

Southern Company Generation

241 Ralph McGill Boulevard NE
BIN10193
Atlanta, Georgia 30308-3374
Tel 404.506.7219



August 31, 2016

Wallace Dam Hydroelectric Project, FERC Project Number 2413-117
Relicensing Study Progress Report

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 relicensing the Wallace Dam Hydroelectric Project, in compliance with FERC Integrated Licensing Process regulations at 18 C.F.R. §5.15(b) and FERC's December 17, 2015 Study Plan Determination.

If you require further information, please contact me at 404.506.7219.

Sincerely,

A handwritten signature in cursive script that reads "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



WALLACE DAM



Lake Oconee

Study Progress Report

Wallace Dam Hydroelectric Project FERC Project Number 2413

Prepared with:

Southern Company Generation Hydro Services

and

Geosyntec 
consultants

August 2016

TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	Objective.....	1-1
1.2	Study Plan.....	1-1
1.3	Schedule.....	1-2
2.0	GEOLOGY AND SOILS	2-1
2.1	Introduction	2-1
2.2	Study Progress	2-1
2.3	Variance from Study Plan and Schedule	2-3
2.4	Remaining Activities	2-3
3.0	WATER RESOURCES	3-1
3.1	Introduction	3-1
3.2	Study Progress	3-1
3.3	Variance from Study Plan and Schedule	3-3
3.4	Remaining Activities	3-3
4.0	FISH AND AQUATIC RESOURCES.....	4-1
4.1	Introduction	4-1
4.2	Study Progress	4-1
4.3	Variance from Study Plan and Schedule	4-3
4.4	Remaining Activities	4-3
5.0	TERRESTRIAL RESOURCES.....	5-1
5.1	Introduction	5-1
5.2	Study Progress	5-1
5.3	Variance from Study Plan and Schedule	5-3
5.4	Remaining Activities	5-4
6.0	RARE, THREATENED, AND ENDANGERED SPECIES.....	6-1
6.1	Introduction	6-1
6.2	Study Progress	6-1

TABLE OF CONTENTS (Continued)

6.3	Variance from Study Plan and Schedule	6-3
6.4	Remaining Activities	6-3
7.0	RECREATION AND LAND USE.....	7-1
7.1	Introduction	7-1
7.2	Study Progress	7-1
7.3	Variance from Study Plan and Schedule	7-4
7.4	Remaining Activities	7-4
8.0	CULTURAL RESOURCES	8-1
8.1	Introduction	8-1
8.2	Study Progress	8-1
8.3	Variance from Study Plan and Schedule	8-2
8.4	Remaining Activities	8-2

TABLE OF CONTENTS (Continued)

TABLES

Table 1-1	Master Schedule for Study Implementation for the Wallace Dam Project
Table 2-1	Preliminary Findings for Selected Attributes from the Shoreline Reconnaissance Survey
Table 7-1	Preliminary Numbers of Recreation Surveys Administered During Five Events in March-June 2016

FIGURES

Figure 1-1	Project Boundary and Surrounding Area
------------	---------------------------------------

ACRONYMS AND ABBREVIATIONS

APE	Area of potential effect
CBD	Center for Biological Diversity
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
DO	dissolved oxygen
FERC	Federal Energy Regulatory Commission
FS	U.S. Forest Service
ft	feet
FWS	U.S. Fish and Wildlife Service
GDNR	Georgia Department of Natural Resource
Georgia Power	Georgia Power Company
GIS	geographic information system
Hwy	Highway
I-20	Interstate 20
NRHP	National Register of Historic Places
PAD	Pre-Application Document
PLP	Preliminary Licensing Proposal
RSP	Revised Study Plan
RTE	rare, threatened, and endangered
SPD	Study Plan Determination
WMA	Wildlife Management Area
WRD	Wildlife Resources Division

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC or Commission) its Study Progress Report as part of the relicensing of the existing 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 the implementation of seven studies included in the approved Study Plan for the Wallace Dam Project. These reports describe overall progress in completing the study activities, summarize preliminary findings as available, and explain any variance from the Study Plan and schedule.

1.2 Study Plan

The approved Study Plan for the Wallace Dam Project consists of Georgia Power's Revised Study Plan (RSP) and the Study Plan Determination (SPD) issued by FERC's Director of the Office of Energy Projects (Director).

Georgia Power filed the RSP with the Commission on November 24, 2015. On December 17, 2015, the Director issued an SPD. The SPD approved the RSP as filed. The FERC-approved Study Plan includes the following seven studies:

- Geology and Soils;
- Water Resources;
- Fish and Aquatic Resources;
- Terrestrial Resources;
- Rare, Threatened, and Endangered Species;
- Recreation and Land Use; and
- Cultural Resources.

1.3 Schedule

The updated master schedule in Table 1-1 provides the current estimated completion dates for all field studies, deadlines for filing Study Reports, and the dates for Study Results Meetings. The majority of the field work will be completed during the 2016 study season. The Initial Study Reports will be filed as a complete package by November 18, 2016.

Since the Initial Study Reports will be completed within 1 year of FERC’s SPD, they will be considered final study reports unless FERC determines that modifications to the Study Plan are necessary. The exception to this is the Water Resources Study, which is a two-year study. An updated Study Report for Water Resources will be filed after the second study season, by October 11, 2017.

