Southern Company Generation.
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October 14, 2020

Lloyd Shoals Hydroelectric Project (FERC No. 2336-094)
Response to Comments on Relicensing Study Results

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Room 1-A- Dockets Room
Washington, D.C. 20426

Dear Secretary Bose:

On behalf of Georgia Power Company, Southern Company is filing with the Federal Energy Regulatory Commission (Commission) a response to comments on the Lloyd Shoals Project relicensing study results and a request for study amendments in compliance with the Commission's Integrated Licensing Process regulations at 18 CFR § 5.15(c)(5).

Georgia Power hosted a relicensing study results meeting on July 29, 2020 and filed a meeting summery with the Commission on August 13, 2020. The Georgia Department of Natural Resources Wildlife Resources Division (WRD) filed a comment letter in the docket on September 14, 2020. Attachment A includes a copy of WRD's comment letter, modified by Georgia Power to bracket and number comments, followed by Georgia Power's responses. Attachment B includes for Commission approval a Proposed Study Plan Amendment, Recreation and Land Use incorporating further study activities to address WRD's recommendations as discussed in our responses. No other comment letters from stakeholders were filed in the docket.

Georgia Power has continued consulting with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) on modifications to sampling efforts for the American Eel Abundance and Upstream Movements Study, and on a proposal for continuing this study through June 2021. A Proposed Study Plan Amendment, American Eel Abundance and Upstream Movements is included in Attachment C for Commission approval. Documentation of consultation with the USFWS and NMFS is provided as Appendix A to Attachment C.

If you require further information, please contact me at 404.506.7219 or cromara@southernco.com.

Sincerely,

Courtenay R. O'Mara

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

Attachments

cc: FERC – Navreet Deo, Allan Creamer
Kleinschmidt – Steve Layman, Ph.D.
Troutman Pepper – Hallie Meushaw

ATTACHMENT A

GEORGIA DEPARTMENT OF NATURAL RESOURCE WILDLIFE RESOURCES DIVISION COMMENTS AND GEORGIA POWER RESPONSES

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

September 14, 2020

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, DC 20426

RE: Comments on the Study Plan Results, Lloyd Shoals Dam Project (2336-094)

Dear Secretary Bose:

Thank you for the opportunity to review and comment on Georgia Power Company's (GPC) Study Plan Results, presented July 2020, for the Lloyd Shoals Hydroelectric Project (P-2336-094). We recognize that this project has impacts to the water quality, aquatic habitat, fisheries resources, and recreational opportunities within, upstream and downstream of the project area. Below are the Wildlife Resources Division's (WRD) Fisheries Management Section (FM) comments:

Recreational Use Survey:

In reviewing the relicensing recreation study results, FM recognized that GPC was unable to conduct surveys on five separate days across spring and summer months. Understandably, two of the planned recreation surveys scheduled for the Spring 2020 were cancelled due to the COVID-19 global pandemic. However, and as a result of the cancellations, FM believes the number recreation surveys completed is low, anglers, boaters and other recreational users who frequent the project during the spring are underrepresented and the survey results may not fully inform long term decisions regarding recreational needs at the project. FM recommends that spring recreation surveys scheduled in 2020 be completed in the spring of 2021, should conditions surrounding COVID-19 permit. This will enable GPC to collect additional information, obtain input from broader representation of the project's users (e.g. spring anglers and boaters, etc.) and ultimately better inform the decision-making process. We also recognize that the pandemic may continue to impede opportunities to conduct on-site interviews and suggest that information gaps could be filled using several other standardized techniques such as internet, phone or mail based survey of users and user groups, field reconnaissance, aerial survey, traffic counters and discussions with knowledgeable persons. 1 2

FISHERIES MANAGEMENT SECTION
2070 U.S. HIGHWAY 278 S.E. | SOCIAL CIRCLE, GEORGIA 30025-4711
706.557.3305 | FAX 706.557.3030 | WWW.GEORGIAWILDLIFE.COM

Public Fishing and Boating Access:

While the results of the current recreation survey instruments can be used estimate use and identify needed recreational enhancements at existing facilities, they are not well suited for identifying access needs at the project, as a whole It is widely known that there is limited public access to the project reservoir, Lake Jackson, given the prevalence of adjacent, private land holdings. In our November 5, 2018 comments on the project's scoping and pre-application relicensing documents, we encouraged GPC to identify new public fishing and boating access opportunities. FM and GPC have had preliminary conversations in these regards and we look forward to GPC's continued engagement as FM works with Newton County, Georgia to identify new boating, paddling and fishing access on the Yellow River, a major tributary to Lake Jackson which lies, in part, within the project boundary. Lastly, we urge GPC to evaluate conditions of the Lloyd Shoal Tailrace boating access facility and consider improving usability of the ramp during periods of non-generation, as we have heard concerns and recently had trouble launching boats during these periods. 3 4

We appreciate GPC's commitment to the conservation of natural and aquatic resources. Our staff looks forward to working closely with GPC throughout the remainder of the relicensing process.

Sincerely,

Thomas Litts, Chief

cc. Jon Ambrose

Response to Letter from Georgia Department of Natural Resources, Wildlife Resources Division, Dated September 14, 2020

Response 1

The three surveys conducted in June-August 2019 collected a substantial amount of information on recreation users and user perspectives, including anglers, boaters, and shoreline recreation users. Of the 117 users interviewed, 37 percent cited bank fishing or boat fishing as the primary reasons for their visits. Representation of users was also well distributed between lake and tailrace users, with 54.7 percent of the users interviewed at Lloyd Shoals Park and 43.6 percent interviewed at Ocmulgee River Park and the Tailrace Fishing Pier.[1]

As described in Georgia Power's Proposed Study Plan Amendment for Recreation and Land Use, which is included with this filing, the two spring recreation surveys will be rescheduled for spring 2021 to capture recreational users who frequent the project during the spring, including anglers and boaters. As conditions allow with respect to Covid-19 and social distancing guidance, Georgia Power will plan to collect in-person surveys and conduct user counts on one weekday and one weekend day in March-April 2021, as originally proposed in the Revised Study Plan, as approved by the Federal Energy Regulatory Commission (FERC) on May 20, 2019. If Covid-19 conditions do not allow in-person interviews, the survey effort will consist of vehicle and user counts and observations on the two survey dates and provisions for the use of a survey drop box as described in Response 2. Georgia Power will consider the safety of its employees, contractors, and the public when deciding if in-person surveys are appropriate in 2021. Since user counts can be conducted without public contact, Georgia Power believes this activity can be completed safely with appropriate social distancing restrictions.

