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August 31, 2017

FERC Project No. 2413-117
Wallace Dam Hydroelectric Project
Relicensing Study Progress Report – Second Season of Studies

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Dear Secretary Bose:

Georgia Power Company (Georgia Power) is the Federal Energy Regulatory Commission (FERC) licensee of the Wallace Dam Hydroelectric Project (FERC No. 2413). On behalf of Georgia Power, Southern Company is filing this letter to provide the Study Progress Report for the second season of studies for relicensing the Wallace Dam Hydroelectric Project. This Study Progress Report is being filed in compliance with FERC Integrated Licensing Process regulations at 18 C.F.R. 5.15(b), FERC's December 17, 2015 Study Plan Determination, and FERC's March 17, 2017 Determination on Requests for Study Modifications and New Studies.

If you require additional information, please contact me at 404-506-7219.

Sincerely,

Courtenay R. O'Mara

Courtenay R. O'Mara, P.E.
Hydro Licensing & Compliance Supervisor

Enclosure

cc: FERC/OEP – Allan Creamer
Geosyntec – Steve Layman, Ph.D.
Troutman Sanders – Hallie Meushaw, Fitzgerald Veira

Georgia Power

WALLACE DAM

Lake Oconee

Study Progress Report
Second Season of Studies

Wallace Dam Hydroelectric Project
FERC Project Number 2413

Prepared with:

Southern Company Generation Hydro Services

and

Geosyntec consultants

August 2017

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
DO	dissolved oxygen
FERC	Federal Energy Regulatory Commission
Georgia Power	Georgia Power Company
PLP	Preliminary Licensing Proposal
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC or Commission) a Study Progress Report for the second season of studies as part of the relicensing of the 321.3-megawatt Wallace Dam Hydroelectric Project (FERC No. 2413) (Wallace Dam Project, the Project). The Wallace Dam Project is a pumped storage project consisting of Wallace Dam, a powerhouse, and Lake Oconee. It is located on the Oconee River in Hancock, Putnam, Greene, and Morgan Counties, Georgia (Figure 1-1). The Wallace Dam Project operates using Lake Oconee as the upper reservoir. Lake Sinclair, located immediately downstream, serves as the lower reservoir and is operated by Georgia Power as the separately licensed Sinclair Hydroelectric Project (FERC No. 1951).

1.1 Objective

Pursuant to the Commission regulations at 18 Code of Federal Regulations (CFR) § 5.15(b), this Study Progress Report provides updates on two studies being conducted for Wallace Dam relicensing. They include: (1) the second season of water quality monitoring in the Wallace Dam tailrace, the ongoing Water Resources Study; and (2) a new study of aeration methods to enhance summer dissolved oxygen (DO) concentrations in the Wallace Dam tailrace area.

1.2 Study Plan

FERC's Director of the Office of Energy Projects (Director) issued a study plan determination for the Project on December 17, 2015. After completing the first season of studies, Georgia Power filed on November 18, 2016, an Initial Study Report for six finalized studies and one ongoing study, the Water Resources Study, which included tailrace water quality monitoring through September 2017. Georgia Power held Initial Study Results Meetings on December 5 and 6, 2016, and filed a meeting summary on December 21, 2016. During the Study Results Meetings, Georgia Power indicated that the previously approved tailrace water quality monitoring would continue in 2017 and that a new study would be proposed to assess alternative aeration methods for improving summer DO concentrations in the tailrace area. Georgia Power filed the newly proposed study plan entitled "Study of Aeration Methods to Enhance Summer Dissolved Oxygen in the Wallace Dam Tailrace Area" (Aeration Methods Study) on February 20, 2017.

The Director issued a determination on requests for study modifications and new studies on March 17, 2017, based on FERC staff's recommendations. The determination approved the new study proposed by Georgia Power. Regarding requested study modifications to the desktop fish entrainment analysis in the Fish and Aquatic Resources Study, FERC staff recommended that Georgia Power provide or develop certain requested information in the Preliminary Licensing Proposal (PLP), and not as an updated study report.

1.3 Schedule

Georgia Power will file an Updated Study Report consisting of the finalized Water Resources Study Report for the second season of tailrace water quality monitoring and the Aeration Methods Study Report by October 11, 2017. Table 1 provides the completion dates and deadlines for the remainder of study implementation for the Wallace Dam Project.

TABLE 1
Updated Master Schedule for Study Implementation for the Wallace Dam Project

Activity	Completion Date or Deadline
File Updated Study Report (Water Resources and Aeration Methods)	October 11, 2017
Hold Updated Study Results Meeting	October 17, 2017
File Updated Study Results Meeting Summary	November 10, 2017
Stakeholders File Updated Study Results Meeting Summary Disagreements	December 11, 2018
File Response to Updated Study Results Meeting Summary Disagreements	January 9, 2018
FERC Resolves any Meeting Summary Disagreements	February 8, 2018

Georgia Power will file the PLP on November 21, 2017. Stakeholder comments on the PLP must be filed by February 19, 2018. Georgia Power will file the final license application by May 31, 2018.