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

Activity	Completion Date or Deadline
Conduct Field Studies	
<i>Geology and Soils</i>	September 30, 2016
<i>Water Resources</i>	September 30, 2017
<i>Fish and Aquatic Resources</i>	September 30, 2016
<i>Terrestrial Resources</i>	September 30, 2016
<i>Rare, Threatened, and Endangered Species</i>	September 30, 2016
<i>Recreation and Land Use</i>	September 30, 2016
<i>Cultural Resources</i>	September 30, 2016
File Progress Reports (All Studies)	August 31, 2016
File Initial Study Reports (Considered final study reports for all studies except Water Resources)	November 18, 2016
Hold Study Results Meetings	December 5-6, 2016
File Study Results Meeting Summary	December 21, 2016
Stakeholders File any Study Results Meeting Summary Disagreements and/or Modified or New Study Requests	January 20, 2017
File Response to any Study Results Meeting Summary Disagreements and/or Modified or New Study Requests	February 20, 2017
FERC Resolves any Disagreements (and Modifies Study Plans if Necessary)	March 22, 2017
File Updated Study Report (Water Resources)	October 11, 2017
Hold Updated Study Results Meeting (Water Resources)	October 16-17, 2017
File Updated Study Results Meeting Summary	November 10, 2017

2.0 GEOLOGY AND SOILS

2.1 Introduction

Georgia Power is conducting a study to characterize existing erosion and sedimentation conditions within the Wallace Dam project boundary and to develop information for analyzing the potential impacts of continued project operation on geology and soils. The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in a Geology and Soils Study Report, which will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the Preliminary Licensing Proposal (PLP), to be filed with the Commission by November 21, 2017.

The specific objective of the study is to characterize the distribution and sources of erosion and sedimentation within the FERC project boundary based on a shoreline field reconnaissance survey and review and analysis of existing information.

2.2 Study Progress

2.2.1 Activities Completed

Shoreline Reconnaissance Survey

The following activities were completed to inventory and characterize existing sources of erosion and sedimentation within the project boundary:

- Prepared a geographic information system (GIS) shapefile defining 500-foot (ft) shoreline segments for the project reservoir and tailrace area within the project boundary.
- Partitioned the study area into five sections (upper reservoir, middle reservoir, Richland Creek, lower reservoir, and tailrace area) for stratified random selection of 500-ft shoreline segments for the shoreline reconnaissance survey.
- Selected a total of 146 shoreline segments, or sites, for the reconnaissance survey as follows:
 - One site selected at each of the seven project recreation facilities.
 - One site selected at each of the three Forest Service (FS) recreation areas.
 - One site selected at each of the nine undeveloped areas within the project boundary reserved for future recreational development.

- One site selected along the shoreline next to Pond 2 in the tailrace area.
- The remaining 126 survey sites selected randomly to total 35 sites in each of the four reservoir sections, and six sites in the tailrace section.
- Determined and tabulated the geographic coordinates of the midpoint of each selected shoreline site using GIS.
- Completed a shoreline reconnaissance survey of the 146 selected shoreline segments on June 7 and 8, 2016. Each site was evaluated and rated using the visual shoreline assessment protocol as described in the Study Plan. Digital photographs were taken at each shoreline survey site. All field studies have been completed.
- Completed database entry of all field data forms for analysis of survey findings and compiled color photographs taken at each shoreline survey site.
- Began analyzing shoreline reconnaissance survey findings, including characterization of shoreline buffer zone conditions; ratings of bank stability and bank vegetative protection; shoreline structural stabilization practices; potential sources of active shoreline erosion; and sources of littoral zone fish cover.

Analysis of Existing Information and Data

The following activities were conducted for characterizing the effects of continued project operation on shoreline conditions within the project boundary:

- Reviewed literature on shoreline structural modifications associated with shoreline development (seawalls/bulkheads, rock riprap, and combinations thereof) and their effects on littoral-zone aquatic habitats as reflected in fish species composition, diversity, and abundance.

Reporting

- Began drafting the Geology and Soils Study Report.

2.2.2 Preliminary Findings

Shoreline Reconnaissance Survey

- Shoreline vegetative buffer zone condition ratings and bank stability ratings are summarized in Table 2-1. Of the 146 sites assessed, 65 (44 percent) were characterized by natural vegetative buffer zone conditions, 42 (29 percent) were landscaped, and 39 (27 percent) had a mix of landscaped and natural vegetative conditions. Ninety-five percent of the sites had stable or moderately stable banks.

- Shoreline structural stabilization practices, including seawalls, riprap, and combinations thereof, were observed at 87 of the 146 shoreline sites (60 percent). The majority of these sites were located in the lower reservoir, middle reservoir, and Richland Creek embayment. Structural stabilization practices were observed at only 13 of 35 sites in the more naturally vegetated upper reservoir.

TABLE 2-1
Preliminary Findings for Selected Attributes from the Shoreline Reconnaissance Survey

Attribute and Rating	Number of Sites with Rating					Total
	Lower Reservoir (35 sites)	Middle Reservoir (35 sites)	Upper Reservoir (35 sites)	Richland Creek Embayment (35 sites)	Tailrace (6 sites)	
Shoreline Vegetative Buffer Zone Condition:						
Natural	11	16	19	14	5	65
Landscaped-Natural	13	11	7	8	--	39
Landscaped	11	8	9	13	1	42
Bank Stability:						
Stable	29	27	27	27	5	115
Moderately Stable	6	5	7	4	1	23
Moderately Unstable	--	2	1	4	--	7
Unstable	--	1	--	--	--	1
Shoreline Structural Stabilization Practices:						
Present	27	22	13	21	4	87
Absent	8	13	22	14	2	59

2.3 Variance from Study Plan and Schedule

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

2.4 Remaining Activities

- Complete analysis of shoreline reconnaissance survey results.
- Complete evaluation of operational data characterizing maximum and minimum reservoir fluctuations.

- Complete analysis of existing information and data relative to the effects of project operations and current shoreline structural stabilization practices on shoreline erosion and sedimentation and littoral zone aquatic habitats.
- Complete preparation of the Geology and Soils Study Report.

3.0 WATER RESOURCES

3.1 Introduction

Georgia Power is conducting a study to characterize existing water resources in the Oconee River at the Wallace Dam Project, including water use, availability, and water quality, and evaluating potential impacts to water resources associated with continued project operation. The study is being conducted according to the Study Plan approved by FERC on December 17, 2015. The results of the study will be presented in an Initial Water Resources Study Report, which will be filed with FERC by November 18, 2016. In addition, an Updated Water Resources Study Report will be filed by October 11, 2017 to report on the findings of a second season of continuous water quality monitoring in the Wallace Dam tailrace area. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with FERC by November 21, 2017.