Response 2

Should Covid-19 social distancing restrictions continue into early spring 2021, Georgia Power proposes to collect additional recreation survey data to supplement the vehicle and user counts of the two scheduled field surveys. Georgia Power proposes to install drop boxes at the three project recreation facilities most frequented by anglers or boaters, including Lloyd Shoals Park, Ocmulgee River Park, and the Tailrace Fishing Pier, from March 15 through April 15, 2021. The drop boxes will include comments cards with the same set of survey questions used in the previous surveys. Recreation users completing the survey questions will leave the cards in the drop box. Georgia Power personnel will collect the completed cards weekly. The proposed comment card survey questions are included in the Proposed Study Plan Amendment for Recreation and Land Use. Since user counts can be conducted without public contact, Georgia Power believes this activity can be completed safely with appropriate social distancing

[1] The remaining users (1.7 percent) were interviewed at the Georgia Highway 36 bridge at Tussahaw Creek.

restrictions. The decision whether to conduct in-person or drop-box surveys will be made by March 1, 2021 to allow sufficient time for installing the drop boxes.

Response 3

Figure 12 of the Recreation and Land Use Study Report depicts the distribution of Georgia Power-owned lands located within and adjacent to the project boundary. Georgia Power will continue discussions with the Georgia Department of Natural Resources (GDNR) regarding the identification of potential opportunities for new boating, paddling, and fishing access within the project boundary during development of the Preliminary Licensing Proposal (PLP), which will be filed with FERC by July 1, 2021.

Response 4

Georgia Power acknowledges GDNR's concerns regarding accessibility of the boat ramp at Ocmulgee River Park in the Lloyd Shoals tailrace area and will evaluate the condition of the ramp and opportunities to improve its usability during non-generation periods during development of the PLP.

ATTACHMENT B

LLOYD SHOALS PROJECT

PROPOSED STUDY PLAN AMENDMENT, RECREATION AND LAND USE

Georgia Power

PROPOSED STUDY PLAN AMENDMENT

RECREATION AND LAND USE

LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

Prepared with:

Kleinschmidt

Lexington, South Carolina
www.Kleinschmidtgroup.com

October 2020

PROPOSED STUDY PLAN AMENDMENT
RECREATION AND LAND USE
LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

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PROPOSED STUDY PLAN AMENDMENT
RECREATION AND LAND USE
LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) proposes to amend the study plan for the Recreation and Land Use Study being conducted for the Federal Energy Regulatory Commission (FERC) relicensing of the Lloyd Shoals Hydroelectric Project (FERC No. 2336) (Lloyd Shoals Project, the Project) to reschedule two recreation surveys to spring 2021. The approved study plan consists of Georgia Power's Revised Study Plan (RSP) (Georgia Power 2019) and FERC's Study Plan Determination issued on May 20, 2019 (FERC 2019). As set forth in the approved study plan, Georgia Power originally planned to conduct recreation surveys on five days in 2019-2020, with the two final surveys planned for early spring 2020. The first three surveys were completed according to the study plan; however, due to federal and state requirements issued in response to the Covid-19 pandemic, the final two surveys were cancelled.

In its comments on the study plan results dated September 14, 2020, the Georgia Department of Natural Resources (GDNR) Wildlife Resources Division recommended that the spring recreation surveys cancelled in 2020 be completed in spring 2021. Further, should the pandemic continue to impede opportunities to conduct on-site interviews, GDNR recommends that other standardized techniques be considered for filling information gaps. This study plan amendment proposes rescheduling and completing the final two recreation surveys in spring 2021 according to the on-site survey methodology in the approved study plan (Georgia Power 2019; FERC 2019), with modifications for using comment-card drop boxes in lieu of interviews to supplement data gathering should Covid-19 social distancing restrictions continue into spring 2021.

2.0 STUDY AREA

The study area for the spring 2021 recreation surveys includes the four project recreation facilities within the project boundary (Lloyd Shoals Park, Jane Lofton Public Access Area,

Tailrace Fishing Pier, and Ocmulgee River Park) and the informal recreation area on Georgia Power land used for bank fishing at the Georgia Highway 36 Bridge at Tussahaw Creek. The recreation surveys completed in June-August 2019 were conducted at the same locations.

3.0 METHODOLOGY

3.1 RECREATION SURVEYS

Two on-site recreation surveys will be conducted in March-April 2021, one on a weekday and one on a weekend day, to assess recreational user satisfaction and to characterize user trends, carrying capacity, competing uses, and the adequacy of existing recreation facilities. Two survey instruments, a Recreational Survey Form and a Recreation User Count Form, which are provided as Figures 8-1 and 8-2, respectively, in the RSP (Georgia Power 2019), will be used to collect project-related information.

As conditions allow with respect to Covid-19 and applicable social distancing guidance, the recreation surveys will be administered in-person by interviewing recreation users as described in the RSP. Surveyors will interview users with the pre-prepared questionnaire. In addition, the surveyors will perform vehicle and user counts upon arriving at and leaving a survey site, when there is any noticeable change in users while present at the site, or at a minimum of once per hour while present at the site.

If Covid-19 conditions do not allow in-person interviews, the two on-site recreation surveys will consist of rotating among the survey sites to perform vehicle and user counts and observations, without public contact. Georgia Power will consider the safety of its employees, contractors, and the public when deciding if in-person surveys are appropriate in spring 2021.

Should Covid-19 restrictions continue into spring 2021, additional recreation survey data will be collected to supplement the vehicle and user counts of the two scheduled field surveys. Comment-card drop boxes will be installed at the three project recreation facilities most frequented by anglers and boaters, including Lloyd Shoals Park, Ocmulgee River Park, and the Tailrace Fishing Pier, from March 15 through April 15, 2021. One box will be installed at each park, near the boat ramps at Lloyd Shoals Park and Ocmulgee River Park and at the entrance to the Tailrace Fishing Pier. The drop boxes will provide comment cards with the same set of

questions used on the pre-prepared questionnaire (Appendix A). Recreation users completing the survey questions will leave the cards in the drop box, which will be collected on a weekly basis. A Quick Response (QR) Code will be provided on each drop box, which can be easily read by smartphones, for users wishing to respond to the survey questions on a web-based version of the comment card by April 15, 2020. The decision whether to conduct in-person interviews or drop-box surveys will be made by March 1, 2021 to allow sufficient time for installing the drop boxes.

3.2 DATA ANALYSIS

The survey results will be compiled and incorporated into updated data tables for all five recreation surveys and analyzed with respect to user response trends, annual use estimates, and future recreation demands.

4.0 REPORTING

In accordance with the Lloyd Shoals Process Plan and Schedule, an Updated Recreation and Land Use Study Report will be filed with FERC by May 19, 2021. The study report will compile and analyze all recreation survey data gathered since the beginning of the study in 2019, present the findings in tables and graphs as appropriate, and interpret resulting trends.

5.0 SCHEDULE

The spring 2021 recreation surveys for the Recreation and Land Use Study will be completed according to the milestones in Table 1. Following the filing of the Updated Study Report by May 19, 2021, an Updated Study Results Meeting will be held on June 3, 2021 and a summary of the meeting will be filed with FERC by June 18, 2021.