2.0 WATER RESOURCES

2.1 Introduction

Georgia Power has been continuously monitoring DO and water temperature in the Wallace Dam tailrace according to the Study Plan since July 2015. The specific objective of the tailrace monitoring is to characterize the effects of continued project operation on water quality in the Wallace Dam tailrace area within the project boundary.

The results of the first season of tailrace water quality monitoring conducted from July 2015 through September 2016 were presented in the Initial Water Resources Study Report filed on November 18, 2016. An Updated Water Resources Study Report presenting the results of the second season of monitoring (October 2016-September 2017) will be filed with FERC by October 11, 2017. Georgia Power will use the information gathered in evaluating the environmental effects of its proposed action in the PLP and license application.

2.2 Study Progress

2.2.1 Activities Completed

- Conducted continuous DO and water temperature monitoring in the Wallace Dam tailrace area (Station OCTR) from October 2016 through the present. Monitoring is ongoing and will continue through September 2017.
- Continued compiling water quality monitoring data from the tailrace.
- Aligned continuous DO and water temperature monitoring data from the tailrace with real-time project operational data for the same periods to identify and isolate operational conditions during critical summer periods.
- Began preparing graphic summaries of the water quality monitoring results.

2.2.2 Preliminary Findings

- Trends in seasonal variation and daily trends during normal summer project operations are similar to those observed during the first season of study. Data compilation and analysis are ongoing.

2.3 Variance from Study Plan and Schedule

- There has been no variance to date from the Study Plan.
- The Updated Study Results Meeting will be held on one day, October 17, 2017.

2.4 Remaining Activities

- Continue tailrace monitoring through September 2017.
- Compile and analyze the results of the second season of continuous tailrace monitoring.
- Prepare the Updated Water Resources Study Report for the second season of study.
- Hold the Updated Study Results Meeting on October 17, 2017.

3.0 AERATION METHODS

3.1 Introduction

Georgia Power is conducting a study to assess aeration methods that could potentially enhance summer DO concentrations in the tailrace of the Wallace Dam Project. The study is being conducted according to the study plan approved by FERC on March 17, 2017. The results of the study will be presented in an Aeration Methods Study Report, which will be filed with FERC by October 11, 2017. Georgia Power will use the information generated by the study to evaluate the feasibility of enhancing summer DO concentrations in the tailrace area in the PLP and license application.

The specific objectives of the Aeration Methods Study are to identify and evaluate, using available data, technically feasible and cost-effective aeration methods for enhancing summer DO concentrations in the Wallace Dam tailrace. The assessment consists of the following tasks:

- Review and evaluate existing water quality data for the reservoir and tailrace to characterize the water withdrawal zone at the turbine intakes, and model the withdrawal zone to relate forebay water quality to tailrace water quality.

- Model turbine aeration to assess the potential for turbine venting and the addition of forced air.

- Model the forebay of Wallace Dam to evaluate in-lake aeration approaches at the conceptual level of modeling and design.

3.2 Study Progress

3.2.1 Activities Completed

- Contracted the services of Richard J. Ruane, P.E. (Reservoir Environmental Management, Inc.), Mark H. Mobley, P.E. (Mobley Engineering, Inc.), and Paul J. Wolff, Ph.D. (WolffWare, Ltd) to identify and assess conceptual alternatives to enhance DO in the Wallace Dam tailrace.

- Reviewed water quality vertical profiles of Lake Oconee and continuous tailrace DO monitoring data collected by Georgia Power in 2015-2016 to evaluate the extent of vertical mixing in the forebay during pumpback and generation operations.

- Modeled the Wallace Dam forebay withdrawal zone using U.S. Army Corps of Engineers (USACE) Waterways Experiment Station model. Applied modeling to selected vertical profiles measured hourly during intensive reservoir monitoring events conducted by Georgia Power in summer 2016.

- Evaluated a range of alternative aeration methods that have been applied at other hydropower facilities, including turbine venting aeration, forebay oxygen line diffuser systems, forebay surface water pumps, draft tube aeration using compressed air, forebay mixing systems, tailwater aeration approaches, and various other methods.

- Conducted turbine aeration modeling to assess the potential for turbine venting and the addition of forced air, and conducted forebay modeling to evaluate the preliminary design for a forebay oxygen line diffuser system. Began developing conceptual design and cost estimates for evaluating and comparing effectiveness, practicality, installation costs, and operations and maintenance considerations.

- Conducted a site visit of forebay oxygen line diffuser systems in use by USACE in J. Strom Thurmond Lake and in the forebay of Richard B. Russell Dam on the Savannah River in Georgia and South Carolina.

3.2.2 Preliminary Findings

- Withdrawal zone modeling indicates that most of the water drawn into the turbine intakes originates in the upper layers of the forebay in Lake Oconee even though the centerline of the intake is about 70 feet deep.

- Turbine venting aeration is not technically feasible at Wallace Dam because pressures in the draft tubes would prevent air from being drawn into the draft tubes. Surface water pumps and tailwater aeration methods also would not be technically feasible.