The specific objectives of the Water Resources Study are to:

- Characterize water use, availability, and water quality in the project study area.
- Characterize the effects of continued project operation on water quality in Lake Oconee and the Wallace Dam tailrace area within the project boundary.
- Document the extent of mixing that occurs in Lake Oconee as a result of the pump-back/generation cycles.
- Review the substantial amount of water resources information and data available for the Oconee River, along with the findings of Georgia Power's water quality monitoring in the project waters, to evaluate the effects of continued project operation on water quality (including water temperature and dissolved oxygen [DO] concentrations) and habitat conditions for fish and other aquatic organisms inhabiting Lake Oconee and the tailrace area.

3.2 Study Progress

3.2.1 Activities Completed

Monthly Vertical Profiles and Quarterly Water Chemistry in Reservoir

- Completed monthly water quality monitoring at nine locations in Lake Oconee from August 2015 through July 2016. Vertical profiles were measured at 1-meter (m) intervals for water temperature, DO, pH, specific conductance, and turbidity.
- Completed quarterly water chemistry sampling (including nutrient sampling) at six locations in Lake Oconee in August 2015, November 2015, February 2016, and

May 2016. Eleven water chemistry parameters were analyzed in grab samples collected at 1-m depth.

- Began compiling monthly vertical profile monitoring and quarterly water chemistry results from August 2015-July 2016 into a database for summary and analysis.
- Began compiling quarterly vertical profile monitoring data collected by Georgia Power since 2003 to help document the extent of summer mixing that occurs in Lake Oconee.

Hourly Vertical Profiles of Summer Pumpback/Generation in Reservoir

- Completed two diel (day-night) sampling events to measure hourly vertical profiles of DO and water temperature at seven monitoring locations in Lake Oconee over the course of a single day. The first event was conducted on July 27-28, 2016. The second event was conducted on August 15-16, 2016. The monitoring events involved three boat crews visiting assigned locations approximately every hour during three 7- to 10-hour shifts. Georgia Department of Natural Resources (GDNR) Wildlife Resources Division (WRD) biologists participated in the monitoring events.
- Began compiling the hourly vertical profiling results into a database for analysis.

Continuous Monitoring of DO and Water Temperature in Tailrace

- Conducted continuous DO and water temperature monitoring in the Wallace Dam tailrace area (Station OCTR) from July 2015 through the present. The period July-September 2015 included buoy deployment and testing to determine the selected location as being representative of tailrace water quality conditions. Monitoring is ongoing and will continue through September 2017.
- Began compiling continuous monitoring data from the tailrace.

Hourly Transect Monitoring of Summer Pumpback/Generation in Tailrace

- Coordinated with WRD on the tailrace transect design and field data collection methods. Monitoring was conducted along zig-zag transects across the channel extending from the safety-buoy line near the powerhouse downstream to Georgia Highway 16. Each event was conducted during one or two days in the field to represent hourly changes in tailrace water quality conditions occurring during the normal summer pumpback/generation operational cycle. DO and water temperature were measured on approximately an hourly basis during representative day and night operational periods. Measurements were taken at a depth of 1 m from the surface.

- Completed two tailrace transect monitoring events to characterize variation in tailrace water quality over the course of a summer day. The first event was conducted August 3-4, 2016. The second event was conducted on August 25, 2016.
- Began compiling the tailrace transect monitoring data into a database for analysis.

Analysis of Information and Data

- Began compiling real-time operational data for the powerhouse available since continuous tailrace water quality monitoring began in July 2015.
- Began aligning 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 conditions. Aligning these data will allow the detection of any influences from the pumpback/generation operational cycle on summer DO and water quality conditions in the tailrace area.
- Began preparing graphic and tabular summaries for presentation of the water quality monitoring results.
- Conducted literature review of cyanobacteria occurrence and blooms in Lake Oconee and the surrounding area, including factors potentially influencing algal abundance in Lake Oconee.

3.2.2 Preliminary Findings

- Data compilation and analysis for all monitoring activities are ongoing.

3.3 Variance from Study Plan and Schedule

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

3.4 Remaining Activities

- Continue analysis of monthly vertical profile data and quarterly water chemistry data for Lake Oconee collected from August 2015 through July 2016.
- Continue analysis of quarterly vertical profile data collected by Georgia Power since 2003 to help document trends in the extent of mixing that occurs in Lake Oconee.
- Compile and analyze results of hourly vertical profiles collected in Lake Oconee during the two diel sampling events in July-August 2016.

- Complete analysis of real-time operational data and contemporaneous water quality data collected in the tailrace during the first study season to evaluate the relationship between summer pumpback/generation operations and DO concentrations and water temperature recorded in the tailrace.
- Compile and analyze results of the two tailrace transect monitoring events conducted in August 2016.
- Complete literature review of relevant water resources information and data available for the project area since preparation of the Pre-application Document (PAD).
- Analyze the effects of project operations on water quality (and on habitat conditions for fish and other aquatic organisms in the Fish and Aquatic Resources Study).
- Prepare the Initial Water Resources Study Report for the first season of study.
- Complete a second season of continuous monitoring of DO and water temperature in the tailrace area extending 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 (Table 1-1).

4.0 FISH AND AQUATIC RESOURCES

4.1 Introduction

Georgia Power is conducting a study to characterize the existing fish and aquatic resources in the Wallace Dam Project waters and to develop aquatic resource information for evaluating the potential impacts of continued project operation on the fish and aquatic resources of the Oconee River. The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in a Fish and Aquatic Resources Study Report, which will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with the Commission by November 21, 2017.

The specific objectives of the Fish and Aquatic Resources study are to:

- Characterize representative shoreline and littoral-zone aquatic habitats occurring throughout the reservoir.
- Evaluate the occurrence of Altamaha Shiner, a Georgia threatened fish species, and other rare, threatened, or endangered (RTE) aquatic species within the project boundary based on review of existing information and data.
- Conduct a freshwater mussel survey within the project boundary characterizing the occurrence, distribution, relative abundance, species richness, and population status of the native freshwater mussel community, especially RTE species of mussels.
- Evaluate the effects of continued project operations on summer reservoir water quality and habitat for sport fish species such as Largemouth Bass and Striped Bass.
- Evaluate the potential for fish entrainment and turbine-induced mortality by applying trends and data from entrainment studies completed at other hydroelectric projects to the physical, operational, and fisheries characteristics of the Wallace Dam Project.

