

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D.C. 20426

August 29, 2022

OFFICE OF ENERGY PROJECTS

Project No. 2628-066 – Alabama
R.L. Harris Hydroelectric Project
Alabama Power Company

VIA FERC Service

Angie Anderegg
Harris Relicensing Project Manager
Alabama Power Company
600 North 18th Street, P.O. Box 2641
Birmingham, AL 35203-8180

Reference: Additional Information Request

Dear Ms. Anderegg:

On June 15, 2022, Alabama Power Company (Alabama Power) filed responses to Commission staff's additional information requests (AIRs) issued on December 23, 2021, and February 15, 2022. Based on the responses to the AIRs and ongoing review of the associated filings,¹ we need additional information on your relicense application for this project. Pursuant to section 4.32(g) of the Commission's regulations, please provide the additional information requested in the enclosed Schedule A within 120 days from the date of this letter. If the requested information causes any part of the application to be inaccurate, that part must be revised and refiled by the due date.

Within 5 days of receipt, provide a copy of this letter to all agencies you will consult in response to this additional information request. Then, when you file the requested information with the Commission, you must provide a complete copy of the information to each agency consulted under 18 C.F.R. section 16.8 of the Commission's regulations.

The Commission strongly encourages electronic filing. Please file the requested information using the Commission's eFiling system at <http://www.ferc.gov/docs-filing/efiling.aspx>. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

¹ Responses to the AIRs included revisions to various sections of the license application and final study reports.

In lieu of electronic filing, you may submit a paper copy. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, D.C. 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, Maryland 20852. The first page of any filing should include docket number P-2628-066.

Please contact Sarah Salazar at (202) 502-6863, or via email at sarah.salazar@ferc.gov, if you have any questions.

Sincerely,

Stephen Bowler, Chief
South Branch
Division of Hydropower Licensing

Attachment: Schedule A – Request for Additional Information

SCHEDULE A
REQUEST FOR ADDITIONAL INFORMATION

Developmental Resources

1. In its June 15, 2022 response to Commission staff's February 15, 2022, AIR Item #2, Alabama Power provided a mostly qualitative evaluation of four potential mechanisms to release minimum flows greater than 300 cubic feet per second (cfs) (*i.e.*, 350, 400, and 450 cfs) to the Tallapoosa River downstream of Harris Dam. Alabama Power's proposal to release a continuous 300-cfs minimum flow below the dam assumes that all inflow to the project would be used for generation and that the existing low-level intake would be used to provide flows to the proposed Francis-type minimum flow turbine. The low-level intake is located below the thermocline² and therefore is not expected to improve the water quality in downstream releases from the project because it would withdraw colder, less oxygenated water from the hypolimnion³ when Harris Lake is stratified.

In comparison, a minimum flow release mechanism using a high-level intake would withdraw warmer, more oxygenated water from the epilimnion⁴ from April 1 through October 30, and potentially improve dissolved oxygen (DO) levels and water temperatures in the Tallapoosa River downstream from Harris Dam. A high-level intake could be implemented through a variety of release mechanisms including a siphon-system, pump-system, modified gate release, modifications to the proposed minimum flow turbine-unit, or some combination of the above. In order for staff to fully evaluate the feasibility of different minimum flow release mechanisms, including a high-level intake system, and the effects on aquatic resources downstream, please provide the following:

- (a) for each mechanism (*i.e.*, a modified minimum flow turbine-unit, siphon-system, pump-system, and modified-gate release), a description of structural modifications to the dam or other project facilities to accommodate a high-level intake, the feasibility (time, cost, effectiveness, etc.) of the modifications, and any specific safety concerns associated with such modifications;

² In a lake or other water body, thermally stratified layers of water can form during the summer. The thermocline is the transition layer between warmer water at the surface and cooler and deeper water below it.

³ The hypolimnion is the lower layer of water in a thermally stratified lake or other body of water. It is typically cooler and relatively stagnant compared to the surface water.

⁴ The epilimnion is the upper layer of water in a thermally stratified lake or other body of water. It is typically warmer and more oxygenated than the hypolimnion.