6.0 REFERENCES

Federal Energy Regulatory Commission (FERC). 2019. Study Plan Determination for Lloyd Shoals Hydroelectric Project. May 20, 2019.

Georgia Power Company (Georgia Power). 2019. Revised Study Plan for Lloyd Shoals Hydroelectric Project, FERC Project Number 2336. April 2019.

TABLE 1 SCHEDULE FOR CONDUCTING SPRING 2021 RECREATION SURVEYS

Activity	Deadline
Begin Field Studies	March 15, 2021
Complete Field Studies	April 15, 2021
File Updated Study Report	May 19, 2021
Updated Study Results Meeting	June 3, 2021
File Updated Study Results Meeting Summary	June 18, 2021
Stakeholders file any Updated Study Results Meeting Summary Comments	July 18, 2021
File Response to any Study Results Meeting Summary Comments	August 17, 2021

APPENDIX A

RECREATION SURVEY COMMENT CARDS FOR USE WITH DROP BOXES

FRONT OF COMMENT CARD

Georgia Power Company **Lloyd Shoals Project** **Recreation Use Survey**	Georgia Power Company is conducting this survey to learn about recreational use at Lake Jackson, user satisfaction with existing recreation facilities, and whether facility improvements may be needed. Please take a few minutes to answer some questions about your visit today. Thank you for your participation.

Location: LLOYD SHOALS PARK					**Date:**	**Time:**
Weather:	____Clear	____Partly Cloudy	____Cloudy	____Rainy		**Temperature:**

1. What is your county and state of residence?	County:	State:
2. How many people (including you) are in your group today?_____people		

3. What is your age? (check one)	____18-24	____25-34	____35-44	____45-54	____55+

4. If you came with others, what are their age groups? (check all that apply)			
____Children (infants-12)	____Youth (13-17)	____Adults (18-55)	____Senior Adults (over 55)

5. How many hours will you have spent here today?_____hours
6. How many times (including today) have you visited Lake Jackson or its parks in the last 30 days?_____times
7. How many times do you visit Lake Jackson annually?_____times

8. Do you use the reservoir at night?	____Yes	____No	**If "yes", how many times per year?**_____times

9. Are the parks at this reservoir your primary destination for outdoor recreation activities?	____Yes	____No

10. What other parks and lakes in the area do you frequent for recreation? (list below)

BACK OF COMMENT CARD

11. What is the primary reason for your visit today? (check all that apply)			
____Boat fishing	____Pontoon boating	____Canoeing/kayaking	____Hiking/walking
____Bank fishing	____Sail boating	____Sailboarding	____Shoreline relaxation
____Tournament fishing	____Water skiing	____Picnicking/playing	____Other (list below):
____Pleasure boating	____Jet skiing	____Swimming/wading	

12. If you came to fish today, what were you fishing for? (check all that apply)			
____Largemouth bass	____Striped bass	____Channel catfish	____Other (list below):
____Crappie	____Hybrid bass	____Blue catfish	
____Sunfish/bream	____White bass	____Flathead catfish	

13. Please rate the quality of the existing facilities at this access area. (choose one description for each)							
Parking:	____Good	____Fair	____Poor	**Restrooms:**	____Good	____Fair	____Poor
Boat ramp:	____Good	____Fair	____Poor	**Cleanliness:**	____Good	____Fair	____Poor
Dock:	____Good	____Fair	____Poor	**Bank fishing access:**	____Good	____Fair	____Poor

14. List any specific improvements you would like to see at this access area, and any other comments or suggestions.

FRONT OF COMMENT CARD

Georgia Power Company Lloyd Shoals Project Recreation Use Survey	Georgia Power Company is conducting this survey to learn about recreational use at Lake Jackson, user satisfaction with existing recreation facilities, and whether facility improvements may be needed. Please take a few minutes to answer some questions about your visit today. Thank you for your participation.

Location: LLOYD SHOALS TAILRACE FISHING PIER					**Date:**	**Time:**
Weather:	____Clear	____Partly Cloudy	____Cloudy	____Rainy		**Temperature:**

1. What is your county and state of residence?	County:	State:
2. How many people (including you) are in your group today?_____people		

3. What is your age? (check one)	____18-24	____25-34	____35-44	____45-54	____55+

4. If you came with others, what are their age groups? (check all that apply)			
____Children (infants-12)	____Youth (13-17)	____Adults (18-55)	____Senior Adults (over 55)

5. How many hours will you have spent here today?_____hours
6. How many times (including today) have you visited Lake Jackson or its parks in the last 30 days?_____times
7. How many times do you visit Lake Jackson annually?_____times

8. Do you use the reservoir at night?	____Yes	____No	**If "yes", how many times per year?**_____times

9. Are the parks at this reservoir your primary destination for outdoor recreation activities?	____Yes	____No

10. What other parks and lakes in the area do you frequent for recreation? (list below)

BACK OF COMMENT CARD

11. What is the primary reason for your visit today? (check all that apply)			
____Boat fishing	____Pontoon boating	____Canoeing/kayaking	____Hiking/walking
____Bank fishing	____Sail boating	____Sailboarding	____Shoreline relaxation
____Tournament fishing	____Water skiing	____Picnicking/playing	____Other (list below):
____Pleasure boating	____Jet skiing	____Swimming/wading	

12. If you came to fish today, what were you fishing for? (check all that apply)			
____Largemouth bass	____Striped bass	____Channel catfish	____Other (list below):
____Crappie	____Hybrid bass	____Blue catfish	
____Sunfish/bream	____White bass	____Flathead catfish	

13. Please rate the quality of the existing facilities at this access area. (choose one description for each)							
Parking:	____Good	____Fair	____Poor	**Restrooms:**	____Good	____Fair	____Poor
Boat ramp:	____Good	____Fair	____Poor	**Cleanliness:**	____Good	____Fair	____Poor
Dock:	____Good	____Fair	____Poor	**Bank fishing access:**	____Good	____Fair	____Poor

14. List any specific improvements you would like to see at this access area, and any other comments or suggestions.

FRONT OF COMMENT CARD

Georgia Power Company Lloyd Shoals Project Recreation Use Survey	Georgia Power Company is conducting this survey to learn about recreational use at Lake Jackson, user satisfaction with existing recreation facilities, and whether facility improvements may be needed. Please take a few minutes to answer some questions about your visit today. Thank you for your participation.