4.2 Study Progress

4.2.1 Activities Completed

Shoreline Habitat Survey

- Completed a shoreline reconnaissance survey of 146 representative shoreline segments on June 7 and 8, 2016, as part of the Geology and Soils Study (Section 2.2.1). Each site was visually assessed as to sources of shoreline and littoral-zone aquatic habitats and their proportional coverage of shoreline length.

- Completed database entry of all field data forms and began analyzing the shoreline habitat data.
- Performed a literature review of the effects of shoreline structural stabilization practices associated with shoreline development and their effects on aquatic habitat.

Occurrence and Distribution of Altamaha Shiner

- Reviewed existing sources of information and data pertaining to the occurrence, distribution, and habitat use of Altamaha Shiner and other aquatic RTE species potentially occurring within the project boundary. The literature review included aquatic species petitioned for federal listing under the Endangered Species Act by the Center for Biological Diversity (CBD) in April 2010.

Freshwater Mussel Survey

- Completed a field reconnaissance of Lake Oconee on June 17, 2016 to identify representative habitats and specific locations to be surveyed for freshwater mussels by Gerald Dinkins of Dinkins Biological Consulting. WRD participated in the reconnaissance effort.
- Completed the freshwater mussel survey of Lake Oconee from July 25 to 29, 2016. Mussel surveys were conducted at 30 locations representing a variety of mussel habitat types throughout the reservoir. WRD participated in the survey effort.
- Began compiling and analyzing the Lake Oconee mussel survey data for species composition, distribution, relative abundance, and associated habitat characteristics.
- Completed the mussel survey of the Wallace Dam tailrace area from August 23 to 25, 2016.

Summer Habitat for Sport Fish Species

- Coordinated with WRD to obtain the most up-to-date standardized fishery survey database for Lake Oconee (through spring 2016) and updated stocking information to include striped bass, hybrid bass, and American shad.
- Began compiling and analyzing summer vertical reservoir profiles (water temperature and DO) collected from nine stations annually since 2003 and vertical profiles measured monthly at the same nine stations from August 2015 through July 2016.
- Began graphing the 2015-2016 monthly profile data as isopleths showing the variation in water temperature and DO over the entire length of the reservoir.

- Based on the extent of vertical mixing evident in the profile data, segregated the WRD fish sampling stations for comparative analysis by different areas of the reservoir. Compiled tables and figures depicting catch rates, average condition, and length-frequency distribution for Largemouth Bass, Black Crappie, Bluegill, Striped Bass, and Hybrid Bass from each area of the reservoir.
- Reviewed existing scientific literature for DO and water temperature habitat use, suitability, and tolerances of Striped Bass and Largemouth Bass for comparison to the summer vertical profiles and isopleths to identify and approximate areas of the reservoir providing suitable habitat under representative summer conditions.

Fish Entrainment Evaluation

- Gathered primary literature sources of entrainment and mortality information, including data from other pumped storage facilities, for desktop assessment of the potential for fish entrainment and turbine-induced mortality from project operations.

4.2.2 Preliminary Findings

- Literature review of Altamaha Shiner, a state threatened species in Georgia, has not found any reported occurrences of the species within the project boundary. CBD petitioned Altamaha Shiner for federal listing in April 2010 but withdrew the species from the petition in December 2015 based on new (unspecified) information.
- The July 2016 mussel survey in Lake Oconee detected the presence of several species of native mussels and provided information for characterizing their distribution, habitat use, and relative abundance. No mussel species listed as federal or state endangered or threatened species were found. Inflated Floater (*Pyganodon gibbosa*), a species petitioned for federal listing by CBD but recently withdrawn from the petition based on new (unspecified) information, was detected in Lake Oconee. The species is not listed as protected in Georgia.

4.3 Variance from Study Plan and Schedule

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

4.4 Remaining Activities

- Complete the analysis of the occurrence and distribution of Altamaha Shiner and other aquatic RTE species based on existing sources of information and data.
- Compile and analyze the Wallace Dam tailrace mussel survey data for species composition, distribution, relative abundance, and associated habitat characteristics.

- Complete the mussel survey report for both Lake Oconee and the tailrace area.
- Complete the analysis of summer habitat for sport fish species, with emphasis on Striped Bass and Largemouth Bass, including comparison of fish population attributes between different areas of the reservoir based on the extent of vertical mixing that occurs as a result of pumpback/generation operations.
- Complete the analysis of the suitability of summer water temperatures and DO concentrations for fish and other aquatic organisms in the Wallace Dam tailrace area using a combination of the continuous water quality monitoring data, tailrace transect monitoring over the course of a summer day, and literature review.
- Complete the analysis of existing information and data relative to characterizing existing fish and mussel communities; effects of project operations on fish and aquatic resources; and the potential for fish entrainment and turbine-induced mortality as a result of project operations.
- Prepare the Fish and Aquatic Resources Study Report.

5.0 TERRESTRIAL RESOURCES

5.1 Introduction

Georgia Power is conducting a study to characterize existing terrestrial resources at the Wallace Dam Project for use in analyzing the potential effects of continued project operation. For the purposes of this study, terrestrial resources include wildlife and botanical resources, and wetlands, riparian, and littoral habitat. The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in a Terrestrial Resources Study Report, which will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with the Commission by November 21, 2017.

The specific study objectives are to:

- Describe terrestrial wildlife and botanical resources occurring in the Wallace Dam project area, including providing lists of representative plant and animal species that use representative upland habitats, and to identify invasive species in these habitats.
- Describe the floodplain, wetlands, and riparian habitats occurring in the project area, including lists of representative plant and animal species that use representative habitats, to identify invasive species, and to prepare a map delineating wetland, riparian, and littoral habitat.

