a beneficial, dependable, and inexpensive source of electric energy; (2) the required measures will help reduce erosion, as well as protect and enhance water quality, fishery resources, wetlands and associated wildlife, recreation, aesthetics, and historic properties; and (3) the 677,990 MWh of electricity generated annually from this renewable resource will continue to replace the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable energy resources, reducing atmospheric pollution.

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[107] 16 U.S.C. §§ 797(e) and 803(a)(1) (2000), respectively.

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LICENSE TERM

130. Section 15(e) of the FPA[108] 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 or enhancement; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.

131. The amount of proposed new investment associated with the relicensing of the Osage Project is moderate. This license authorizes AmerenUE to upgrade four turbines. In addition, AmerenUE will be required to implement measures designed to protect and enhance environmental resources affected by the project, including: (a) a water quality enhancement program, including on-going monitoring; (b) variable minimum flows, ramping rates, and other aquatic habitat improvements for the lower Osage River; (c) fish protection measures and associated biological monitoring; (d) a fish propagation program; (e) recreation enhancements, including periodic monitoring; and (f) a SMP and an HPMP. Therefore, a 40-year license term is appropriate.

The Director orders:

(A) This license is issued to Union Electric Company, dba AmerenUE (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the Osage Hydroelectric Project. This license is subject to the terms and conditions of the 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 would consist of:

(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 consisting of: (A) the 2,543-foot-long, 148-foot maximum height concrete gravity-type Bagnell Dam composed of a (i) 331-foot-long non-overflow section (east retaining section), (ii) a 511-foot-long integral powerhouse, (iii) 520-foot-long gated spillway section with 12 radial gates, each 34 feet wide by 22 feet high, and (iv) a 1,181-foot-long non-overflow section (west retaining section); (B) a 511-foot-long

[108] 16 U.S.C. § 808(c) (2000).

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by 150-foot-wide by 148-foot-high concrete, brick, and steel frame powerhouse containing (i) four main 172-inch-diameter vertical Francis turbine-generators rated at 21.5 MW each, with a hydraulic capacity of 4,210 cfs each, (ii) two upgraded main 168-inch-diameter vertical Francis turbine-generators rated at 21.5 MW each, with a hydraulic capacity of 5,000 cfs each, (iii) two upgraded main 165-inch-diameter vertical Francis turbine-generators rated at 21.5 MW each, with a hydraulic capacity of 4,556 cfs each, and (iv) two upgraded auxiliary turbine-generators rated at 2.1 MW each, with a hydraulic capacity of 450 cfs each; (C) Lake of the Ozarks, a 54,000-acre reservoir at a normal full pool elevation of 660.0 feet Union Electric Datum, with a gross storage of 2,000,000 acre-feet; (D) transmission facilities consisting of (i) the 2.4 kilovolt (kV) and 13.8 kV generator leads, (ii) four three-phase 13.8/138-kV, 60-MVA main transformer banks, and (iii) transmission equipment associated with the auxilliary units; and (E) 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 February 24, 2004 and supplemented on February 12, 2007: Pages A-1 through A-9.

Exhibit F: The following sections of exhibit F filed on February 24, 2004:

Exhibit F-	FERC Drawing No. 459-	Showing
1	1001	General Plan
2	1002	Powerhouse and Dam - Plans & Sections
3	1003	Plan & Elevation – West Retaining Section
4	1004	Plan & Elevation – West Retaining Section
5	1005	Plan & Elevation – West Retaining Section
6	1006	Plan & Elevation – Spillway
7	1007	General Plan & Elevation – Powerhouse
8	1008	Plan & Elevation – East Retaining Section
9	1009	Sections & Details – East Retaining Section
10	1010	General Plan and Elevation – Post-Tensioned Anchorage System
11	1011	General Sections – Post-Tensioned Anchorage System

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project

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boundary, 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 the license. Since this order requires certain revisions to the project boundary, the Exhibit G drawings filed as part of the application are not approved. Article 203 requires the filing of revised exhibit G drawings.

(D) This license is subject to the conditions of the water quality certification issued by the Missouri Department of Natural Resources pursuant to section 401(a) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the articles set forth in Form L-3 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States" (*see* 54 FPC 1817-24), as reproduced at the end of this order, and the following additional articles:

Article 201. *Administrative Annual Charges*. The licensee shall pay the United States annual charges, effective the first day of the month in which this license is issued, and as determined in accordance with the provisions of the Commission's regulations in effect from time to time, for the purposes of:

(1) 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 176.2 megawatts. If the proposed turbine upgrades, as authorized in accordance with Article 301, should result in a change to the authorized installed capacity, such change should be reflected in the revised exhibits A and F filed pursuant to Article 302. Whether or not the turbine upgrades result in a change to the authorized installed capacity, the licensee must file a letter with the Secretary of the Commission with a copy to the Office of the Executive Director, Division of Procurement, so stating. If a change in authorized capacity does result from upgrading the turbines, the licensee must state the date construction commenced for the new capacity.

(2) recompensing the United States for the use, occupancy, and enjoyment of 1.6 acres of its lands (other than for transmission line right-of-way).

Article 202. *Exhibit F Drawings*. Within 45 days of the date of issuance of this license, the licensee shall file the approved exhibit drawings in aperture card and electronic file formats.

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a) Four sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (i.e., P-459-1001 through P-459-####) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards, along with form FERC-587, shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections Chicago Regional Office. The remaining set of aperture cards and a copy of Form FERC-587 shall be filed with the Bureau of Land Management office at the following address:

State Director
Bureau of Land Management
Branch of Lands (ES-930)
7450 Boston Blvd.
Springfield, VA 22153
ATTN: FERC Withdrawal Recordation

b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections Chicago Regional Office. Exhibit F drawings must be identified as (CEII) material under 18 CFR § 388.113(c). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-459-####, F-1, Description, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY – black & white raster file
FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
RESOLUTION – 300 dpi desired, (200 dpi min)
DRAWING SIZE FORMAT – 24" X 36" (min), 28" X 40" (max)
FILE SIZE – less than 1 MB desired

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

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and maintenance of the project. Such project works shall include all lands and project features within the existing project boundary, as well as Willmore Lodge and its affiliated scenic viewing area. The revised Exhibit G drawings shall also reflect the revisions to the project boundary approved by the Commission on August 14, 2006 (116 FERC ¶ 62,127 (2006)), including retaining in the project boundary Legion Road, that portion of Valley Road that connects Route 54 Business to Legion Road and the route of egress to the west end of Bagnell Dam and any other access roads required for project purposes. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission's regulations, 18 C.F.R. §§ 4.39 and 4.41 (2006).

Article 204. *Amortization Reserve*. Pursuant to section 10(d) of the Federal Power Act, a specific reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall 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 shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall 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 shall 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 rations shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall 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 shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits

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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 301. *Commencement of Turbine Upgrades*. Within four months of the issuance date of the license, the licensee shall file for Commission approval a schedule for upgrading the two original main turbines and the two original auxilliary turbine-generator units. The licensee must coordinate its proposed work with the Commission's Chicago Regional Office.

Article 302. *Revised Exhibits and As-built Drawings*. Within 90 days of the completion of any construction of facilities, or any other action required by this license, that results in changes to Exhibits A, F, and G, as appropriate, to show and describe those project facilities and lands as built or modified. The exhibits shall have sufficient detail to adequately delineate the relative location of project features. The licensees shall submit six copies of the revised exhibits to the Commission, one copy to the Commission's Division of Dam Safety and Inspections Chicago Regional Engineer, and one to the Director, Division of Hydropower Administration and Compliance.

Article 303. *Reservoir Target Levels*. Within 60 days of the issuance date of this license, the licensee shall submit one copy to the Division of Dam Safety and Inspections – Chicago Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a report describing the effects of the new reservoir guide curve on the project's spillway adequacy. The report should include a flood routing study that evaluates the ability of the developments to safely pass flows up to the Inflow Design Flood. If necessary, the report should include a plan and schedule for performing any remedial measures necessary to ensure the continued safe operation of the developments during high flows.

The licensee shall not implement the new reservoir guide curve for the Osage Project until the Division of Dam Safety and Inspections - Chicago Regional Engineer determines that these altered project operations have no adverse impact on dam safety and issues a letter indicating such.

Article 304. *Operating Manual*. At least 60 days prior to implementation of the new reservoir guide curve required by Article 407, the licensee shall submit for review and comment one copy to the Division of Dam Safety and Inspections – Chicago Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of an Operating Manual describing how the project will be operated to achieve the desired target elevations.