Location: OCMULGEE RIVER PARK				**Date:**	**Time:**
Weather:	____Clear	____Partly Cloudy	____Cloudy	____Rainy	**Temperature:**

1. What is your county and state of residence?	County:	State:
2. How many people (including you) are in your group today?_____people		

3. What is your age? (check one)	____18-24	____25-34	____35-44	____45-54	____55+

4. If you came with others, what are their age groups? (check all that apply)			
____Children (infants-12)	____Youth (13-17)	____Adults (18-55)	____Senior Adults (over 55)

5. How many hours will you have spent here today?_____hours
6. How many times (including today) have you visited Lake Jackson or its parks in the last 30 days?_____times
7. How many times do you visit Lake Jackson annually?_____times

8. Do you use the reservoir at night?	____Yes	____No	**If "yes", how many times per year?**_____times

9. Are the parks at this reservoir your primary destination for outdoor recreation activities?	____Yes	____No

10. What other parks and lakes in the area do you frequent for recreation? (list below)

BACK OF COMMENT CARD

11. What is the primary reason for your visit today? (check all that apply)			
____Boat fishing	____Pontoon boating	____Canoeing/kayaking	____Hiking/walking
____Bank fishing	____Sail boating	____Sailboarding	____Shoreline relaxation
____Tournament fishing	____Water skiing	____Picnicking/playing	____Other (list below):
____Pleasure boating	____Jet skiing	____Swimming/wading	

12. If you came to fish today, what were you fishing for? (check all that apply)			
____Largemouth bass	____Striped bass	____Channel catfish	____Other (list below):
____Crappie	____Hybrid bass	____Blue catfish	
____Sunfish/bream	____White bass	____Flathead catfish	

13. Please rate the quality of the existing facilities at this access area. (choose one description for each)							
Parking:	____Good	____Fair	____Poor	**Restrooms:**	____Good	____Fair	____Poor
Boat ramp:	____Good	____Fair	____Poor	**Cleanliness:**	____Good	____Fair	____Poor
Dock:	____Good	____Fair	____Poor	**Bank fishing access:**	____Good	____Fair	____Poor

14. List any specific improvements you would like to see at this access area, and any other comments or suggestions.

ATTACHMENT C

LLOYD SHOALS PROJECT

PROPOSED STUDY PLAN AMENDMENT, AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS

Georgia Power

PROPOSED STUDY PLAN AMENDMENT

AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS

LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

Prepared with:

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October 2020

PROPOSED STUDY PLAN AMENDMENT
AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS
LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

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AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS
LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) proposes to amend the study plan for the American Eel Abundance and Upstream Movements Study being conducted for the Federal Energy Regulatory Commission (FERC) relicensing of the Lloyd Shoals Hydroelectric Project (FERC No. 2336) (Lloyd Shoals Project, the Project). The approved study plan consists of Georgia Power's Revised Study Plan (Georgia Power 2019) and FERC's Study Plan Determination issued on May 20, 2019 (FERC 2019). [1] Based on the findings of the first year of study in 2019-2020 and consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS), Georgia Power proposes to extend the study from November 2020 to June 2021 and to modify the study area and the sampling methods to provide additional information on the abundance and upstream movements of American Eel (*Anguilla rostrata*) in the Ocmulgee River below Lloyd Shoals Dam. The proposed survey efforts in November 2020-June 2021 will include backpack electrofishing to further characterize the life stages, size distribution, and abundance of the eel population below Lloyd Shoals Dam, nighttime boat electrofishing, and nighttime observations using flashlights and trapping to document the seasonal timing and size characteristics of eels migrating to the base of the dam.

The 18-megawatt Lloyd Shoals Project consists of a dam, a powerhouse, and a reservoir (Lake Jackson) on the Ocmulgee River in Butts, Henry, Jasper, and Newton Counties, Georgia. Georgia Power operates the Project in a modified run-of-river mode for generation during peak power demand hours to meet electrical system demand. Georgia Power is not proposing to make

[1] On December 20, 2018, FERC issued a process plan and schedule (PP&S) for the relicensing of the Project. On April 30, 2020, Georgia Power filed a letter requesting that FERC modify the PP&S to account for the effects of COVID-19 and high inflow conditions and 1) allow Georgia Power to conduct the study results meeting on July 29, 2020, instead of June 3, 2020, and 2) extend the remainder of the first study season by about two months. On May 5, 2020, FERC granted the request and issued a revised PP&S for the Project. *See* Letter to Courtenay O'Mara, Southern Company Generation, from Vince Yearick, FERC (May 5, 2020).

any major modifications to the Project under the new license. The Project does not occupy federal lands. The current license expires December 31, 2023.

Appendix A documents Georgia Power's consultation with NMFS and FWS on the study plan amendment.

1.1 GOALS AND OBJECTIVES

The goal of this study is to develop current baseline information on the abundance, life stages, size range, and timing of upstream movements of American Eel that approach Lloyd Shoals Dam within the project boundary. This information will enable NMFS and FWS to evaluate whether passage may be needed for American Eel at Lloyd Shoals Dam.

The objectives of this study are:

- Objective 1 – Identify the life stage and size range of American Eel migrating to Lloyd Shoals Dam.
- Objective 2 – Identify the timing of upstream movements of American Eel migrating to Lloyd Shoals Dam in terms of seasonality and correlation to environmental variables, including discharge, water temperature, and the percent of moon illumination.
- Objective 3 – Calculate indices of abundance of American Eel migrating to the Lloyd Shoals Project.

1.2 RESOURCE MANAGEMENT GOALS

American Eel is an interjurisdictional diadromous[2] fish species and federal trust resource. The Atlantic States Marine Fisheries Commission (ASMFC) coordinates interstate management for American Eel along the Atlantic Coast via an Interstate Fishery Management Plan (ASMFC 2000) and subsequent addenda. Applicable objectives of the fishery management plan include:

- Protect and enhance American Eel abundance in all watersheds where eel now occur.
- Where practical, restore American Eel to those waters where they had historical abundance but now may be absent by providing access to inland waters for glass eel, elvers, and yellow eel, and adequate escapement to the ocean for pre-spawning adult (silver) eel.

A goal of NMFS is to restore American Eel to historical habitats and ensure safe migratory pathways to build abundance and resilience in the population.

[2] Diadromous species migrate between freshwater and marine/estuarine environments to complete their life cycles.

FWS' overall management goal for the Altamaha River basin and its sub-basins is to protect, enhance, and restore a diverse, healthy, and native aquatic community and the aquatic habitats on which this community depends. This goal includes an objective to provide safe, timely, and effective upstream and downstream passage for native Altamaha River basin fishes, particularly diadromous species.

2.0 EXISTING INFORMATION

As reviewed in the Revised Study Plan (Georgia Power 2019), previous fisheries investigations have documented the ongoing presence of a widespread and relatively abundant population of American Eel downstream of the Project. The results of Georgia Power's American Eel and Upstream Movements Study from 2019-2020 (Georgia Power 2020a, 2020b) update the existing information on the abundance, life stages, size range, and seasonal occurrence of eels migrating upstream to the Lloyd Shoals Project.