5.2 Study Progress

5.2.1 Activities Completed

Review of Existing Information

- Reviewed current and historical aerial imagery for the project area.
- Reviewed available published and online data pertaining to National Wetlands Inventory wetlands mapping for the project area.
- Reviewed available online data for U.S. Department of Agriculture Natural Resources Conservation Service soil survey mapping for the project area.
- Reviewed available published and online data pertaining to mammal, amphibian, reptile, and bird species ranges that occur in the counties in which the project resides.
- Obtained updated lists from GDNR of breeding bird species documented by the North American Breeding Bird Survey in annual surveys along routes near Wallace

Dam/Lake Oconee in Hancock, Putnam, Greene, and Morgan Counties. This includes the Siloam, Maxey's, and Rutledge Routes.

- Obtained checklists of bird species observed by local birders in the project vicinity from the Audubon Society's Lake Oconee Christmas Bird Count.
- Obtained pertinent and relevant data on flora and fauna associated with the Chattahoochee-Oconee National Forests Land Resource Management Plan.
- Compiled lists of plant, mammal, amphibian, reptile, and bird species potentially occurring in the project vicinity.

Field Reconnaissance Survey

- Completed field reconnaissance surveys of the study area which includes the Project boundary depicted in Figure 1-1 of the Study Plan, as well as adjacent recreation facilities, project lands adjacent to Wallace Dam, the project boundary encompassing the Wallace Dam tailrace area, and the project transmission line easement between Lake Oconee and Eatonton, Georgia.
- Completed field reconnaissance surveys of wetland and aquatic vegetative communities in the project area.
- Prepared draft lists of plant and animal species observed in upland habitats in the project area.
- Prepared lists of wetland and aquatic plant and animal species observed in the project area.
- Prepared descriptions of dominant wetland vegetative community types observed in the project area.
- Began preparation of map of wetland, floodplain, riparian, and littoral community types occurring within the project area.
- Prepared draft lists of invasive plant species observed in the project area.

Reporting

- Began drafting the Terrestrial Resources Study Report.

5.2.2 Preliminary Findings

- A mosaic of terrestrial habitat types occur within 2,000 feet of the project boundary. The predominant land uses in this portion of the upper Oconee River basin include farmlands and pasture, commercial pine plantations, riparian corridors, mixed pine/hardwood forest, and low-density residential.
- Forested, scrub-shrub, and emergent wetlands occur primarily in the upper portion (northern half) of the project reservoir, where river and stream floodplains and sediment deposition have created shallow flats and seasonal inundation is common.
- Large areas of forested, scrub-shrub, and emergent wetlands occur north of Interstate 20 (I-20), along the upper reaches of the reservoir in the Apalachee and Oconee River drainages. Drainages in the southern portion of the project area along Beaverdam, Richland, Sugar, Little Sugar, and Lick Creeks also contain wetlands at their confluence with Lake Oconee. South of Wallace Dam, additional forested, scrub-shrub, and emergent wetlands are found along upper reaches of Shoulderbone Creek, Sikes Creek, and Herndon Branch.
- An approximately 35-acre emergent wetland occurs within the Dyar Pasture Recreation Area.
- Emergent wetlands occur elsewhere in the project area as a result of beaver activity on broad floodplains of the larger stream systems and on shallow flats in the upper reaches of the reservoir.
- Small, scattered littoral/lake fringe wetlands occur throughout the project area, particularly within small embayments and coves at the confluence of smaller stream drainages and Lake Oconee.
- The drainages flowing into lower reaches of Lake Oconee (below I-20) are often occupied by small perennial or intermittent streams and associated riparian corridors.
- Most islands within Lake Oconee contain abrupt shorelines and are dominated by upland communities; however, islands in the upper (northern) portion of the reservoir are often forested and/or scrub-shrub wetlands.

5.3 Variance from Study Plan and Schedule

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

5.4 **Remaining Activities**

- Complete the compilation of flora and fauna lists.
- Complete the descriptions of vegetative community types, floodplain and wetland communities, and littoral habitats.
- Complete flora and fauna species lists observed in upland, wetland, floodplain, and littoral habitats in the Project area.
- Calculate acreages of habitat types, wetlands, and littoral communities within the Project boundary.
- Complete GIS mapping and prepare study report figures of wetland, riparian, and littoral community types occurring within the Project area.
- Complete the Terrestrial Resources Study Report.

6.0 RARE, THREATENED, AND ENDANGERED SPECIES

6.1 Introduction

Georgia Power is conducting a study to characterize existing federal and state RTE species of plants and wildlife that may be present in the Wallace Dam project area for use in analyzing the potential effects of continued project operation. The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in a RTE Species Study Report, which will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with the Commission by November 21, 2017.

The specific study objectives are to:

- List federal and state RTE plant and animal species with known records of occurrence near the Project.
- Identify their habitat requirements.
- Describe distributions and habitat use of RTE species presently occurring on or near the Project.

6.2 Study Progress

6.2.1 Activities Completed

Review of Existing Information

- Obtained updated information on known occurrences of RTE species in the project vicinity in Hancock, Putnam, Greene, and Morgan Counties from GDNR and the U.S. Fish and Wildlife Service (FWS).
- Reviewed other existing sources of information on the occurrence and habitat use of RTE species potentially occurring in the project vicinity.
- Obtained shapefiles and other GIS-related data from GDNR of RTE species occurrence data to depict species occurrences on field survey and report maps/figures.
- Prepared an updated tabular listing of RTE species with known records of occurrence near the project, their federal or state status, their habitat requirements, and county of known occurrence based on review of existing information sources.

- Obtained updated GDNR list (May 13, 2016) of known RTE occurrences (including natural communities, plants, and animals of highest priority conservation status) on or near the Project and within Greene, Hancock, Morgan, and Putnam Counties.
- Contacted GDNR to obtain locations of Bald Eagle (*Haliaeetus leucocephalus*) nests in proximity to the Project.