- (b) a conceptual plan for a minimum flow turbine system utilizing a high-level intake to pass up to 300 cfs, including: (1) the location, number, size, and type of turbine(s) that would be used; (2) an estimate of the annual generation (in kilowatt-hours) and the hydraulic capacity of each turbine unit (in cfs), if different from the license application proposal (300 cfs); (3) the location and description (composition, dimensions, configuration, etc.,) of the intake and discharge conveyance structures; (4) the elevation necessary for an intake structure to operate during winter pool surface water elevation of Harris Lake; (5) a description of the estimated installation costs, with itemized costs for the flow release mechanism and associated project modifications; and (6) an estimate of operation and maintenance (O&M) costs, including energy gains/losses (due to differences in head);
- (c) a conceptual plan for a siphon-system utilizing a high-level intake that could pass up to 300 cfs. In Alabama Power's response to staff's February 15, 2022 AIR Item #2, use of a siphon was the only mechanism evaluated for providing minimum flows that would draw from the epilimnion. Alabama Power states that this strategy was determined to be physically feasible on the east side of the dam in 2003, but required an estimated cost of \$10,000,000 for installation and \$75,000 for annual O&M. Alabama Power provided few details on the potential design for a siphon system, and has not evaluated the feasibility and cost if a siphon system was deployed to provide minimum flows only during the summer months when Harris Lake is at full pool elevation. The plan should include: (1) a detailed description of the syphon system including the size, depth, and location of the intake and piping; (2) an itemized list of estimated costs for installation of the mechanism and any modifications to existing project features; and (3) estimated O&M costs, including energy loss from the minimum flow release, between continuous operation of the system versus operation solely when Harris Lake is at full pool;
- (d) a conceptual plan for a pump-system utilizing a high-level intake to pass 150 cfs and 300 cfs. The plan should include: (1) a detailed description of the pump-system including the size, depth, and location of the intake and piping; (2) an itemized list of estimated costs for installation of the mechanism and any modifications to existing project features; and (3) estimated O&M costs, including energy losses to operate the pumps, energy losses to pass the minimum flow, and any cost savings from operating the pumps only at full pool versus one that would be operated continuously; and
- (e) a conceptual plan for modifying an existing gate in the dam to accommodate a high-level release of 150 cfs to 300 cfs. The plan should include: (1) a detailed description of the gate including the size, depth, and

location; (2) the estimated cost for modifying the gate, with itemized costs for the changes to the gate and for modifying Harris Dam; and (3) estimated O&M costs, including energy losses to pass the minimum flow.

- Alabama Power developed Environmental Fluid Dynamics Code (EFDC) and Hydrologic Engineering Center's River Analysis System (HEC-RAS) models during the pre-filing phase of the relicensing process to provide quantitative estimates of the potential environmental benefits from the proposed downstream release alternative (*i.e.*, the proposed minimum flow turbine-unit with a low-level intake) to water temperatures and DO concentrations in the Tallapoosa River downstream from Harris Dam. In order to help us understand the potential environmental benefits of using a high-level intake to improve water quality downstream from Harris Dam, please use the EFDC and HEC-RAS models to evaluate the effects of each of the scenarios in Table 1 below. Please include the effects on water temperature and DO at points in the immediate tailrace area, and 7 miles downstream from the project. In addition, please update exhibits throughout the license application to reflect these scenarios.

Table 1. R.L. Harris AIR Model Runs – Minimum Flow (cfs) Scenarios

Scenario	Low Level Minimum Flow Turbine (as proposed)		High Level Minimum Flow Turbine Intake		High Level Non-Generation Source (Siphon/Pump/Gate Mod.)		Total Volume	
	May 1 - Oct 31	Nov 1 - Apr 30	May 1 - Oct 31	Nov 1 - Apr 30	May 1 - Oct 31	Nov 1 - Apr 30	May 1 - Oct 31	Nov 1 - Apr 30
1	0	0	300	300	0	0	300	300
2	0	0	0	0	300	0	300	0
3	300	300	0	0	150	0	450	300
4	300	300	0	0	150	150	450	450
5	0	0	0	0	300	300	300	300
6	0	0	150	300	150	0	300	300
7	0	0	300	300	150	0	450	300

- Please provide an assessment of the environmental effects to downstream aquatic resources (*i.e.*, fish, macro-invertebrates, mussels) of using a high-level intake to pass warmer, more oxygenated water from the epilimnion that could increase average DO and water temperature in the Tallapoosa River. Please use the results of the analysis of releasing water from above the thermocline, including the model runs, in AIR No. 2 above to provide an assessment for each scenario.
- In response to Commission staff’s February 15, 2022, AIR Item #11, Alabama Power states that the net head for the proposed minimum flow turbine-unit would

be 115 feet. Please revise Figure 5-2 of Exhibit E in the license application to include the elevation of the center-line of the minimum flow unit runner.