2.1 PREVIOUS FISHERIES INVESTIGATIONS (1987-2014)

Fisheries investigations on the Ocmulgee River in 1987-1988 for the previous Lloyd Shoals relicensing (EA Engineering, Science, and Technology, Inc. [EA], 1990a, 1990b) identified the size range and life stages of 77 American Eels in the current study area below Lloyd Shoals Dam and provided catch per unit effort (CPUE) by number and biomass. In 1988, EA (1990a) sampled quarterly at four stations, including three between Lloyd Shoals Dam and Juliette Dam and one downstream of Juliette Dam. Daytime boat and backpack electrofishing were used exclusively. American Eel was among the top ten numerically abundant species overall, comprising 2.74 percent of the total catch. Forty-seven eels collected at the upstream-most station (Station 1), within the current study area, ranged in total length from 168 to 825 millimeters (mm) and averaged 343 mm. The electrofishing catch rate of eels at Station 1 was highest in the summer and spring, and lowest in the winter (Table 1). Backpack electrofishing proved to be a much more effective method of eel capture than boat electrofishing.

EA (1990b) also conducted electrofishing sampling at two sites downstream of Lloyd Shoals Dam in September 1987, as part of the instream flow study, and found American Eel comprised 5.6 percent of the total catch. Fifty-one eels were collected, ranging in total length from 190 to

610 mm and averaging 295 mm. Thirty of the eels were collected between Lloyd Shoals Dam and the Georgia Highway (Hwy) 16 bridge, within the current study area.

Fisheries surveys for the U.S. Environmental Protection Agency's (EPA's) National Rivers and Streams Assessment (EPA 2016) documented the recent occurrence of American Eel downstream of the Project. Boat electrofishing conducted in July 2009 near Georgia Hwy 83, about 13 miles downstream of the Project, yielded two eels. Sampling by the Georgia Department of Natural Resources (GDNR) Wildlife Resources Division in July 2014 at the same locality captured 10 eels, representing 2.8 percent of the total catch (GDNR 2019). Relative abundance of the species within the riverine fish community was similar to that in 1988.

2.2 AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS STUDY (2019-2020)

Under the approved study plan for the American Eel Abundance and Upstream Movements Study, Georgia Power sampled monthly for American Eel in the study area in September-December 2019, January 2020, and March-July 2020 (Georgia Power 2020a, 2020b). Georgia Power also completed sampling in August and September 2020 and will continue sampling monthly through October 2020, for a total of 13 months of sampling effort in 2019-2020. The monthly sampling was extended beyond June 2020 in consultation with NMFS and USFWS to make up for electrofishing sampling efforts that were cancelled in spring 2020 due to high river flows or Covid-19 health and safety concerns (Georgia Power 2020b). Georgia Power also implemented study modifications in consultation with the agencies to better adapt the sampling methods to Covid-19 restrictions and site-specific constraints. The modifications included:

- Extending the study area to include the shoal complex immediately downstream of the Georgia Hwy 16 bridge to improve safe access to shallow-water habitats for backpack electrofishing;
- Deploying a ramp trap on the west side of the tailrace within the confines of the project works to reduce the risk of vandalism; and
- Performing nighttime observations in the tailrace and spillway area using flashlights to enhance detection of eel migrating to the base of the dam.

Through July 2020, Georgia Power has collected and observed a total of 61 eels in the study area (Table 2). Thirty-one eels were captured, measured, and weighed; 29 of these eels were also tagged but none have been recaptured to date. An additional 30 eels were observed but not captured; their lengths have been estimated. The total length of captured eels ranged from 184 to

575 mm and averaged 313 mm. Sixty-one percent were captured by backpack electrofishing, 36 percent by boat electrofishing, and 3 percent by trapping. Of the eels observed but not captured, 60 percent were observed during boat electrofishing, 27 percent during backpack electrofishing, and 13 percent by flashlight at night. Since instituting flashlight surveys in June 2020, four eels have been observed along the base of the dam, while one eel has been captured by trapping in the same area.

Table 1 compares electrofishing catch rates between the 1988 sampling by EA (1990a) and the 2019-2020 sampling by Georgia Power. Although high flows prevented backpack electrofishing in several months between December 2019 and June 2020, extending the study area to the shoal area downstream has dramatically improved backpack electrofishing catch rates when river discharge is below 1,500 cubic feet per second (cfs), allowing for safe wading access. The backpack electrofishing catch rate of 26 eels per hour in July 2020 was similar in magnitude to the peak catch rate of 37 eels per hour in summer 1988. EA also conducted backpack electrofishing in the shoal area below Hwy 16. Similar to the EA study, boat electrofishing in summer 2020 yielded substantially lower catch rates than backpack electrofishing, when backpack electrofishing was first conducted downstream of Hwy 16. Boat electrofishing catch rates were similarly low overall in 1988 and 2019-2020.

The size range of eels collected by Georgia Power in 2019-2020 (Table 1) indicate that a population persists in the study area below Lloyd Shoals Dam and remains stable, with representation by multiple age classes.

3.0 STUDY AREA

The proposed study area includes the mainstem Ocmulgee River from Lloyd Shoals Dam downstream about 1.4 river miles to include the shoal complex immediately downstream of the Georgia Hwy 16 bridge (Figure 1).

4.0 METHODOLOGY

Sampling for American Eel within the study area will be conducted using backpack electrofishing, boat electrofishing, and eel traps during the period November 2020 through June

2021 when water temperatures are above 10°C. Backpack electrofishing will be conducted monthly to supplement the catch data from 2019-2020 and will be effective for characterizing the current size range and life stages of American Eel inhabiting the study area and calculating CPUE (Objectives 1 and 3; Section 1.1). Because it has yielded substantially lower catch rates of eels than backpack electrofishing, boat electrofishing will be conducted at night on a quarterly frequency to provide seasonal information on abundance and size classes in open-water habitat. In addition, nighttime eel trapping and flashlight surveys will be conducted monthly to detect and characterize upstream migrant American Eels actively approaching the base of the dam (Objective 2).

Sampling will be conducted during the winter and spring seasons of 2020-2021 to encompass the onset of spring upstream eel migration, as water temperature rises above 10°C and river discharge is higher on average. Sampling will conclude in June 2021 to allow sufficient time to consult on the study results prior to the filing of Georgia Power's license application by December 31, 2021.

4.1 BACKPACK ELECTROFISHING

Backpack electrofishing sampling will be conducted monthly from November 2020 through June 2021 when water temperatures are above 10°C. Sampling will be conducted in the shoal area downstream of Georgia Hwy 16 (Figure 1), where shallow-water habitats are most accessible, and which yielded the highest electrofishing catch rates of eels in 2019-2020 and in the previous study in 1988 (EA 1990a). Monthly backpack electrofishing in winter and spring will provide for seasonal comparisons of catch rates to backpack electrofishing conducted in the same shoal complex in summer 2020 (July-August) and fall 2020 (September-October).