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Article 305. *Consultation and Coordination with the Corps*. The licensee shall continue to coordinate the operation of the Osage Project with the U.S. Army Corps of Engineer's (Corps) upstream Harry S. Truman Project in accordance with the existing Memorandum of Agreement (MOA) approved by the Commission on September 11, 1995. The licensee shall also enter into consultation with the Corps concerning ramping rates at the Truman Project. Within 180 days of the issuance date of this license, the licensee shall file, for Commission approval, a revised MOA describing any amendments to the MOA resulting from the aforementioned consultation. The revised MOA shall describe how the licensee will coordinate project operations with the Corps' operation of its Truman Project to minimize riverbank erosion along the lower Osage River, downstream from the Osage Project. Copies of the revised MOA shall be filed with the Director, Office of Energy Projects and the Chicago Regional Engineer.

Article 401. *Commission Approval, Reporting, and Filing of Amendments*.

(a) Requirement to File Plans for Commission Approval

Various conditions of this license required by Ordering Paragraph D and found in the Missouri Department of Natural Resources' (Missouri DNR) water quality certification (Appendix A of this license) require the licensee to prepare plans and reports for its approval and implement specific measures or modifications, at its direction, without prior Commission approval. Each such plan and report shall also be submitted to the Commission for approval. These plans are listed below.

WQC Condition No.	Plan name	Due date
2	Alternative Technology Assessment and Dissolved Oxygen Enhancement Plan	Within 90 days of license issuance
4	Water Quality Monitoring Plan	Within 90 days of license issuance
4.A.3	DO Assessment	Within 90 days of license issuance
7	Storm Water Pollution Prevention Plan	Within 90 days of license issuance

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The licensee shall submit to the Commission documentation of its consultation, copies of comments and recommendations made in connection with any plan, and a description of how the plan accommodates the comments and recommendations. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information. 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 shall implement the plan or changes in project operations or facilities, including any changes required by the Commission.

(b) Requirement to File Documentation of Completion

The licensee shall file, with the Commission, documentation that the following activity has been completed.

WQC Condition No.	**Activity**	**Due date**
6	Bacterial sampling in lake coves.	December 31 of license years 1 through 5. The filing shall include a summary of the sampling data.

(c) Requirement to Notify the Commission of Planned or Unplanned Deviations from License Requirements

Condition 5.A of the water quality certification (Appendix A of this license) would allow the licensee to suspend quarterly reporting of DO monitoring results under certain conditions. The Commission shall be notified prior to implementing such change in the reporting requirements. The Missouri Department of Conservation and the U.S. Fish and Wildlife Service shall also be notified prior to implementing any such change.

(d) Requirement to File Amendment Applications

Certain conditions in appendix A of this license and required by Ordering Paragraph D contemplate unspecified, long-term changes to project operations or facilities for the purpose of attaining environmental standards or mitigating environmental effects. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. These conditions are listed below.

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WQC Condition No.	Modification
1.A.2	Changes to the Re-aeration Plan and Procedures to meet DO standards.
3.B	Assess feasibility and install, if appropriate, modified intakes to increase DO.
3.C	Modifications in turbine design or installation of new turbines to enhance DO and unit efficiency.
4.A.4 and 4.B.4	Changes to approved Water Quality Monitoring Plan.

Article 402. *Funding*. Notwithstanding the limitation on expenditures as expressed in the settlement agreement and mandatory conditions, as included in this license, the Commission reserves the right to require the licensee to undertake such measures as may be appropriate and reasonable to implement approved plans and other requirements in this license.

Article 403. *Project Inspections*. The licensee shall provide representatives of the Missouri Department of Conservation, the Missouri Department of Natural Resources, and the U.S. Fish and Wildlife Service, who show proper credentials, reasonable, free and unrestricted access to, through, and across the project lands and works, in the performance of their official duties, after appropriate advance notification is made.

Article 404. *Erosion Monitoring and Remediation Plan*. Within 180 days of the issuance date of this license, the licensee shall file with the Commission, for approval, an erosion monitoring and remediation plan for the Osage Project. The objectives of the plan are to: (a) monitor erosion rates along the lower Osage River downstream from Bagnell Dam; and (b) describe the mechanisms of erosion along the lower Osage River and develop education material.

The plan, at a minimum, shall include the following elements listed below.

(1) The licensee shall monitor, or provide for an entity to monitor, the width of the lower Osage River using laser range finder or equivalent technology to document erosion rates. This monitoring shall occur in years 2, 5, and 10 of this license, and every 10 years thereafter for the term of the license. The plan shall include a schedule for filing reports documenting the findings of this monitoring with the Commission. The report shall also identify any actions the licensee

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may need to take to address any erosion problems attributed to project operations. These reports shall be prepared after consultation with the Missouri Department of Conservation (Missouri DC), the Missouri Department of National Resources (Missouri DNR), the U.S. Fish and Wildlife Service (FWS), the U.S. Army Corps of Engineers (Corps), and the Osage River Flood Control Association (Flood Control Association).

(2) Based on the studies undertaken for relicensing, the licensee shall prepare (a) a report summarizing the mechanisms of erosion that occur along the lower Osage River, and (b) educational material on biological and structural remediation measures that can be taken to help reduce erosion, including erosion protection techniques and potential sources of financial assistance to complete erosion protection projects. This report shall be filed with the Commission within one year of the issuance date of this license, and concurrently provide the report to the Missouri DC, the Missouri DNR, the FWS, and the Flood Control Association.

(3) The licensee shall provide a source for water willow that can be obtained by landowners for use in erosion protection remediation projects.

(4) The licensee shall include with the plan an implementation schedule.

The licensee shall prepare the erosion monitoring and remediation plan after consultation with the Missouri DC, the Missouri DNR, the FWS, the Corps, the National Park Service, and the Flood Control Association. The licensee shall allow a minimum of 30 days for the agencies and the Flood Control Association to comment and to make recommendations before filing the plan with the Commission. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations, and specific descriptions of how the agencies' and the Flood Control Association's comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

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

Article 405. *Alternative Technology Assessment and Dissolved Oxygen Enhancement Plan*. As part of the alternative technology assessment and dissolved oxygen (DO) enhancement plan required by conditions 2 and 3 of the water quality certification, the licensee shall include water temperature as a consideration in its

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assessment of technologies and development of DO enhancement measures. The technology assessment and DO enhancement plan shall be filed in accordance with Article 401, and include any modifications that may result from considering water temperature in the assessment and implementation of measures.

Article 406. *Water Quality Monitoring Plan*. As part of the water quality monitoring plan required by condition 4 of the water quality certification, the licensee shall include total dissolved gas (TDG) as a parameter to be monitored under the plan. In addition, water quality parameters shall be monitored at 15-minute intervals. The water quality monitoring plan shall be filed in accordance with Article 401, and include modifications that may result from adding TDG to the plan and changing the monitoring interval to every 15 minutes.

Article 407. *Lake Level Management*. Within 30 days of the issuance date of this license, the licensee shall implement the lake level management provisions of this article. The purpose of this article is to protect the ecological, cultural, and recreational values of the lake.

The licensee shall operate the Osage Project in accordance with the guide curve and other elevations shown in section 2.2 of the settlement agreement and summarized as follows:

FIGURE 1
GUIDE CURVE, FLOOD POOL AND ELEVATIONS LIMITS OF NORMAL OPERATION

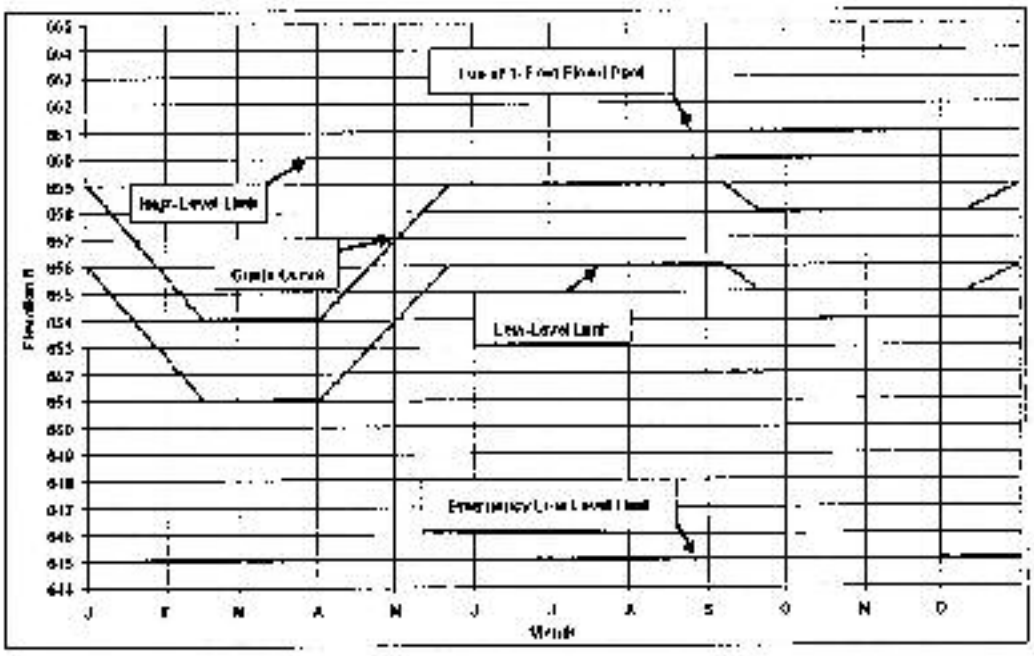

TABLE 1 – GUIDE CURVE

Period	Lake Elevation
January 1	659.0 feet Union Electric Datum (UED)
January 2 – February 14	Incremental decrease form 659.0 to 654.0 feet UED
February 15 – April 1	654.0 feet UED
April 2 – May 21	Incremental increase from 654.0 to 659.0 feet UED
May 22 – September 9	659.0 feet UED
September 10 – September 20	Incremental decrease from 659.0 to 658.0 feet UED
September 21 – December 10	658.0 feet UED
December 11 – December 31	Incremental increase from 658.0 to 659.0 feet UED

No other restrictions are required on either the up-ramp or down-ramp of plant output, except as provided in Article 409 regarding floods. Target elevations and lake level constraints are as follows:

(1) Top of flood pool = 661.0 feet UED

(2) High-level limit = 660.0 feet UED

(3) Low-level limit = 3 feet below guide curve

(4) Emergency low-level limit = 645.0 feet UED

The licensee shall, to the extent possible, manage lake levels to follow the above elevations, thereby providing lake levels consistent with historical operations. The licensee shall continually review hydrologic conditions and lower the lake to 659.0 UED, or lower, in anticipation of high inflow events. Lake levels may be above or below the

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guide curves, but may not fall below the designated low-level limit or emergency low-level limit.

The lake level requirements may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement among the licensee, the Missouri Department of Conservation (Missouri DC), the Missouri Department of Natural Resources (Missouri DNR), the U.S. Fish and Wildlife Service (FWS), and the U.S. Army Corps of Engineers (Corps). If lake levels are so modified, the licensee shall notify the Commission as soon as possible, but not later than 10 days after each such incident, and shall provide the reason for the change in lake levels.

Article 408. *Minimum Flow Schedule*. The licensee shall implement the variable minimum flow schedule for the lower Osage River specified in condition 1.A of the water quality certification (appendix A of this license) within 30 days of the issuance date of this license.

Article 409. *Ramping Rates*. Within 30 days of the issuance date of this license, the licensee shall implement, in coordination with the U.S. Army Corps of Engineers (Corps), post-flood flow ramping rates at the Osage Project. The purpose of this ramping rate schedule is to reduce project-related flood flows in the lower Osage River and minimize the effects of such flows on erosion and the aquatic community in the river.

The licensee shall reduce discharges from Bagnell Dam according to the table below, when all of the following criteria are met: (a) Harry S. Truman (Truman) elevation is below 710 feet and falling; (b) Truman's pool has been above 710 feet; (c) 7DA lake inflow exceeds 25,000 second foot day (sfd); (d) projected lake inflow for the current day is less than 30,000 sfd; and (e) projected project discharge for the current day is less than 30,000 sfd.

The Seven-Day Rolling Average (7DA) Lake Inflow is defined as a rolling average of Daily Lake Inflow for the previous seven days, with each day being defined as 0000 hours to 2400 hours.

Day	**Percentage of Lake of the Ozarks 7DA Lake Inflow**
Day 1	70%
Day 2	60%
Day 3	50%
Day 4	30% (July 1- February 14 only)

After the above 3- or 4-day period, the minimum flow schedule required by

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condition 1.A of the 401 water quality certification and Article 408 shall be implemented.

Exceptions to the Ramping Rate Schedule

(a) A post-flood flow ramp down shall be suspended if significant flooding occurs as shown by: (a) Truman's pool elevation rising above 710 feet; or (b) projected project discharge for the current day is equal to or greater than 30,000 sfd. The flood ramp down schedule shall resume at Day 1 when the post-flood flow criteria are again met.

(b) The flood ramp down schedule shall be suspended if the Corps requests that the licensee reduce project discharge to prevent downstream flooding, and shall resume at Day 1 when the post-flood flow criteria are once again met.

(c) The flood ramp down schedule may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the Corps, the Missouri Department of Conservation, the Missouri Department of Natural Resources, the U.S. Fish and Wildlife Service, and the Osage River Flood Control Association. If the ramping schedule is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 after each such incident.

Article 410. *Re-aeration Flows*. The licensee shall implement the re-aeration flows for the lower Osage River specified in condition 1.A of the water quality certification (appendix A of this license) within 30 days of the issuance date of this license.

Article 411. *Project Operation and Flow Monitoring Plan*. Within 180 days of the issuance date of this license, the licensee shall file with the Commission, for approval, a Project Operations and Flow Monitoring Plan that describes how the licensee will comply with the operational requirements of this license, including lake levels, peaking operations, ramping rates, and flows in the lower Osage River.

The plan shall provide a means to independently verify compliance with the project operation and flow requirements of this license. The plan shall identify the monitoring methods and locations of monitoring devices necessary to ensure that the project is operated in a manner consistent with Ordering Paragraph D, as well as Articles 305, 407, 408, 409, and 410.

The plan shall include the following provisions, at a minimum.

(1) A description of all gages (including staff gages) and other equipment necessary to monitor (a) water levels in Lake of the Ozarks as required by Article 407,

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(b) project inflows, and (c) lower Osage River flow requirements, as identified in section 3 of the settlement agreement and Articles 305, 408, 409, and 410.

(2) Procedures for recording, maintaining, and publishing project operations data, as well as flows in the Osage River immediately downstream from the Bagnell Dam on an hourly basis, including the following measures;

(a) cooperate with the U.S. Geological Survey (USGS) to ensure that USGS Gage No. 06926000 (Osage River near Bagnell, MO) at Highway 54 is maintained and upgraded to collect data in 15-minute collection intervals, then transmit those data on hourly intervals for real-time availability on the USGS or licensee website;
(b) on a daily basis, calculate and publish on the licensee's website, in a current and downloadable format (i) daily Harry S. Truman (Truman) pool level recorded at 2400 hours, (ii) Truman outflow (sfd) for the previous day, (iii) Lake of the Ozark daily lake inflow (sfd) from the previous day, (iv) 7DA lake inflow (sfd), (v) minimum flow (cfs) to be initiated at about 0900 hours, (vi) project discharge as an hourly average (cfs) for each hour of the previous day, (vii) project discharge volume (sfd) for the previous day, and (viii) anticipated project discharge volume for the current day;
(c) publish, in a current downloadable format on the USGS's or licensee's websites, real-time lake elevation data which has been collected on an hourly basis; and
(d) report appropriate project operations and flow data and information to the resources agencies and the Commission.

(3) a schedule for implementing the plan.

The plan shall also include provisions consistent with the emergency notification requirements for project operation and the instream flows required by this license. In addition, should impoundment elevations or instream flows, as measured according to the approved monitoring plan, fall below the levels required by this license, the plan shall include a provision whereby the licensee files with the Commission a report of the incident within 30 days of occurrence.

Any incident report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental effects resulting from the incident. The report also shall include: (1) operational data necessary to determine compliance with this article; (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,

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received from agencies, as identified below, regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.

The licensee shall prepare the project operation and flow monitoring plan after consultation with the Missouri Department of Conservation, the Missouri Department of Natural Resources, the U.S. Fish and Wildlife Service, National Park Service, the U.S. Army Corps of Engineers, and the USGS. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations, and specific descriptions of how the agencies' comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. No ground-disturbing or land-clearing activities for installation and use of monitoring devices shall begin until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any existing equipment or equipment installed in accordance with this article shall be shown on the as-built drawings filed pursuant to Article 302 of this license.