- The most technically feasible alternatives for enhancing summer DO in the tailrace include a forebay oxygen line diffuser system and draft tube aeration using compressed air. The analyses of these alternatives are ongoing.

3.3 Variance from Study Plan and Schedule

- There has been no variance to date from the Study Plan.

- The Updated Study Results Meeting will be held on one day, October 17, 2017.

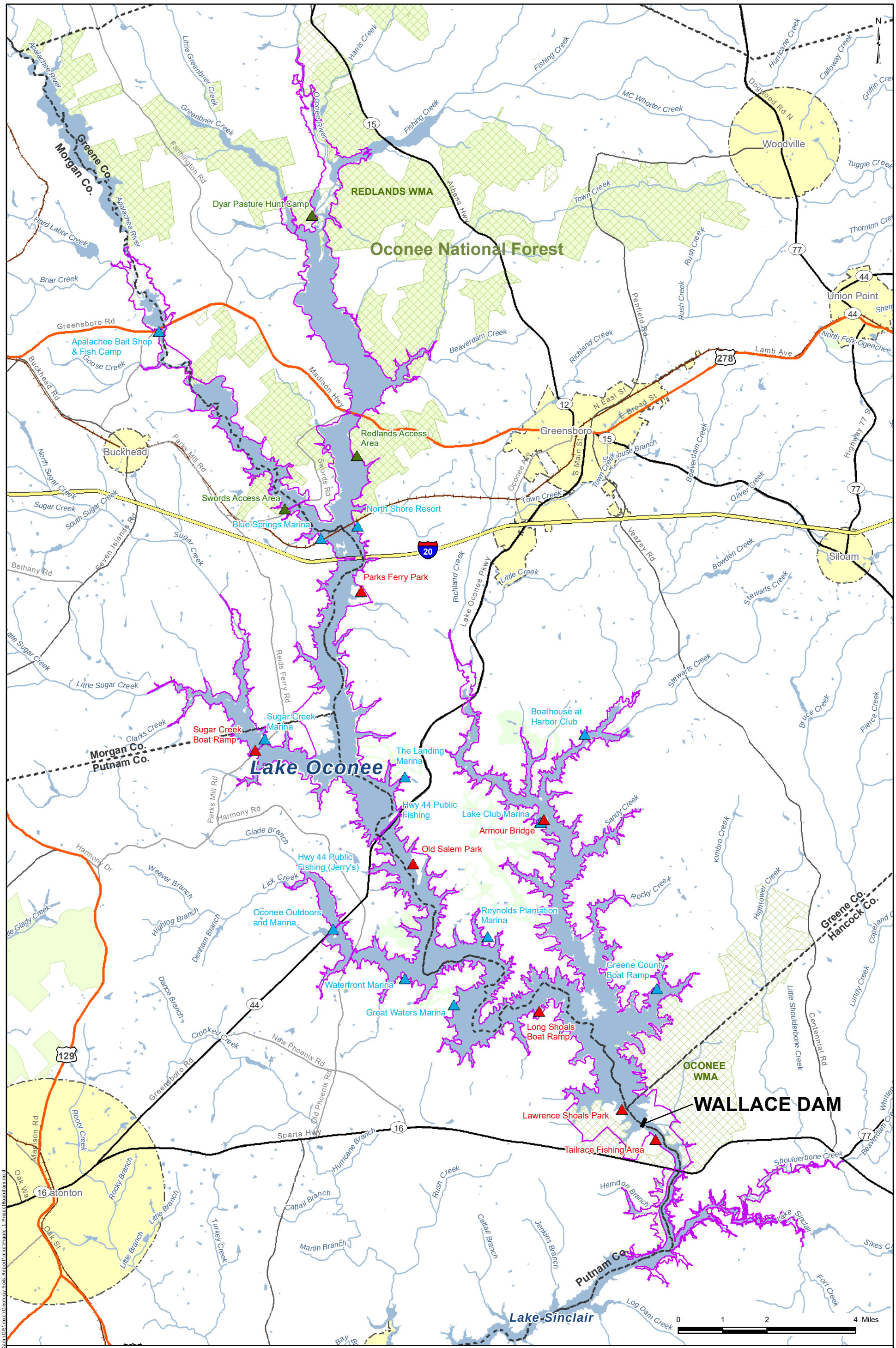
3.4 Remaining Activities

- Complete the analysis of conceptual alternatives for enhancing summer DO in the tailrace.

- Prepare the Aeration Methods Study Report.

- Hold the Updated Study Results Meeting on October 17, 2017.

FIGURE



Interstate Highway
U.S. Highway
State Highway
Major Roads
Local Streets

Railroads (Local)
Dam
Rivers/Creeks
Lake
Project Boundary

Towns/Cities
County Boundary
State Managed Lands
National Park or Forest
Golf Course

Recreation Access Point
Forest Service
Public/Private
Georgia Power

Georgia Power
Geosyntec consultants

Figure 1
Project Boundary and Surrounding Area
Wallace Dam Project
(FERC No. 2413)

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