Backpack electrofishing will be conducted using a Smith-Root Model LR20 unit, or other standard backpack electrofisher, in wadeable shoals, shallow pools, backwaters, and along shorelines. The backpack electrofisher will be operated in pulsed direct-current (DC) mode, with a pulse width of 60 hertz (Hz) , a duty cycle of 25-50 percent, and a voltage of 200-250 volts. Two individuals will net stunned fish. Sampling effort will total up to 2 hours of electrofisher run time to represent the range of wadeable habitats available in the shoal area. All eels collected will be held in water-filled buckets or coolers with aeration for processing.

The sampling team will coordinate closely with Georgia Power operations personnel in advance of each backpack electrofishing event to identify off-peak periods when project releases are projected to be 1,500 cfs or less, allowing for safe wading access. All backpack electrofishing will be conducted during daylight conditions for safety, visibility of stunned eels, and for comparability with the previous surveys downstream of Lloyd Shoals Dam.

4.2 BOAT ELECTROFISHING

Boat electrofishing will be conducted as two quarterly, nighttime events in winter 2021 and spring 2021, when water temperatures are above 10°C, to provide seasonal comparisons of catch rates and size characteristics of eels to boat electrofishing conducted during daytime in 2020. Four, 30-minute boat electrofishing runs (totaling 2 hours of effort) will be made during each sampling event to represent the range of boatable habitats available in the study area (> 2 ft water depth). Each boat electrofishing survey event will begin no earlier than 1 hour after sunset.

A Midwest Lake Electrofishing Systems (MLES) Elite Series Boat (16 foot; 60 horsepower outboard) equipped with an MLES Infinity control box and powered by a 6,750-watt generator, or comparable standard boat electrofisher, will be used for all boat electrofishing. The boat electrofisher will be operated in pulsed DC mode, with a pulse width of 30 Hz, a duty cycle of 25 percent, and 425 volts. During each run, the boat will be maneuvered slowly downstream along the shoreline while stunned eels are collected by two netters. All eels collected will be held in a live well for processing.

4.3 EEL TRAPPING AND FLASHLIGHT SURVEYS

Sampling will also include one multi-day event per month from November 2020 through June 2021 when water temperatures are above 10°C. During each event, eel traps will be deployed overnight for two consecutive nights and nighttime observations with flashlights will be conducted on two consecutive nights. The eel trapping and flashlight surveys will be performed near the base of Lloyd Shoals Dam, including shorelines within the tailrace channel and spillway area and shallow pools along the base of the spillway (Figure 1). If eels are detected near the base of the dam via either survey method during a given event, the survey frequency will be increased to two events per month (two nights per event) until no eels are detected in two consecutive events, when survey frequency will revert to monthly.

Eel Trapping

Eel trapping will be conducted using cylindrical 9-inch (in) by 31-in galvanized steel wire traps with 0.25-in mesh and 2-in diameter entrance openings on each end. Four eel traps/pots will be baited (e.g., canned sardines) and deployed in various locations around the tailrace and spillway area near the base of the dam (Figure 1). Eel traps will be deployed in late afternoon and retrieved the following morning for two consecutive days.

In addition, one ramp trap will be deployed overnight for two consecutive nights on the west bank of the tailrace between the powerhouse and Tailrace Fishing Pier to minimize the potential for vandalism (Figure 2). The ramp trap will consist of an 8-foot (ft) long by 2.5-ft wide wooden raceway with an ABS strip drain as the climbing substrate. Water supplied from a spigot at the dam will be used to keep the ramp wetted and provide an attraction flow to eels at the toe of the ramp. The ramp trap will be set in late afternoon and checked and emptied after sunrise the following morning.

Trapped eels will be held in water-filled buckets or coolers with aeration for processing.

Flashlight Surveys

Based on experience at other dams, most upstream American Eel movement at dams occurs during dusk and evening hours. Nighttime observations using flashlights will be conducted for a minimum of 1 person-hour per night on two consecutive nights during each monthly event to detect eels actively migrating upstream toward the base of the dam. The study area will be partitioned into sections as shown in Figure 2. Each survey will begin no earlier than 1 hour after sunset and will be conducted by a two-person crew. The crew will visit each designated section from land to make observations of spillage/leakage areas and pools along the base of the spillway and nearby tailrace shorelines (within the limits of safety) using a low- to medium-intensity spotlight. At each survey area, the crew will record the date, time, presence/absence of eels, approximate number and length of eels present as visually estimated, and notes on observed eel behavior or predators. Spillage, leakage, and other physical conditions of the migration pathway will be recorded, sketched, and/or photographed. Prevailing weather, discharge, water temperature, and the percent of moon illumination will also be recorded.

4.4 DATA ANALYSIS

All captured yellow eels will be anesthetized with Tricaine Methanesulfonate (MS-222), dosed at approximately 150 milligrams per liter, measured to the nearest mm total length, and weighed in grams. Captured eels will be implanted with an 8-mm x 1.44-mm, 30-milligram passive integrated transponder (PIT) tag (Biomark HPT8) in the dorsal musculature. Tag numbers will be recorded on data sheets along with the length, weight, and capture location. Large numbers of elvers, if captured, will be counted volumetrically and a subsample measured for total length. Length-frequency distributions will be produced by month of sampling, area of capture, gear type, and combined gear types for the entire sampling period. Minimum, maximum, and mean total lengths will be reported. American Eels collected or observed near the base of the spillway will be characterized separately as sizes and life stages of fish likely to have been actively migrating upstream at the time of capture and their location in the migration pathway.

Data for the environmental variables river discharge, water temperature, and percent of moon illumination will be collected for the sampling periods for correlation to eel catch. Discharge data will be obtained from the U.S. Geological Survey (USGS) gage located about 1 mile downstream (USGS No. 02210500, Ocmulgee River near Jackson, Georgia). Water temperature data will be obtained from the USGS gage on the Ocmulgee River at Hawkinsville (USGS No. 02215000). Readily available percent of moon surface illumination data will be obtained online from the U.S. Naval Observatory for the last day of each sampling event.

The number of eels captured by date will be graphed separately by gear type and combined for the entire sampling period. Any resulting trends will be interpreted. The eel catch by date will also be evaluated for correlation to river discharge, water temperature, and percent moon surface illumination. These data will be presented in graphs and any resulting trends will be interpreted.

In addition, a hydrological comparison will be provided comparing conditions during the EA quarterly fisheries investigation of 1988 and the current American Eel Abundance and Upstream Movements Study of 2019-2021. Georgia Power will evaluate monthly/yearly flows and associated generation data to assess whether the study periods represented occurred during generally wet, normal, or dry years.

5.0 REPORTING

A Study Progress Report will be prepared and filed with FERC by January 29, 2021. The progress report will describe overall progress, summarize preliminary findings as available, and explain any variance from the study plan and schedule.