Article 412. *Lower Osage River Protection and Enhancement*. Within 120 days of the issuance date of this license, the licensee shall file, for Commission approval, a Lower Osage River Protection and Enhancement Plan. The plan shall describe the licensee's responsibilities to enhance aquatic habitat and affiliated aquatic communities in the lower Osage River.

The protection and enhancement plan shall include, at a minimum:

(1) a list of management activities that will be undertaken for the lower Osage River, including, but not necessarily limited to,

(a) measures to prevent/ reduce island and bank erosion (*e.g.*, vegetation buffer zones, hard points, etc.),
(b) measures to restore/create main-channel fish and mussel habitat in select areas, as well as restore side channel habitats,
(c) monitoring to determine the effectiveness of implemented measures,
(d) a freshwater mussel propagation program, and
(e) other measures that benefit aquatic fishery resources in the lower Osage River; and

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(2) identification of one-time measures that do not require continuing oversight during the term of the license, and

(3) a provision for filing annual status reports prepared after consultation with the U.S. Fish and Wildlife Service (FWS), by March 1 each year, documenting, in detail, the management activities undertaken the previous year and those planned for the upcoming year. The report shall include information on the effectiveness of any implemented measures.

The licensee shall prepare the lower Osage River protection and enhancement plan after consultation with the FWS and the Missouri Department of Conservation. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations, and specific descriptions of how the agencies' comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. This plan shall not be implemented until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 413. *Fish Propagation and Stocking*. Within 90 days of the issuance date of this license, the licensee shall file, for Commission approval, a Fish Propagation and Stocking Plan. The plan shall describe the licensee's responsibilities to enhance, through supplemental stocking, the sport fishery in Lake of the Ozarks and the lower Osage River. The plan shall include a provision for filing reports, prepared after consultation with the Missouri Department of Conservation (Missouri DC), by December 31 every 5th year through the term of the license, documenting the types and numbers of fish stocked in Lake of the Ozarks and the lower Osage River, as well as any other activities associated with the fish stocking program.

The licensee shall prepare the fish propagation plan after consultation with the Missouri DC. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations, and specific descriptions of how the agencies' comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

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The Commission reserves the right to require changes to the plan. This plan shall not be implemented until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 414. *Fish Protection Plan*. The licensee shall implement fish protection measures at the Osage Project, as specified in section 4 of Appendix A of the settlement agreement (agreement).

Fish Protection Working Group

The licensee shall establish a Fish Protection Working Group (Fish Group), as provided for in section 4.1 of Appendix A of the agreement. The Fish Group shall consist of representatives of the licensee, the U.S. Fish and Wildlife Service (FWS), the Missouri Department of Conservation (Missouri DC), and the Missouri Department of Natural Resources (Missouri DNR). The purpose of the Fish Group is to assist in developing a fish protection plan, as described below, and to work out key fish protection issues, including the elements of the fish protection plan.

Fish Protection Plan

Within 180 days of the issuance date of this license, the licensee shall file, for Commission approval, a Fish Protection Plan. The purpose of this plan is to identify and implement measures to protect the fishery resources of Lake of the Ozarks and the lower Osage River.

The fish protection plan shall include, at a minimum, the following measures and elements specified in sections 4.2.1, 4.3, and 4.4 of the agreement's Appendix A:

(1) the goals and objectives of the fish protection plan;

(2) a provision to modify off-normal operational procedures to spread high flows in excess of turbine capacity equally across 11 of the project's 12 spillway gates, or as many spillway gates as possible without affecting operation of the barrier net. This measure may be modified after its effectiveness is evaluated by the Fish Group and any modification is approved by the Commission;

(3) installing (a) a barrier net in front of the intakes at Bagnell Dam, or (b) other measures if the Fish Group determines that such other measures are more appropriate and cost-effective;

(4) a discussion of the design/construction, implementation, and operational issues associated with fish protection measures identified by the Fish Group, including a

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barrier net;

(5) (a) a final design for the barrier or net or other measure(s); (b) an operations and maintenance protocol for the measure(s); and (c) a schedule for installing and testing the barrier net or other fish protection measure(s), as well as filing the monitoring report described in item (6) below; and

(6) a provision for biological monitoring, in coordination with the FWS, the Missouri DC, and the Missouri DNR, before and after implementation of the barrier net or other fish protection measure(s) to adequately characterize the biological effectiveness of the specific fish protection measure.

The licensee shall prepare the fish protection plan after consultation with the FWS, the Missouri DC, and the Missouri DNR. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. The licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations, and specific descriptions of how the agencies' comments are accommodated by the plan. If the FWS, the Missouri DC, or the Missouri DNR objects to the plan, the licensee shall attempt to resolve the disagreement through consultation and amend the plan as necessary. If the disagreement can not be resolved, the licensee may, following the dispute resolution procedures outlined in section 4.6 of the agreement (attached as Appendix B to this license), file the proposed plan with the Commission, along with documentation of consultation and the disagreement, including any comments from the agencies. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. This plan shall not be implemented until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure or facility constructed in accordance with this article shall be shown on the as-built drawings filed pursuant to Article 302 of this license.

The licensee shall meet and consult annually with the FWS, the Missouri DC, and the Missouri DNR to discuss the effectiveness of the fish protection measure(s). The licensee shall prepare and submit annual reports to the FWS, the Missouri DC, and the Missouri DNR that are based on data collected through monitoring of the project and barrier net or other agreed-upon protection measure. If fish protection measures are determined to be effective, the licensee shall continue to operate the project in accordance with the Fish Protection Plan. If fish protection measures are determined to be ineffective, then the licensee shall take reasonable actions to improve the performance

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and/or effectiveness of protection measures and shall in good faith consider recommendations of the FWS, the Missouri DC, and the Missouri DNR to improve fish protection.

The licensee shall file the annual reports with the Commission, following consultation with the agencies, and include documentation of consultation and any dispute. Any modification to the Commission-approved fish protection plan shall be approved by the Commission prior to its implementation.

Article 415. *Reservation of Authority – Fishways*. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 416. *Recreation Enhancement Plan*. Within one year of the issuance date of this license, the licensee shall file, for Commission approval, a recreation plan for the Osage Project. The purpose of this plan is to enhance recreation resources at the project.

The plan shall include, at a minimum, the following:

(1) establishment and maintenance of a scenic viewing area at Willmore Point, and continued support and maintenance of (i) the museum in Willmore Lodge, (ii) the Bagnell Dam Scenic Overview facility, (iii) the Bagnell Dam Observation Area, and (iv) the Bagnell Dam Access (public boat ramp and parking area along the lower Osage River);

(2) measures at Lake of the Ozarks State Park, including:

(a) improvements at the Pa He Tse area that include (i) utility construction, (ii) breakwaters for safety and erosion control, (iii) a satellite law enforcement processing center, (iv) additional moorings and docks, (v) restroom improvements, and (vi) retaining walls and drainage enhancements;

(b) a new restroom at Grand Glaize;

(c) breakwaters and gabions at Anderson Cove, Pin Oaks Cove, and Mcubbins Point, as well as moorings, piers, and buoys in Anderson Cove;

(3) a map(s) that clearly identifies all existing and proposed recreation sites and public access, in relation to the existing project boundary;

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(4) an assessment of water safety issues, including any measures that may be implemented to address any identified problem; and

(5) provisions for monitoring (to begin within 5 years of license issuance) recreation use in the project area to ensure that (a) existing facilities are meeting public recreation needs, and (b) project lands and waters remain safe, and filing monitoring results every 6 years in conjunction with the filing date of the project's Form 80 Report. This monitoring provision shall encompass the recreation assessment included in section 8.3 of the agreement.

Monitoring reports include: (1) annual recreation use figures; (2) a discussion of the adequacy of recreation facilities at the project site to meet recreation demand; (3) a description of the methodology used to collect all study data; (4) if there is a need for additional facilities, a revised plan and schedule proposed by the licensee to accommodate recreation needs in the project area; (5) the entity or entities responsible for constructing, operating, and maintaining the facilities; (6) an assessment of water safety issues; (7) documentation of agency consultation and agency comments on the revised plan after it has been prepared and provided to the agencies; and (8) specific descriptions of how the agencies' comments are accommodated by the revised plan.

The recreation enhancement plan shall be developed in conjunction with the shoreline management plan (Article 417) and the historic properties management plan (Article 418). The licensee shall prepare the plan and monitoring reports after consultation with the Missouri DNR, the Missouri Department of Conservation, the National Park Service, and the U.S. Fish and Wildlife Service. The licensee shall include with the plan an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed shoreline management plan after it has been prepared and provided to the aforementioned parties, and specific descriptions of how their comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the recreation enhancement plan. This plan shall not be implemented until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the recreation enhancement plan, including any changes required by the Commission. Any structure or facility constructed, with the project boundary, in accordance with this article shall be shown on the as-built drawings filed pursuant to Article 302 of this license.