5. The project was originally licensed to operate in peaking mode without the Green Plan pulses. Over the course of the license term, Alabama Power modified project operation in accordance with the Green Plan. The proposed operations include provisions to: (a) release a continuous, minimum flow of 300 cfs through a new, minimum flow turbine-unit at Harris Dam; (b) discontinue implementation of Green Plan pulses, except when the minimum flow turbine-unit is out of service; (c) generate power in a peaking mode of operation; and (d) maintain the existing rule curve of Harris Lake during a new license term. While the license application includes a copy of the existing Green Plan schedule and protocols, it does not include the same information for the proposed peaking mode of operation. In order for staff to fully understand and analyze the operational changes proposed, please provide a detailed explanation of the proposed peaking operation, including use of the minimum flow turbine-unit, in terms of peaking cycles (magnitude of discharge, timing and frequency of peaking cycles, duration of peaking events, etc.).
6. In the *R.L. Harris Water Control Manual (Appendix I of the Alabama-Coosa-Tallapoosa Water Control Manual, EXHIBIT C MEMORANDUM OF UNDERSTANDING BETWEEN CORPS OF ENGINEERS AND ALABAMA POWER COMPANY)*, there is a highlighted note: “INSERT SIGNED COPIES: MOU DATED 27 SEP 1972; REVISION TO MOU DATED 11 OCT 1990; AND 2011 “ATTACHMENT.” Please provide copies of these documents in order for staff to fully understand project operation(s) within the greater Alabama-Coosa-Tallapoosa Basin.
7. On November 22, 2021, Alabama Power provided a geographic information system (GIS) shapefile labeled *Harris_Baseline_Project_Boundary* (2021 baseline project boundary) as part of its license application.⁵ The project boundary depicted in the 2021 baseline project boundary shapefile differs from the shapefile filed with the approved Exhibit G drawings for the project on March 17, 2017.⁶ Based on our review, it appears that the 2021 shapefile uses a different elevation,

⁵ This filing was over 50 megabytes, which exceeds the file size limit for the Commission’s e-library system. Therefore, Alabama Power provided this file via its R.L. Harris Project relicensing website at <http://harrisrelicensing.com>.

⁶ Alabama Power filed this GIS data pursuant to ordering paragraph (C) of the February 3, 2017, *Order Revising Annual Charges and Approving Revised Exhibit G Drawing* (Alabama Power Company, 158 FERC ¶ 62,074 (2017)). See Accession Number 20170317-4008.

or different elevation model, to define the project boundary around Harris Lake, decreasing the total area within the 2021 baseline project boundary by approximately 5,440 acres.⁷ In addition, there appear to be areas where the project boundary diverges from elevation contours, and the 2021 shapefile does not align with the 2017 shapefile (*e.g.*, shape and/or angle of the polygon is different, and there are new cutouts for what appear to be roads or right-of-way corridors). To facilitate our analysis of the proposed changes to the project boundary included in the license application,⁸ please explain the reason(s) for the differences between the 2021 baseline project boundary and the 2017 project boundary shapefiles. If the 2017 project boundary shapefile is still correct, please revise and refile: (1) the Proposed_Changes_June2022 shapefile to accurately depict the proposed changes (*i.e.*, additions and removals of land and/or water acreage) to the project boundary in relation to the 2017 project boundary shapefile; and (2) any other GIS data filed with the license application that would need to be updated based on the use of the 2017 project boundary shapefile, such that all GIS data uses uniform coordinate systems, projections, and datums across all shapefiles.

Aquatic Resources

8. Attachment 2 of Alabama Power's response to Commission staff's December 23, 2021 AIR Item #9 included an email from Dennis Devries of Auburn University to Jason Moak of Kleinschmidt with an attachment titled "*Auburn Univ report to Alabama Power-Harris bioenergetics revised 10-19-21-CLEAN.pdf*," dated October 20, 2021. This correspondence suggests that the most recent Bioenergetics report should be dated no earlier than October 19, 2021 if it was revised by Auburn University with corrected water quality data⁹ and filed as part of the November 2021 Aquatic Resources Report. However, the most recent version of the Bioenergetics report is dated January 2021.¹⁰ Therefore, please clarify whether the most recent version of the Bioenergetics report used the corrected water quality data, as stated in your response to AIR #9, "to describe the magnitude and duration of water temperature fluctuations and to determine if there were any differences in these fluctuations as a result of Green Plan implementation." If the most recent version of the Bioenergetics report was in fact

⁷ The total area for the 2021 baseline project boundary is about 32,251 acres, and the total area for the 2017 project boundary is 37,691 acres.

⁸ On June 15, 2022, Alabama Power filed a GIS shapefile labeled Proposed_Changes_June2022, which provides proposed additions to, and removals from, the 2021 baseline project boundary at Harris Lake.

⁹ The corrected water quality data was filed on August 16, 2021. *See* Accession No. 20210816-5246.