Field Surveys

- Completed seasonal field surveys on multiple, consecutive days between April 25 and May 12, 2016 along granite outcrop features within the project boundary for several RTE species, including:
 - Federal- and state-threatened Pool Sprite (*Amphianthus pusillus*)
 - State-endangered Sun-loving Draba (*Draba aprica*)
 - State-endangered Dwarf Hatpins (*Eriocaulon koernickianum*)
 - Federal- and state-endangered Black-spored Quillwort (*Isoetes melanospora*)
 - Federal- and state-endangered Mat-forming Quillwort (*Isoetes tegetiformans*)
 - Federal- and state-endangered Harperella (*Ptilimnium nodosum*)
 - State-threatened Granite Stonecrop (*Sedum pusillum*)
- Conducted surveys between May 10 and June 24, 2016 for Bald Eagle nests during the combined terrestrial resource and RTE surveys along the project reservoir shoreline and other areas where the project boundary is expanded from the reservoir.
- Preliminary surveys for other terrestrial RTE species and their preferred habitats were conducted between April 25 and June 24, 2016, concurrent with the field activities for the Terrestrial Resources Study (Section 5).
- Obtained preliminary results of freshwater mussel surveys from Georgia Power.

Reporting

- Began drafting the RTE Species Study Report.

6.2.2 Preliminary Findings

- Field activities associated with preliminary surveys for terrestrial RTE species within the project boundary identified two federal- and/or state-listed species, and two species that are considered rare or uncommon within Georgia. These findings include the following:
 - Pool Sprite (federally threatened) was found in Putnam County on the large granite outcrop at Lawrence Shoals Park located in the Oconee Wildlife Management Area (WMA) within the project boundary. The outcrop is managed by GDNR, helping to protect the site from foot traffic and recreational activity.
 - Bald Eagles were observed on multiple occasions along the shoreline of Lake Oconee within the project boundary, including immediately north of the Land Management Office boathouse, along the Richland Creek (east) side of the reservoir, at Dyar Pasture Recreation Area, and along the main stem of the reservoir (Oconee River) and south of I-20. Bald eagle is a state threatened species and is protected under the Bald and Golden Eagle Protection Act.
 - Bachman’s Sparrow (*Peucaea aestivalis*) calls were heard along the transmission easement in Putnam County between Wallace Dam and Eatonton, Georgia. Bachman’s Sparrow is unlisted but is considered rare in Georgia.
 - Swainson’s Warbler (*Limnothlypis swainsonii*) calls/songs were heard along forested floodplains in the Shoulderbone Creek floodplain below Wallace Dam and in the Redlands WMA along the northern portions of the project area. Therefore, occurrences were documented in Hancock and Greene Counties. Swainson’s Warbler is unlisted but is considered uncommon in Georgia.
- Based on preliminary findings of the Fish and Aquatic Resources Study relative to RTE species (Section 4.2.2), no federal or state endangered or threatened species of fish or mussels are known to occur within the project boundary. The freshwater mussel survey conducted in Lake Oconee in July 2016 detected the presence of Inflated Floater, a species previously petitioned for federal listing by CBD but which has been withdrawn from the petition. The species is not listed as protected in Georgia.

6.3 Variance from Study Plan and Schedule

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

6.4 Remaining Activities

- Incorporate bald eagle nest locations into GIS maps/figures for the study report.

- Incorporate findings of aquatic RTE species assessment and freshwater mussel surveys from the Fish and Aquatic Resources Study (Section 4) into the study report.
- Complete the RTE Species Study Report.

7.0 RECREATION AND LAND USE

7.1 Introduction

Georgia Power is conducting a study to characterize existing recreational use and land use at the Wallace Dam Project and to evaluate the potential impacts of continued project operation on these resource areas. The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in a Recreation and Land Use Study Report, which will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with the Commission by November 21, 2017.

The specific objectives of the Recreation and Land Use Study are to:

- Review existing information to describe existing recreation and land use in the Wallace Dam project area.
- Characterize the effects of continued project operation on recreational opportunities at the Project.
- Characterize existing recreational capacity and usage on Lake Oconee and in the Wallace Dam tailrace area.
- Evaluate the adequacy of existing recreational facilities to meet current and future recreational demand, including fishing tournaments at the Project.
- Evaluate the adequacy of the existing Shoreline Management Program to address land use practices, including erosion, and protect environmental resources within the project boundary.

7.2 Study Progress

7.2.1 Activities Completed

Interviews with User Groups, Facility Providers, and Other Stakeholders

- Developed user-group and facility-provider survey forms and distributed 42 forms to potential recreation stakeholders for their responses. Recipients included FS; homeowners associations and resorts; angling clubs; park hosts at Georgia Power project recreation facilities; operators of private marinas; GDNR Law Enforcement; business interests; and other organizations. Follow-up contacts were made via email or telephone communications as appropriate.

2015 Form 80 Data Analysis

- Reviewed the 2015 Form 80 methods and calculations used to develop annual visitation estimates in recreation days from recreational use data collected in 2014.
- Began compiling 2015 visitation records from Georgia Power project recreation facilities for use in updating annual visitation estimates.
- Reviewed the 2009 Form 80 methods and annual visitation estimates for comparison.
- Analyzed the 2015 Form 80 raw data and calculations for incorporating relevant user data collected during the recreation field surveys to update annual visitation estimates.

Campground Customer Satisfaction Surveys and Shoreline Customer Surveys

- Began analyzing and summarizing the results of the Georgia Power customer satisfaction surveys of campground customers in 2011 and in 2014.

Recreation Field Surveys

- Completed five recreation field surveys at three Georgia Power parks from March to June 2016. The parks included Armour Bridge, Long Shoals Boat Ramp, and Sugar Creek Boat Ramp. Roving recreation surveys were administered to bank anglers at numerous other locations around the project reservoir and tailrace area during the five events. The surveys were conducted on one weekday in March, one weekend in April, Memorial Day weekend in May, and one weekday and one weekend in June.
- Compiled recreation survey results into a database for summarizing response trends assessing user satisfaction and extracting relevant user data for updating annual visitation estimates.
- Began tabulating user response trends, recreation user count data, and other findings of the recreation surveys.