Article 417. *Shoreline Management Plan*. The shoreline management plan

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required by condition 8 of the water quality certification shall be filed, for Commission approval, within one year of the issuance date of this license. The purpose of this plan is to coordinate land-management activities along the project shoreline.

Consistent with the Commission's *Guidance for Shoreline Management Planning at Hydropower Projects dated April 2001* and the August 2006 final Environmental Assessment for the Osage Project, the plan shall include, at a minimum:

(1) a discussion of the plan's purpose, goals, and objectives;
(2) a discussion of key issues associated with shoreline management at the project, and how issues were addressed in developing the plan (*e.g.*, the public's right to access the entire shoreline, excluding project works, within the project boundary, as well as boating carrying capacity, navigation hazards, and the effect permitted structures have on boating safety);
(3) identification and description of land use along the project shoreline (taking into account the need to protect sensitive habitats, historic properties, and aesthetic resources), including (a) maps identifying the locations of land use types, as well as sensitive habitats, aesthetic areas, historic sites, etc., (b) a description of how the use classifications were defined and delineated, and (c) descriptions of activities and uses that will be allowed in those classifications;
(4) if the licensee chooses to file an amendment to remove land from the project boundary, a map showing the location of the lands proposed for removal, overlaid with its SMP shoreline classification map developed for item (3);
(5) a description of all types of permitted uses, the permit application process, and guidelines for applying for a construction permit within the project boundary;
(6) the licensee's existing programs (*e.g.*, Adopt-A-Shoreline program, vector control program, derelict dock removal program, shoreline protection hotline, etc.);
(7) measures to protect water, fish, wildlife, important habitat areas, and historic properties (*e.g.*, an updated permitting program addressing set backs, size, density, and placement of docks, piers and other in-water structures; an encroachment policy; buffer zones and vegetative buffer policy; restricting development in critical or sensitive habitats; shoreline stabilization requirements; dredging and excavation restrictions, such as restricting the timing of the activity and testing sediments for contaminates if dredging is proposed; and measures to control erosion associated with permitted development);
(8) a description of management policies (*e.g.*, shoreline structure permitting guidelines), monitoring programs, educational programs, and enforcement;

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(9) provisions for periodically reviewing and updating the shoreline management plan;
(10) a provision to undertake the shoreline erosion assessment for the Missouri State Park lands near the project specified in section 8.3 of the settlement agreement, with a schedule for filing a report, prepared after consultation with the Missouri DNR, documenting the findings of the assessment with the Commission. The report shall identify any actions the licensee may need to take to address any erosion problems attributed to project operations; and
(11) provisions for consultation with agencies and other interested parties in the implementation of the shoreline management plan.

The shoreline management plan shall be developed in conjunction with the historic properties management plan (Article 418) and recreation enhancement plan (Article 416). The licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service; the Department of the Army, Corps of Engineers; the National Park Service; the Missouri Department of Conservation; the Missouri Department of Natural Resources; the Advisory Council on Historic Preservation; and the shoreline management committee for the Osage Project. The licensee shall include with the plan an implementation schedule, documentation of consultation, copies of comments and recommendations on the completed shoreline management plan after it has been prepared and provided to the aforementioned parties, and specific descriptions of how their comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensees' reasons, based on project-specific information.

The Commission reserves the right to require changes to the shoreline management plan. This plan shall not be implemented until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee shall implement the shoreline management plan, including any changes required by the Commission.

Article 418. *Programmatic Agreement and Historic Properties Management Plan*. The licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the Missouri State Historic Preservation Officer for Managing Historic Properties That May Be Affected By Issuing a License to AmerenUE For the Continued Operation of the Osage Hydroelectric Project In Benton, Camden, Miller and Morgan Counties, Missouri (FERC Project No. 459)," executed on November 13, 2006, including, but not limited to, the Historic Properties Management Plan (HPMP) for the project. Pursuant to the requirements of this Programmatic Agreement, the licensee shall file, for Commission

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approval, a HPMP within 1 year of issuance of this order. The licensee shall prepare the HPMP after consultation with the entities listed in Stipulation I.A. of the Programmatic Agreement and the Advisory Council on Historic Preservation. 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 shall obtain approval from the Commission and the Missouri State Historic Preservation Officer (SHPO), 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 effect.

Article 419. *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 shall 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 shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall 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

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walls, the licensee shall: (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 reservoir 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 one million gallons per day from a project reservoir. No later than January 31 of each year, the licensee shall file three copies 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 Exhibit R or 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 five 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

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before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, 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 Director, 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 shall 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 shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or 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 shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall 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 shall not unduly restrict public access to project 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 shall be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

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

Article 501. *Hydropower Compliance*. (1) Within 6 months of the issuance date of this license, the licensee shall file a Hydropower Compliance Management Program (HCMP) for Commission approval. The HCMP shall include the following elements for each license requirement:

(a) the identification of, and schedule for, each action necessary to complete the license requirement;

(b) a schedule for the start and completion of the consultation process with each resource agency required to be consulted for each action necessary to complete the license requirement; and

(c) the identification of specific individuals in each agency that need to be consulted on each action necessary to complete the license requirement.

(2) The licensee shall file an annual report with the Commission, on or before each anniversary of the issuance date of this license, that demonstrates the progress made toward completion of each license requirement under the schedules presented in the HCMP.

Seven copies of all submissions under this article must be filed with the Secretary of the Commission. One copy of each submission must be filed with the agency consulted under element 1(b) above.

The Commission reserves the right to require the licensee to make modifications to the HCMP and to take other measures necessary to ensure compliance with the terms and conditions of the license.

(3) To assist the licensee in meeting its new license requirements, the licensee shall file a Compliance Plan. The Plan should include provisions for the following:

(a) Within 60 days from the date of licensing, establish a compliance tracking system which shall include, but not be limited to, clearly identifying due dates of license articles, identifying triggers for compliance issues (for example, the items that are required 90 days before construction), and identifying interrelated license requirements.

(b) Within 60 days from the date of licensing, establish a training program for all staff who work at the project to assist them in ensuring compliance with the license. Topics should include, but not be limited to, identification of project boundary, identification of permitted uses within the project boundary, and working knowledge of fisheries requirements, cultural resources issues, and engineering requirements. Full training on all initial license requirements shall take place for all staff with specialized training in specific fields for responsible staff.

(c) Within 60 days of license issuance, establish a system to file Hydro Project Non-Conformance Reports. If instances of non-compliance occur, the licensee shall be required to file with the Commission a report identifying each non-compliance incident, how it was remedied or plans to remedy the non-compliance incident, and how it will prevent reoccurrence. Reports shall be filed within 30 days of each occurrence.

(d) Within 60 days of license issuance, establish a system to file annual reports of all permits issued for non-project use of project lands at the project. The report shall include, but not be limited to a description of what facilities have been approved and what criteria in the permitting program the licensee applied as it issued the permit. This list shall be filed annually until the Shoreline Management Plan is filed and approved by the Commission.

(e) Within 60 days of license issuance, file a staffing plan with the Commission. This plan shall include but not be limited to, the identification of staffing needs at the project, a delineation of which staff position is responsible for which actions/plans/filing requirements. The plan shall also include an organizational chart and list of key contacts at the project in each program area (*i.e.*, fisheries, cultural resources, recreation, land use, engineering). The purpose of this plan is to ensure that the licensee maintains adequate staffing levels to ensure compliance with the license.

(F) The licensee shall 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.

(G) This order is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in section 313(a) of the FPA. 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, except as specifically ordered by the Commission.

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The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

J. Mark Robinson
Director
Office of Energy Projects

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Form L-3
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION
TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING NAVIGABLE
WATERS OF THE UNITED STATES

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

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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

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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.

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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 any 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 United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and 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 Secretary of the Army may prescribe in the interest of navigation, and 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 Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other 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

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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.

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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.

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Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. 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

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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 27. 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.

Article 28. 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.