¹⁰ The Bioenergetics report was included in Appendix D of the November 2021 Aquatic Resources Report.

filed to the record, please clearly identify and explain any discrepancies in the report, including an explanation for conflicting dates, as appropriate. If the most recent version of the Bioenergetics report was not provided previously, please file it to the record, along with: (1) a red-line version of the most recent report, including changes made since the January 2021 filing; or (2) a detailed list of all changes made by Auburn University and Alabama Power since the January 2021 report.

9. In response to Item #5 of staff's February 15, 2022 AIR, Alabama Power states that Discrete Bubble Modeling (DBM) was conducted and provides a brief discussion of the model results. However, the response does not include a detailed summary of the specific assumptions or rationale used to determine various inputs and parameters used in the model. The validity of model output is highly dependent on the assumptions incorporated into the model and input values. In order for staff to fully understand the results of the DBM exercise, please provide a detailed explanation of all assumptions, equations, or other information used to inform model inputs, including the boundary conditions, with rationale for the values used, and the results for each scenario modeled. In addition, please include any technical reports or memoranda associated with this modeling.
10. Alabama Power's response to Commission staff's February 15, 2022 AIR Item #6 does not state whether the proposed minimum flow would maintain surface water elevations below the dam that are conducive to operation of the water quality monitoring equipment. Therefore, please clarify whether the proposed minimum flow would be sufficient to keep the proposed water quality monitoring equipment in the water so that it would monitor and report DO and temperature data reliably.

Cultural Resources

11. In Alabama Power's June 15, 2022 response to Commission staff's February 15, 2022 AIR Item #19, the updated site table indicates that there are 345 archaeological sites within the Area of Potential Effects (APE) at Harris Lake, 148 sites at Skyline, and 19 sites located downstream of Harris Dam.¹¹ At Harris Lake, the table indicates that the State Historic Preservation Officer (SHPO) concurs with Alabama Power's National Register of Historic Places (National Register) evaluations of 55 sites (24 sites were recommended to be eligible, 31 sites were recommended to be ineligible). In addition, the updated site table indicates that 122 sites within the project APE have been recommended to be ineligible for listing, but concurrence from the Alabama SHPO has not been

¹¹ Section 15.1. of Alabama Power's revised Exhibit E, filed with its AIR response, indicates that there are 341 sites at Harris Lake and 151 sites at Skyline. However, our analysis of Alabama Power's updated site table indicates that there are a total of 345 sites at Harris Lake and 148 sites at Skyline.

received. These sites are noted with a “No” or “No?” in the National Register eligibility column, and with an “N/A” in the SHPO determination column. The National Register eligibility of an additional 168 sites remains undetermined. The updated site table indicates that 11 of these 168 sites will be further assessed, 132 sites are currently inundated, and 25 sites have been “removed from consideration” through “appropriate consultation.”

In addition, Item #19b of staff’s AIR, requested documentation of written concurrence from the SHPO for each National Register recommendation provided with the license application. Alabama Power’s AIR response included a copy of a letter dated April 27, 2022, from the Alabama SHPO, concurring with the eligibility recommendations for 9 sites that were addressed in a report titled A Cultural Resources Assessment and Testing Tracts to be Removed from the Harris Project Boundary in Randolph County, Alabama (Stager and Watkins, 2021). With respect to the other determinations of eligibility, the AIR response states that the Alabama SHPO “provided concurrence with the archaeological site information” in a letter dated June 8, 2022. However, a copy of this letter filed with the AIR response states only that “the site information provided matches our previous consultation records.” A formal letter from Alabama Power to the SHPO requesting specific concurrence with the eligibility recommendations for each site was not provided with the AIR response, and the SHPO’s letter does not provide specific concurrence with each site recommendation as required by section 106 of the National Historic Preservation Act, and its implementing regulations found at 36 CFR 8004(c)(2).

All sites that have not been formally evaluated for listing on the National Register remain potentially eligible until such time that formal evaluations have taken place and specific Alabama SHPO concurrence with eligibility recommendations for each individual site has been received.¹² Therefore, please file documentation of SHPO concurrence with Alabama Power’s National Register recommendations *for each site* that has been recommended to be eligible, ineligible, or otherwise removed from consideration within the project APE at Harris Lake, Skyline, and along the Tallapoosa River downstream from Harris Dam. We suggest submitting the updated site tables for each area to the SHPO and requesting formal concurrence with each National Register recommendation and each recommendation for site treatment.

¹² Formal documentation of Alabama SHPOs concurrence with each National Register determination and assessment of effect will be attached to Alabama Power’s Historic Properties Management Plan for consideration during future operation and maintenance activities over any new license term.