Mapping of Bank Fishing Locations

- Began mapping popular bank fishing locations within or adjacent to the project boundary based on observations of Georgia Power shoreline management staff and park operations staff.

Review of Existing Information

- Performed preliminary review of readily available population projections for the counties adjacent to the Project or near the Project that are experiencing population growth in order to assess future recreational demand.
- Began reviewing and evaluating available recreational use information for the WMAs located adjacent to the project boundary.
- Began describing and preparing maps of the project recreation sites, the FS recreational areas, and privately operated recreation access facilities.
- Began reviewing available land use information and preparing a land use map for the project that will delineate developed and undeveloped lands within the project boundary and Georgia Power-owned lands adjacent to the project boundary.

7.2.2 Preliminary Findings

- Table 7-1 summarizes the preliminary recreation field survey counts per access point for the five recreation survey events completed in March-June 2016. A total of 243 unique recreation users were surveyed. Of the 166 recreation users surveyed at Georgia Power boat ramps, 46 percent were from the Sugar Creek Boat Ramp, 34 percent were from the Long Shoals Boat Ramp, and 20 percent were from Armour Bridge. Roving surveys were administered to an additional 77 recreation users, mainly bank anglers, at 14 other locations around the project reservoir and tailrace.

TABLE 7-1
Preliminary Numbers of Recreation Surveys Administered During Five Events in March-June 2016

Location	Tuesday 03-22-2016 (weekday)	Saturday 04-16-2016 (weekend)	Saturday 05-28-2016 (Holiday)	Sunday 06-12-2016 (weekend)	Wednesday 06-22-2016 (weekday)	Access Point Total
Georgia Power Boat Ramps:						
Sugar Creek	11	20	25	19	1	76
Long Shoals	10	9	16	14	7	56
Armour Bridge	2	6	11	14	1	34
Total	23	35	52	47	9	166
Roving Survey Locations:						
Old Salem Park	3	7	3	0	0	13
Hancock County Boat Ramp (Hwy 16)	1	3	5	0	1	10
Hwy 44 at Lake Oconee East Bank	1	6	0	2	0	9
Parks Ferry Park	0	0	5	2	0	7

TABLE 7-1

Preliminary Numbers of Recreation Surveys Administered During Five Events in March-June 2016

Location	Tuesday 03-22-2016 (weekday)	Saturday 04-16-2016 (weekend)	Saturday 05-28-2016 (Holiday)	Sunday 06-12-2016 (weekend)	Wednesday 06-22-2016 (weekday)	Access Point Total
Hwy 44 at Jerry's Bait & Tackle	2	1	3	0	0	6
Swords Recreation Area	0	3	0	3	0	6
Dyar Pasture Recreation Area	0	1	4	0	0	5
Redlands Recreation Area	0	2	3	0	0	5
Tailrace Fishing Area	0	1	3	0	1	5
Hwy 278 at Apalachee River	0	2	0	1	0	3
Hwy 278 at Oconee River	0	2	1	0	0	3
Lawrence Shoals Park	1	2	0	0	0	3
Blue Springs Marina	0	1	0	0	0	1
Hwy 44 near Oconee Outdoors	1	0	0	0	0	1
Total	9	31	27	8	2	77

7.3 Variance from Study Plan and Schedule

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

7.4 Remaining Activities

- Complete interviews with user groups and facility providers.
- Complete analysis of the recreation surveys, campground customer satisfaction surveys, and shoreline customer surveys with respect to user trends, carrying capacity, competing uses, adequacy of existing facilities, and other findings.
- Complete analysis of Form 80 data and refine annual use estimates by incorporating pertinent recreation survey results and updated visitation records where available.

- Complete mapping of popular bank fishing locations within or adjacent to the project boundary to incorporate observations from roving recreation surveys administered to bank anglers and interviews with GDNR Law Enforcement and other stakeholders.
- Complete analysis of information and data relative to existing recreation facilities and opportunities in the project area; regionally or nationally important recreation areas in the project vicinity; current and future recreation needs identified in applicable plans; and effects of project operations on recreational use.
- Complete estimates of future annual visitation to the Wallace Dam Project based on existing population forecasts and evaluate future demand for recreation facilities in the project study area.
- Complete analysis of information and data relative to surrounding land use in the project area and existing shoreline management within the project boundary.
- Evaluate the consistency of the Project with respect to applicable federal, state, regional, and local ordinances and resource management plans.
- Complete preparation of the Recreation and Land Use Study Report.

8.0 CULTURAL RESOURCES

8.1 Introduction

Georgia Power is conducting a cultural resources study of the Wallace Dam Project to identify and evaluate archaeological and historical resources within the area of potential effect (APE). The study is being conducted according to the Study Plan for the Wallace Dam Project approved by FERC on December 17, 2015. The results of the study will be presented in two reports: a Cultural Resources Study Report and a Hydro-Engineering Study Report. The reports will be filed with the Commission by November 18, 2016. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed action in the PLP, to be filed with the Commission by November 21, 2017.

The specific objectives of the Cultural Resources Study are to:

- Identify and delineate the APE.
- Identify known historic resources through literature and site file review.
- Determine if any historic properties are eligible for listing on the National Register.
- Evaluate the potential for effects upon historic resources by the operation and maintenance of the Project or by activities conducted along the shoreline of the project reservoir.

8.2 Study Progress

8.2.1 Activities Completed

Cultural Resources Assessment

- Completed review of archaeological site files and available background data and literature, including review of the Georgia's Natural, Archaeological, and Historic Resources Geographic Information System and visits to the Georgia Site File in Athens, Georgia, and the GDNR Historic Preservation Division.
- Designed and completed a field survey consisting of evaluation (Phase II) testing of three archaeological sites (9HK23, 9GE751, 9GE952) within the project boundary previously recommended as potentially eligible to determine whether they meet criteria defined for inclusion on the National Register of Historic Places (NRHP).
- Processed, sorted, and cataloged all recovered materials; analyzed materials to determine the occupation span, likely function, and degree of artifact preservation at each recorded site. Laboratory processing and analysis is nearly complete.