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APPENDIX A

MISSOURI DEPARTMENT OF NATURAL RESOURCES CERTIFICATION UNDER SECTION 401 OF THE FEDERAL CLEAN WATER ACT

This office certifies that the continued operation of the Bagnell Dam will not cause the general or the numeric criteria to be exceeded nor impair beneficial uses established in the Water Quality Standards, 10 CSR 20-7.031, provided the following conditions and schedule are adhered to:

1. Operational Measures to Attain Water Quality Standards. AmerenUE shall undertake the following operational measures to attain Dissolved Oxygen (DO) level of 5.0 parts per million (ppm), as may be hereafter revised by MDNR pursuant to Clean Water Act section 303 (c), § 33 U.S.C. 1313(c), for the Lower Osage River. These measures shall include appropriate physical measures as a result of the Alternative Technologies Assessment and Plan as provided herein.

   A. Upon issuance of a final, non-appealable new license, AmerenUE shall release the Prescribed Minimum Flow pursuant to Article 3. The prescribed minimum flow established in Article 3 of the new license is hereby incorporated into this Water Quality Certification by reference. AmerenUE shall also implement the re-aeration plan and procedures as established in the following conditions of this Water Quality Certification.

      (1) When the DO levels as measured at both a penstock intake of a main plant turbine and the Highway 54 bridge are below 5 mg/l following a period of sustained generation in excess of one hour, the Licensee shall release a re-aeration flow as follows:

         a. When the tailwater elevation is above 556 feet MSL, the Licensee shall release the required minimum flow.

         b. If the required minimum flow is less than 6,000 cfs when the tailwater elevation is at or below 556 feet MSL, the Licensee shall release a flow of 6,000 cfs with a DO level greater than 5 mg/l for two hours, or the length of the generation run, whichever is shorter in length. If the required minimum flow is greater than 6,000 cfs when the tailwater is at or below 556 meet MSL, the Licensee shall continue to release the required minimum flow.

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(2) In 2005 and each subsequent year, and on the basis of evaluation of monitoring data, AmerenUE or MDNR may propose modifications to these operational requirements in the form of a Memorandum of Agreement (MOA) as agreed to by both parties.

2. Alternative Technology Assessment and Dissolved Oxygen Enhancement Plan. By June 1, 2005, AmerenUE shall undertake a preliminary economic and feasibility assessment of alternative technologies designed to enhance the DO level in the lower Osage River. Such assessment shall include, at a minimum, the follow technologies: 1) enhanced venting using forced air blowers, 2) hub baffles, 3) raising the power plant intakes, 4) use of a downstream weir, and 5) upstream oxygenation methods. Within six (6) months following completion of the assessment, and not later than December 31, 2005, AmerenUE shall propose a Dissolved Oxygen Enhancement Plan based on the results of the technology assessment for approval by MDNR. Through the measures in the approved plan, or as provided elsewhere in this Water Quality Certification or the Settlement Agreement, AmerenUE shall attain the DO level of 5 ppm, or as otherwise provided by law, in the lower Osage River by June 1, 2009, and thereafter. Failure to meet this standard by June 1, 2009, may result in MDNR's suspension, modification, or revocation of this Water Quality Certification and that any such amendment may include the development of alternative conditions, standards or payment for each day of non-compliance.

3. Other Measures to Attain DO Level. In addition to the operational measures required by herein, AmerenUE shall undertake the following measures to modify the project facilities. These measures may be amended in the Dissolved Oxygen Enhancement Plan (DOEP).

   A. By June 1, 2005, AmerenUE shall install a draft tube door vent on Unit 6 and operate the unit using this vent through the end of October 2005 as a pilot test. The results of this pilot test and the potential use of draft tube door vents on Units 2, 4 and 8 will be included in the DOEP.

   B. By June 1, 2005, AmerenUE shall assess the technical and economic feasibility of modifying the intake structure to increase DO in the turbine discharge on the main and house intakes, based on modeling work performed in 2004. If the assessment demonstrates such feasibility, by June 1, 2006, it shall install an intake structure on one main or house unit on a pilot basis. If monitoring results during this pilot phase demonstrate positive water quality impacts as determined by MDNR and AmerenUE, AmerenUE shall install such intake structures on the appropriate remaining units by June 1, 2008.

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C. AmerenUE has developed a conceptual design for a control system to optimize the use of vents to enhance DO and unit efficiency. AmerenUE shall implement this system by December 31, 2006. By December 31, 2005, the Licensee shall investigate aeration capacity and other relevant characteristics of alternative turbine designs or up grade of the two main units and two house units. It shall propose a design, if any, which is expected to provide beneficial water quality impacts. Following any required approval by MDNR and the Commission, or by June 1, 2008, whichever is later, it shall install or modify the turbines as appropriate.

4. Monitoring Requirements. Within six months of issuance of this Water Quality Certification, AmerenUE shall propose a Water Quality Monitoring Plan for MDNR's approval. The plan shall include: (A) monitoring protocols as described below; (B) other appropriate protocols for evaluation, testing, or implementation of any physical or operational measures intended to enhance water quality in the lower Osage River; and C) provision for terminating monitoring if the operational and other measures are proven to be adequate to attain Water Quality Standards.

A. Dissolved Oxygen

(1) AmerenUE shall establish and operate monitoring stations at the Highway 54 Bridge and in the vicinity of the Highway 17 Bridge (approximately river mile 65).

(2) AmerenUE shall take hourly measurements at both locations May 1 through October 31.

(3) By June 1, 2005, AmerenUE shall submit an analysis to MDNR in support of AmerenUE's contention that DO releases from Bagnell Dam are in full compliance with applicable Water Quality Standards during the remainder of the year (November 1 through April 30). The analysis will include: A) a summary of DO monitoring data collected from November 2001 through April 2002; B) a technical review of lake stratification mechanisms and principles; C) a review of relevant historical temperature/depth profile data collected firm the upstream face of the dam; and D) a proposal for verification based on periodic monitoring of turbine intake water. Following review of this analysis, implementation of either the proposed verification monitoring plan or an alternative monitoring plan, as approved by MDNR, may be required.

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(4) Monitoring as specified in the paragraphs above shall continue until the monitoring results for five consecutive years show compliance with Water Quality Standards. Thereafter, monitoring shall continue only at the Highway 54 Bridge during May 1 through October 31; provided that the Reach 6 station shall be re-established if results demonstrate non-attainment of the DO level.

B. Macro Invertebrates

(1) During each year of the New License term, AmerenUE shall conduct a macro-invertebrate study at Stations 3 (river miles 32.5-41) and 7 (river miles 75-80). The choice of dates for such study in any given year shall be between September 15 and October 14.

(2) AmerenUE shall collect samples at each location using kick nets in riffles and/or shallow runs with gravel/cobble substrate. It shall conduct 4 replicates of six kick net samples at each of the two locations.

(3) AmerenUE shall compare the presence and abundance of taxa at these locations using the Quantitative Similarity Index for Taxa (QSIT),
$QSIT_{\mathrm{ab}} = \sum \min (P_{ia}, P_{ib})$

where:

P_{ia} = the relative abundance of species i at Station a,

P_{ib} = the relative abundance of species i at Station b, and

Min (P_{ia}, P_{ib}) = the minimum relative abundance of species i at Station a or b.

The expected result is >47% similarity between the sites during the fall sampling events as a running average over the previous five (5) years.

(4) AmerenUE shall also use Ephemeroptera and Plecoptera Taxa to evaluate trends in taxa richness. If there is a downward trend in taxa richness at Station 3, AmerenUE shall propose a revision to the Monitoring Plan for MDNR's approval. The level of taxonomic identifications used to calculate QS_ and EP Taxa shall be consistent with the MDNR standard operating procedure, MDNR WQMS-209 (Taxonomic Levels for Macroinvertebrate Identifications).

C. Further Biological Monitoring Measures:

(1) AmerenUE shall conduct adequate biological monitoring before and after implementation of fish protection measure(s) to adequately characterize the biological need for specific fish protection plan and to evaluate their positive and/or negative impacts.

(2) AmerenUE shall cooperate with MDNR and MDC to assess the integrity of downstream fish populations. From September 15th through October 15th of each year of the New License term, AmerenUE shall provide suitable flows at appropriate times in the lower Osage to facilitate fish sampling efforts. Appropriate times will be those deemed necessary to conduct such sampling as determined by the agencies.

(3) AmerenUE shall provide MDNR and MDC with access to areas within its control necessary to evaluate matters related to the protection of fisheries and other aquatic species in the Lake and lower Osage.

5. Reporting. AmerenUE shall submit all reports to Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102.

A. AmerenUE shall submit reports on the DO monitoring results on a quarterly basis at least until June 1, 2009. Such quarterly reports shall include, at a minimum, a summary of actions taken and any actual or anticipated variance from the requirements stated herein and the Dissolved Oxygen Enhancement Plan. If the results demonstrate that the DO level has been attained by that date and is expected to continue to be attained, the requirement for quarterly reporting shall terminate.