In accordance with the Lloyd Shoals Process Plan and Schedule, an Updated American Eel Abundance and Upstream Movements Study Report will be filed with FERC by May 19, 2021. The study report will compile and analyze all data gathered since the beginning of the study in 2019, present the findings in tables and graphs, and interpret any resulting trends.

6.0 SCHEDULE

The second year of the American Eel Abundance and Upstream Movements Study will be completed according to the milestones in Table 3. The field studies will be conducted in November 2020 through June 2021. Following the filing of the Updated Study Report by May 19, 2021, an Updated Study Results Meeting will be held on June 3, 2021 and a summary of the meeting will be filed with FERC by June 18, 2021. During the meeting, Georgia Power will consult with NMFS and FWS on the study findings.

7.0 REFERENCES

Atlantic States Marine Fisheries Commission (ASMFC). 2000. Interstate fishery management plan for American Eel. Fishery Management Report No. 36. April 2000.

EA Engineering, Science, and Technology, Inc. (EA). 1990a. Fisheries investigations of the Ocmulgee River downstream of the Lloyd Shoals hydroelectric facility. Prepared for Georgia Power Company. EA Report No. 10277.08. June 1990.

EA Engineering, Science, and Technology, Inc. (EA). 1990b. Instream flow studies for the North Georgia (FERC Project No. 2354) and Lloyd Shoals (FERC Project No. 2336) hydroelectric facilities. Prepared for Georgia Power Company. EA Report No. 10276.08. February 1990.

Federal Energy Regulatory Commission (FERC). 2019. Study Plan Determination for Lloyd Shoals Hydroelectric Project. May 20, 2019.

Georgia Power Company (Georgia Power). 2019. Revised Study Plan for Lloyd Shoals Hydroelectric Project, FERC Project Number 2336. April 2019.

Georgia Power Company (Georgia Power). 2020a. American Eel Abundance and Upstream Movements Study Report, Lloyd Shoals Hydroelectric Project, FERC Project Number 2336. Prepared with Kleinschmidt Associates. May 2020.

Georgia Power Company (Georgia Power). 2020b. American Eel Abundance and Upstream Movements Study Report Addendum, Lloyd Shoals Hydroelectric Project, FERC Project Number 2336. Prepared with Kleinschmidt Associates. August 2020.

TABLE 1 AMERICAN EEL CATCH RATE BY ELECTROFISHING GEAR TYPE FOR THE OCMULGEE RIVER BELOW LLOYD SHOALS DAM IN 1988 AND 2019-2020		
	Catch per Unit Effort (fish/hour)	
	1988[a]	**2019-2020[b]**
Backpack Electrofishing		
Spring	14.6	--
Summer	37.4	26
Fall	5.4	0.3
Winter	1.4	--
Boat Electrofishing		
Spring	--	1.8
Summer	1.4	2.5
Fall	--	0.3
Winter	0.6	1.5
Lengths (mm) and Life Stages Present		
Minimum	168	184
Maximum	825	575
Mean	343	313
Standard Deviation	95	87
Life Stages	juveniles, adults	juveniles, adults

[a] Source: EA (1990a)

[b] Source: Georgia Power (2020a, 2020b); catch rate includes captured and observed eels.

TABLE 2 AMERICAN EELS CAPTURED OR OBSERVED IN THE STUDY AREA FROM SEPTEMBER 2019 THROUGH JULY 2020

Date	Method	Length (mm)	Weight (g)	Tag Number	Notes
10/24/2019	Boat	375	90	982F126058800404	-
10/24/2019	Backpack	346	69	928F126058800499	-
11/25/2019	Boat	200*	-	-	Observed/not captured
1/20/2020	Boat	311	46	982F126058800424	-
1/20/2020	Boat	299	45	982F126058800456	-
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	450*	-	-	Observed/not captured
1/20/2020	Boat	450*	-	-	Observed/not captured
3/11/2020	Boat	241	21	982F126058800413	-
5/29/2020	Boat	440	181	982F126058800492	
5/29/2020	Boat	575	468	982F126058800489	
5/29/2020	Boat	265	29	982F126058800481	
5/29/2020	Boat	294	38	982F126058800482	
5/29/2020	Boat	450*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Flashlight	130*	NA	NA	Observed/not captured
6/24/2020	Flashlight	200*	NA	NA	Observed/not captured
6/24/2020	Flashlight	200*	NA	NA	Observed/not captured
7/22/2020	Backpack	292	47	982F126058800418	
7/22/2020	Backpack	345	85	982F126058800467	
7/22/2020	Backpack	268	34	982F126058800421	
7/22/2020	Backpack	267	33	982F126058800448	
7/22/2020	Backpack	231	23	982F126058800493	
7/22/2020	Backpack	295	49	982F126058800487	
7/22/2020	Backpack	212	17	982F126058800496	
7/22/2020	Backpack	212	17	982F126058800466	
7/22/2020	Backpack	335	71	982F126058800476	
7/22/2020	Backpack	433	133	982F126058800451	
7/22/2020	Backpack	278	40	982F126058800429	
7/22/2020	Backpack	277	37	982F126058800416	

TABLE 2 AMERICAN EELS CAPTURED OR OBSERVED IN THE STUDY AREA FROM SEPTEMBER 2019 THROUGH JULY 2020

Date	Method	Length (mm)	Weight (g)	Tag Number	Notes
7/22/2020	Backpack	208	15	982F126058800468	
7/22/2020	Backpack	414	169	982F126058800439	
7/22/2020	Backpack	460	225	982F126058800419	
7/22/2020	Backpack	418	164	982F126058800460	
7/22/2020	Backpack	541	343	982F126058800437	
7/22/2020	Backpack	184	10	Not tagged	
7/22/2020	Trap	200	16	Not tagged	
7/22/2020	Boat	232	23	982F126058800401	
7/22/2020	Boat	310	60	982F126058800484	
7/22/2020	Boat	358	98	982F126058800406	
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Boat	230*	NA	NA	Observed/not captured
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Flashlight	250*	NA	NA	Observed/not captured

TABLE 3 SCHEDULE FOR CONDUCTING THE SECOND YEAR OF THE AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS STUDY

Activity	Deadline
Begin Field Studies	November 2020
File Progress Report	January 29, 2021
Complete Field Studies	June 2021
File Updated Study Report	May 19, 2021
Updated Study Results Meeting	June 3, 2021
File Updated Study Results Meeting Summary	June 18, 2021
Stakeholders file any Updated Study Results Meeting Summary Comments	July 18, 2021
File Response to any Study Results Meeting Summary Comments	August 17, 2021