- Began preparing the Cultural Resources Assessment Study Report.

Hydro-Engineering Assessment

- Completed background historical research on dam history and historic photographs from Georgia Power archives.
- Completed architectural photographic documentation of the Wallace Dam exterior and interior spaces and equipment.
- Began preparing the Hydro-Engineering Study Report.

8.2.2 Preliminary Findings

- Site 9HK23: Field work included 18 shovel tests and 1 test unit. No artifacts were recovered. The rock piles were revisited but all indications suggest these features are not prehistoric. Initial NRHP eligibility recommendation: not eligible.
- Site 9GE751: Field work included 34 shovel tests and 3 test units. A total of 308 artifacts were recovered, mostly prehistoric ceramics. No cultural features were identified. Initial NRHP eligibility recommendation: not eligible.
- Site 9GE952: Field work included 59 shovel tests and 3 test units. A total of 536 artifacts were recovered, mostly prehistoric ceramics. No cultural features were identified. Initial NRHP eligibility recommendation: not eligible.

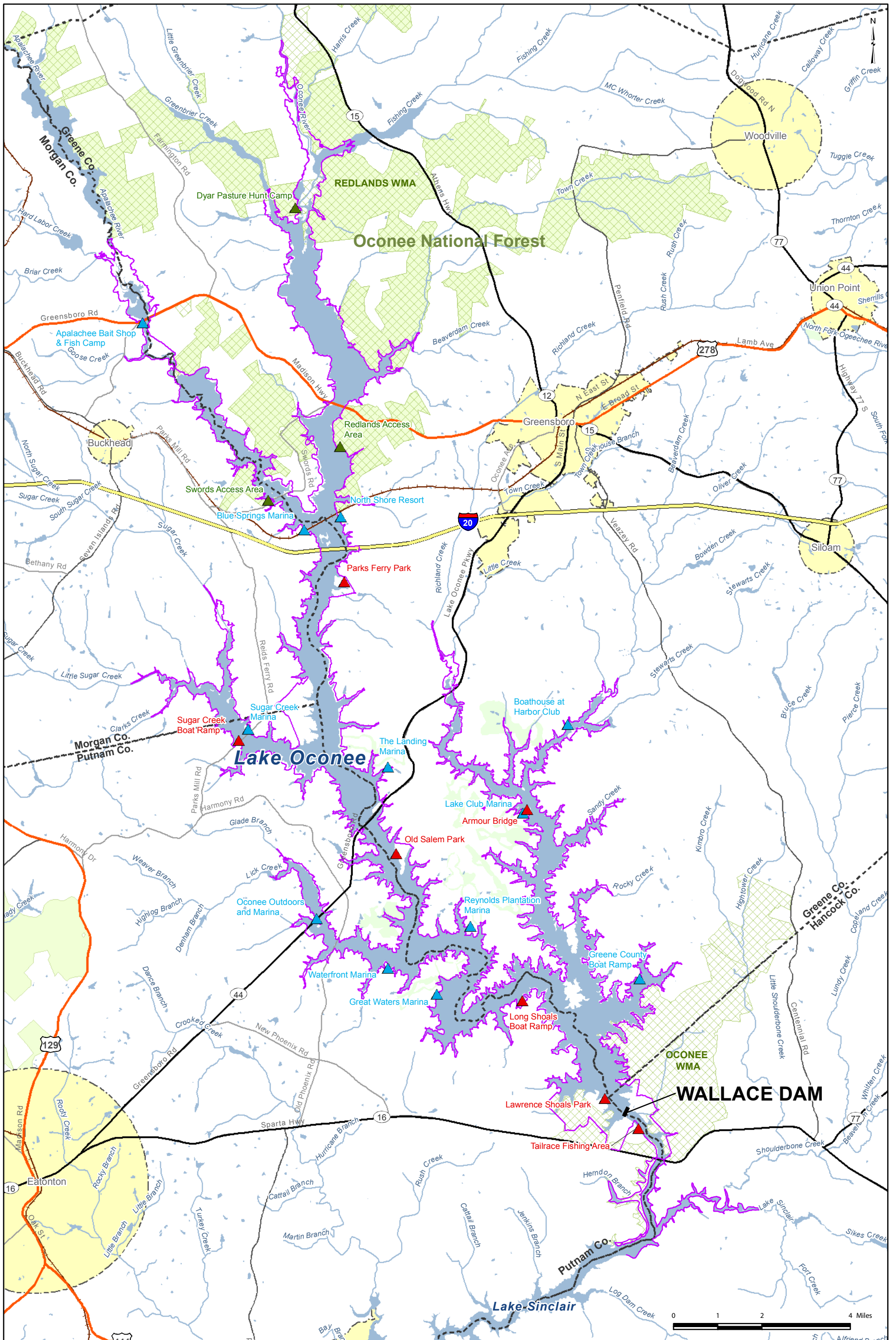
8.3 Variance from Study Plan and Schedule

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

8.4 Remaining Activities

- Complete artifact curation.
- Select artifact photographs for inclusion in the study report.
- Complete preparation of Cultural Resources and Hydro-Engineering Study Reports.

FIGURE



<ul style="list-style-type: none"> Interstate Highway U.S. Highway State Highway Major Roads Local Streets 	<ul style="list-style-type: none"> Railroads (Local) Dam Rivers/Creeks Lake Project Boundary 	<ul style="list-style-type: none"> Towns/Cities County Boundary State Managed Lands National Park or Forest Golf Course 	<ul style="list-style-type: none"> Recreation Access Point Forest Service Public/Private Georgia Power 	<p>GEORGIA POWER A SOUTHERN COMPANY</p> <p>Geosyntec consultants</p>	<p>Figure 1-1 Project Boundary and Surrounding Area Wallace Dam Project (FERC No. 2413)</p>
--	--	---	--	---	---