B. AmerenUE shall submit annual reports of monitoring results to MDNR and FERC.

6. Water Quality Sampling for Lake Coves. For five (5) years following issuance of Water Quality Certification, AmerenUE shall provide $15,000 per year to MDNR to conduct bacterial sampling in lake coves. AmerenUE agrees to submit these funds by check made payable to the Natural Resource Damages Fund. Checks shall be mailed to Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102, upon the receipt of the Water Quality Certification. Annual payment, thereafter, shall be submitted by July 15 of each year.

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7. Storm Water Pollution Prevention Plan. Within six months of issuance of this Water Quality Certification, AmerenUE shall propose a Storm Water Pollution Prevention Plan for approval by MDNR. The plan shall include measures to educate the public as to best management practices for storm water control from development around the river and Lake of the Ozarks. It shall also include measures to prevent and control nonpoint source pollution from development around the river and Lake of the Ozarks. Such plan shall include, but is not limited to, commitments (including expeditious implementation schedules) to create riparian buffers, corridors, cove wetlands, and lakeside buffers on Project Lands under AmerenUE's current and future control and methods to enhance shoreline clean-ups.

8. Permitting and Shoreline Management Plan. Within six months of the issuance of this Water Quality Certification, AmerenUE shall propose a Permitting and Shoreline Management Plan for approval by MDNR. This plan shall include, but is not limited to, commitments (including expeditious implementation schedules) to identification and protection of sensitive habitat; measures to assure compliance with federal and state permitting requirements for activities on project lands; and development of educational programs.

   A. Care shall be taken to keep machinery out of the waterways. Fuel, oil, other petroleum products, equipment and any solid waste shall not be stored below the ordinary high water mark at any time or in the adjacent floodway beyond normal working hours. All precautions shall be taken to avoid the release of wastes, fuel or any toxic or harmful material to streams and other adjacent waterbodies as a result of this operation. Petroleum products spilled into any waterbody or on the banks where the material may enter waters of the state shall be immediately cleaned up and disposed of properly. Spills of petroleum must be reported as soon as possible to the Missouri Department of Natural Resources' 24-hour Environmental Emergency Response number at (573) 634-2436 and in accordance with federal and state laws and rules regarding petroleum products.

   B. Clearing of vegetation shall be the minimum necessary to accomplish the activity, and shall be done in a manner outlined in the NPDES Storm Water Protection Plan so as to minimize erosion.

9. Further Procedures

   A. Upon MDNR’s approval, any plan or other document required by Article 5 shall become a condition of the Water Quality Certification. Failure to meet the conditions in Article 5 may result in MDNR’s suspension, modification, or revocation of the Water Quality Certification; and that any such amendment may

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include the development of alternative conditions, standards or payment for each day of non-compliance.

B. If monitoring results demonstrate that water quality criteria for DO or for aquatic life may not be attainable as a result of factors within AmerenUE's reasonable control, AmerenUE may conduct a Use Attainability Analysis or seek site specific criteria in accordance with state and federal laws. If the beneficial uses(s) or water quality criteria are changed pursuant to federal and state law, MDNR will amend the Water Quality Certification as appropriate.

Pursuant to Chapter 644.052.9, RSMo, commonly referred to as the Missouri Clean Water Law, this 401 Water Quality Certification shall be valid only upon payment of a fee of seventy-five dollars ($75.00). The enclosed invoice contains the necessary information on how to submit your fee. Payment must be received within ten (10) days of receipt of this certification. Upon receipt of the fee, a copy of the certification will be mailed to the applicable office of the Corps of Engineers to inform them the certification is now in effect and final.

Water Quality Standards must be met during any operations authorized by these permits. If you have any questions, please contact Mr. Don Boos of the NPDES Permits and Engineering Section at (573) 751-1404, e-mail at *don.boos@dnr.mo.gov*, or by mail at Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176.

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APPENDIX B

SETTLEMENT AGREEMENT CONCERNING THE RELICENSING OF THE OSAGE HYDROELECTRIC PROJECT, FERC PROJECT NO. 459

SETTLEMENT AGREEMENT
RELEVANT EXCERPTS FROM SECTION 4.0 – IMPLEMENTATION OF SETTLEMENT

4.6. Dispute Resolution. Unless otherwise provided in this Settlement, including Appendices A and B, any dispute among the Parties regarding any Party's performance under the Settlement shall be the subject of a non-binding dispute resolution procedure. The Parties participating in a dispute resolution procedure ("Disputing Parties") shall cooperate in good faith to promptly schedule, attend, and participate in the process. The Disputing Parties shall devote such time, resources, and attention to the procedure as are necessary to resolve the dispute at the earliest time possible. Each Disputing Party shall implement promptly all final agreements reached, consistent with its applicable statutory and regulatory responsibilities. Nothing in this section is intended or shall be construed to affect or limit the authority of the Commission, or other agencies with jurisdiction over a matter in dispute, to resolve a dispute brought before it in accordance with its own procedures and applicable law.

4.6.1. Procedure. Unless otherwise provided in this Settlement, including Appendices A and B, a Disputing Party shall give notice within thirty days of the Party's actual knowledge of the act, event, or omission that gives rise to the dispute, unless this Settlement provides otherwise. At a minimum and in any dispute subject to this procedure, the Disputing Parties shall hold two informal meetings within 30 days after Notice, to attempt to resolve the disputed issue. If the informal meetings do not resolve the dispute, the Disputing Parties shall select a mediator from the sources described in Rule 604(c)(3) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.604(c)(3) (2004). The mediator shall mediate the dispute during the next sixty days after his or her selection. Any of these time periods may be reasonably extended or shortened by agreement of the Disputing Parties, or as necessary to conform to the procedure of an agency or court with jurisdiction over the dispute. Unless otherwise agreed among the Disputing Parties, each Disputing Party shall bear its costs for its own participation in the procedure.

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SETTLEMENT AGREEMENT
APPENDIX A - PROPOSED CONTENT OF LICENSE CONDITIONS, SECTIONS 1, 3, AND 11

Appendix A states the Licensee's obligations to undertake measures to protect, mitigate, and enhance the natural resources affected by the Project. The Parties request that the Commission incorporate these obligations into the New License without material modification.

1. Definitions Applicable to Appendix A

The following definitions apply to Appendix A and are integral to the interpretation of the obligations and requirements set forth herein. The Parties request that the Commission adopt the following definitions, as appropriate, into articles of the New License.

(a) Cubic Foot per Second (cfs). Flow rate as measured by the volume of water (cubic feet) passing an observation point per second.

(b) Daily Lake Inflow. Daily inflow, measured in second foot days (sfd), calculated as *Outflow + Change in Lake Storage*. Outflow is the total colume (sfd) of the previous day's Project Discharge and Leakage. *Change in Lake Storage* is the positive or negative change in Lake volume (sfd) calculated from the change in Lake Elevation between 000 hours and 2400 hours the previous day; and it includes rainfall on the Lake, all inflow, and evaporation.

(c) Elevation. Vertical distance, measured in feet, above mean sea level using 1931 AmerenUE datum.

(d) Emergency Low-Level Limit. The minimum Lake Elevation permitted under the New License.

(e) Guide Curve. Is defined as a series of target elevations for each day over the course of a given year for Lake of the Ozarks with the intent that Lake levels be maintained in accordance with the guide curve during normal operation. The parties concur that the guide curve is not to be used or interpreted as a rule curve.

(f) Hourly Equivalent Minimum Flow. A variance to the Prescribed Minimum Flow such that the volume of water released in response to system demand during a one-hour period is equivalent to or greater than the volume of water

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that would have been released in that same one-hour period as a result of continuous release of the Prescribed Minimum Flow.

(g) Instantaneous Minimum Flow. The lowest instantaneous flow, measured in cubic feet per second, which occurs during a specified period of time.

(h) Lake Elevation. The elevation of the Lake as measured at Bagnell Dam.

(i) Low-Level Limit. Minimum Lake level for Normal Operations.

(j) Minimum Flow Cap. Upper limit of a Prescribed Minimum Flow.

(k) Project Discharge. Flow discharged from the Project powerhouse or spillway.

(l) Prescribed Minimum Flow. An Instantaneous Minimum flow as derived from the Percent Minimum Flow Schedule. If the Prescribed Minimum Flow is determined as a percentage of 7DA Lake Inflow, the result percentage is converted from second foot days to cubic feet per second.

(m) Second Foot Day (sfd). The volume of water that results from release of one cfs every second of the day.

(n) Seven-Day Rolling Average (7DA) Lake Inflow. Rolling average of Daily Lake Inflow for the previous seven days, with each day being defined as 0000 hours to 2400 hours.

3. Minimum Flow Schedule

The Licensee shall operate the Project in compliance with the minimum flow schedule stated herein.

3.1 Schedule. The Licensee shall discharge the Prescribed Minimum flow for a given day, lasting for a twenty-four hour period beginning at approximately 0900 hours, in accordance with the following schedule.

February 15 – April 30. The Prescribed Minimum flow shall be 40% of the 7DA Lake Inflow or 3,500 cfs, whichever is greater. It shall be 900 cfs if the 7DA Lake Inflow is less than 3,500 sfd.

May 1 – June 30. The Prescribed Minimum flow shall be 35% of the 7DA Lake Inflow when 7DA Lake Inflow equals or exceeds 22,000 sfd. The minimum flow shall

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be 25% of the 7DA Lake Inflow or 900 cfs, whichever is greater, when the 7DA Lake Inflow is less than 22,000 sfd.

July 1 – February 14. The Prescribed Minimum Flow shall be 20% of the 7DA Lake Inflow or 900 cfs, whichever is greater.

3.2 Hourly Equivalent Minimum Flow. Project Discharge shall not be less than the Prescribed Minimum Flow on an instantaneous basis, unless: (A) the Licensee discharges the Hourly Equivalent Minimum Flow as provided in Article 3.2.1 below or (B) an Exception stated in Article 3.3 is in effect.

3.2.1 Prescribed Minimum Flows less than 3,500 cfs shall be a continuous discharge. When Prescribed Minimum flow is provided as an Hourly Equivalent Minimum Flow, such flow shall be provided for each hour of the day between 000 hours and 2400 hours. Discharge during an Hourly Equivalent Mini9mum Flow shall not fall below 900 cfs.

3.2.1.1 Any Hourly Equivalent Minimum flow must be equial to or exceed the Prescribed Minimum Flow.

3.2.1.2 The Licensee will develop computer programs to control Hourly Equivalent minimum Flow and will demonstrate their functionality to the MDNR, MDC, and FWS.

3.2.1.3 The Highway 54 Gage will be used to track compliance. During each hour of a given day, the Instantaneous Minimum flow at the Highway 54 gage shall not be less than the prescribed Minimum flow minus a designated percentage of that prescribed flow. This percentage will be calculated based on a linear slope from 10% at 3,500 cfs to 20% at 20,000 cfs. For flows greater than 20,000 cfs, the percentage will be 20% of the Prescribed Minimum Flow.

3.2.2 The Licensee may not release an Hourly Equivalent Minimum Flow when the Prescribed Minimum Flow is less than 3,500 cfs.

3.3. Exceptions to the Prescribed Minimum Flow

3.3.1 Minimum Flow Cap. Notwithstanding Articles 3.1 – 3.2, the licensee shall not be required to discharge minimum flow in excess of 3,500 cfs from July 1 – July 15, or 2,500 cfs from July 16 – February 14.

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3.3.2 The minimum flow schedule may be adjusted downward to a flow equaling the maximum hydraulic discharge if the Prescribed Minimum Flow value exceeds maximum hydraulic discharge.

3.3.3 In the event electrical or mechanical equipment used to provide minimum flow malfunctions or fails, the Licensee may deviate from the minimum flow schedule for a period of time not to exceed two (2) years.

3.3.4 Flood Ramp Down. An Exception to the Prescribed Minimum Flow shall be initiated (Day 1) when all of the following criteria are met: (A) HST elevation is below 710 and falling; (B) HST's pool has been above 710 feet; (C) 7DA Lake Inflow exceeds 25,000 sfd; (D) projected Lake Inflow for the current day is less than 30,000 sfd; and (E) projected Project Discharge for the current day is less than 30,000 sfd. In that circumstance, the Licensee shall discharge a minimum flow calculated as a percent of Lake of the Ozarks 7DA Lake Inflow, as follows:

Day 1 = 70%
Day 2 = 60%
Day 3 = 50%
Day 4 = 30% (July 1 – Feb 14 only).

After the above 3- or 4-day period, the Prescribed Minimum Flow shall be implemented.

3.3.5 Suspension and Resumption of Flood Ramp Down. A Flood Ramp Down shall be suspended and Project Discharges will be in accordance with other provisions as contained in this Appendix A, if significant flooding occurs as shown by: (a) Harry S. Truman (HST) pool elevation rising above 710 feet; or (b) projected Project Discharge for the current day being equal to or greater than 30,000 sfd. The Flood Ramp Down cycle will resume at Day 1 when the Flood Ramp Down criteria are once again met.

The Flood Ramp Down cycle shall be suspended if the U.S. Army Corps of Engineers requests that the Licensee reduce Project Discharge to prevent downstream flooding, and will resume at Day 1 when the Flood Ramp Down criteria are once again met.

3.3.6 Accommodation of Island Farming. The Licensee may deviate from the Prescribed Minimum Flow for brief periods as necessary to accommodate access to islands in the Lower Osage River for the purpose of farming including ground

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preparation, planting, cultivation, spraying, and harvesting crops. Any such deviation shall be based upon agreement with the MDNR, MDC, FWS, and the impacted property owners. Property owners will be required to coordinate together and provide specific times for needed access. This consultation shall provide the basis for a report as to duration of the deviation, taking into consideration the hydrologic and other relevant circumstances of the given year. Such report shall be filed annually with the Commission for informational purposes.

3.3.7 Other Temporary Deviations. The Licensee may modify the Prescribed Minimum flow in response to emergencies beyond the control of the Licensee. Triggering events may include, but are not limited to, the following: a Lake level below the Low-Level Limit as a result of drought; downstream flooding, including potential flood impacts related to the Missouri River and Osage tributaries; any emergency situation related to dam safety, human life and property, or rescue; any natural disaster such as earthquakes, tornadoes, ice storms; or electrical system emergencies such as rolling brown outs or black outs. The Licensee shall restore the Prescribed Minimum Flow as soon as practicable. The Licensee shall notify the Commission, FWS, MDC, and MDNR of such deviation, in advance if practicable and otherwise not later than 10 days after the triggering event. Such report shall include an explanation of the basis and duration of the deviation, and the corrective action if any. In addition, the Licensee may modify the Prescribed Minimum Flow for a one-month period upon written agreement with the FWS, MDC, and MDNR. Any such agreement shall report the basis and duration of the deviation, taking into consideration the hydrologic and other relevant circumstances of the given year. Such agreement shall be filed with the Commission for informational purposes.

3.4. Monitoring. On a daily basis the Licensee shall collect and publish the information used to determine the Prescribed Minimum Flow. The information will be published on the Licensee's website in a current, downloadable format.

3.4.1 The Licensee shall cooperate with the USGS to ensure the USGS gate no. 06926000 (Osage River near Bagnell, MO) at Highway 54 is maintained and upgraded to collect data in fifteen-minute collection intervals, then transmit those data on hourly intervals for real-time availability on the USGS or Licensee website.

3.4.2 In addition, the Licensee shall calculate and publish the following data on a daily basis on its web-site: (A) Daily HST level recorded at 2400 hours; (B) HST outflow (sfd) for the previous day; (C) Lake Ozark Daily Lake Inflow (sfd) from the previous day; (D) 7DA Lake Inflow (sfd); (E) Prescribed Minimum flow (cfs) to be initiated at approximately 0900 hours; (F) Project Discharge as an hourly average (cfs) for each hour of the previous day; (G) Project Discharge volume (sfd) for the previous

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day; and (H) anticipated Project discharge volume for current day. This information will be published in a current, downloadable format.

3.4.3 The Licensee shall publish, in a current downloadable format on the USGS or Licensee's website, real-time Lake Elevation data which have been collected on an hourly basis.

11. Unit Upgrade

The Licensee will upgrade two additional main units and the two house units such that the licensed project will consist of four original main units, four upgraded main units and two upgraded house units (4-4-2 configuration). The Parties agree not to oppose the Licensee's request to the Commission for removal of the flow limitation imposed by the Commission with the November 13, 2000 Order Amending License, so that the Project will be afforded the maximum hydraulic discharge of the 4-4-2 configuration approximately 37,500 cfs at 90' head). The Licensee will continue to operate the Osage Project as a peaking and load regulation facility.