FIGURE 1 LLOYD SHOALS AMERICAN EEL STUDY AREA

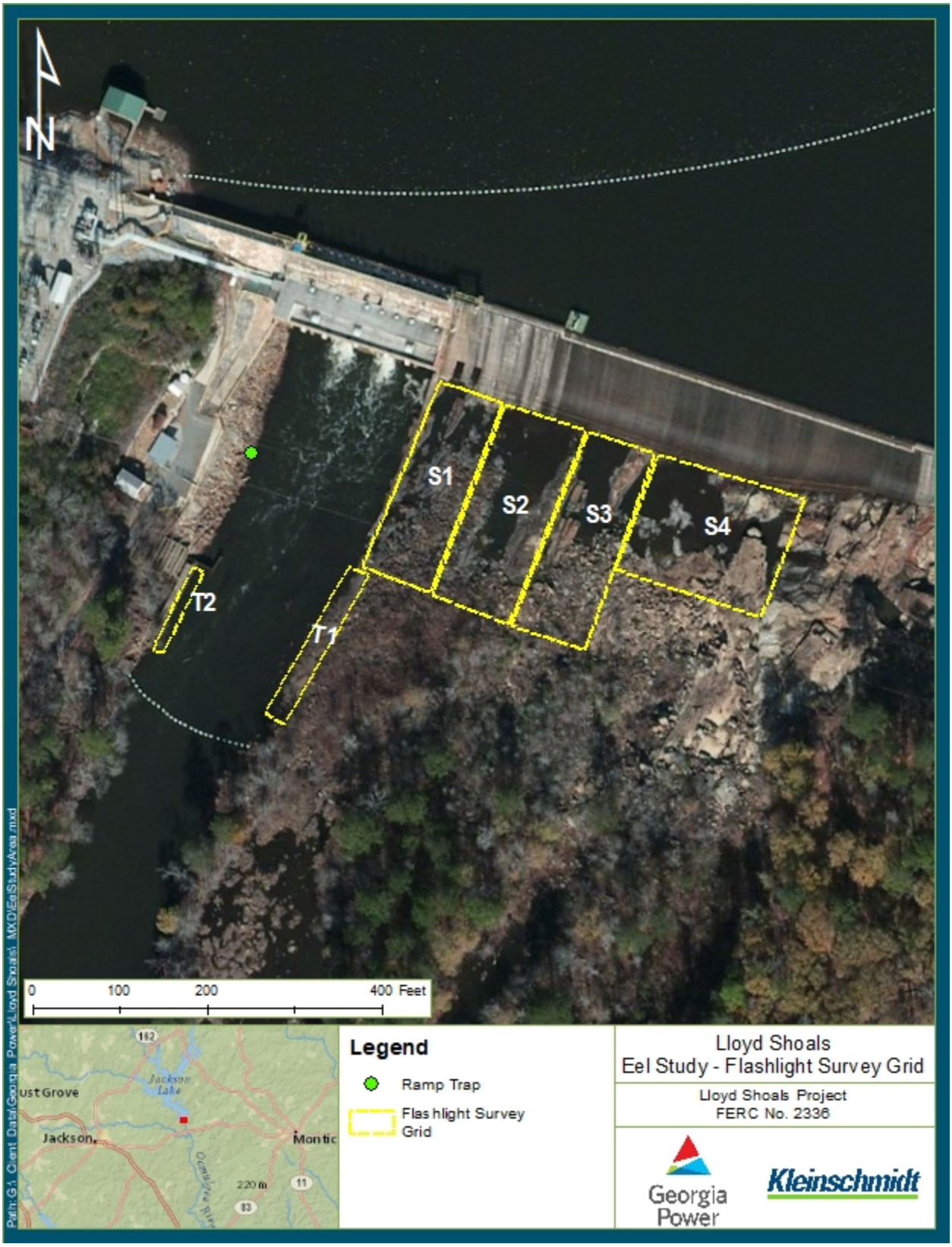

FIGURE 2 AMERICAN EEL FLASHLIGHT SURVEY SECTIONS

APPENDIX A

CONSULTATION DOCUMENTATION

From:	O"Rouke, Patrick Michael
To:	Twyla Cheatwood - NOAA Federal
Cc:	Pace Wilber - NOAA Federal; Imm, Donald; Glassmeyer, Scott T; Zapata, Martha J; O"Mara, Courtenay R.; Slaughter, Joe Ernest
Subject:	RE: Eel Study Proposal-Year 2
Date:	Thursday, October 8, 2020 3:37:19 PM
Attachments:	534045_American Eel Study Plan Amendment_REVISED DRAFT 10-08-2020.pdf

Thank you to everyone for the input and the cooperation on this. I've attached a draft version of the plan we intend to file with FERC next week. Please let me know if anyone has any questions.

Patrick

From: Twyla Cheatwood - NOAA Federal <twyla.cheatwood@noaa.gov>
Sent: Wednesday, October 07, 2020 11:30 AM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Cc: Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Imm, Donald <donald_imm@fws.gov>; Glassmeyer, Scott T <scott_glassmeyer@fws.gov>; Zapata, Martha J <martha_zapata@fws.gov>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Subject: Re: Eel Study Proposal-Year 2

Patrick,

The NMFS has no objections to moving forward with the proposal and amendments outlined in your email. We appreciate your efforts to address concerns from the resource agencies and look forward to updates over the second year of the study season.

Thank you for the continued coordination,

Twyla

On Tue, Oct 6, 2020 at 2:14 PM O'Rouke, Patrick Michael <PMOROUKE@southernco.com> wrote:

> Hi, all. I wanted to follow back up on this. I spoke to Twyla a few weeks ago and she relayed some comments based on her conversations with Don. I'm going to recap what I heard from her and then what we think we can do to amend this draft plan to accommodate them.
>
> - The Services would like to see electrofishing occur at night rather than during daylight. We talked it over with our team, and we feel safe converting the boat electrofishing in this study to nighttime with one caveat: there is a shoal just

upstream of the Ocmulgee River boat ramp that is fairly difficult to get through during daylight, and some of the samples from the first year didn't make it beyond that shoal under the lowest flows. That means we wouldn't be able to get the boat all the way up into the tailrace at night. All nighttime electrofishing would take place essentially between that shoal and just above the Highway 16 bridge where the next shoal is found. Our team doesn't feel safe converting the backpack electrofishing portion of the study from day to night. However, we're consistently continuing to catch fish in the day since moving the backpack site to the shoals below Highway 16. We believe we can get the data we need by continuing to sample during the daytime.

- There was an interest in seeing the study continue into July. The reason we planned to end the second year of study in June is because the PLP filing deadline is August 3rd. We're afraid there won't be enough turnaround time to finalize/analyze data in time to complete a report and include any PLP provisions prior to that date, particularly if the weather isn't cooperative in the first week or two of the month.

- The Services wanted to see the study begin in October rather than January. We had already committed to continuing the modified first year plan through October. In Section 4.0 (Methods), we've got the second year plan beginning in November, so that should be taken care of.

Please let me know if I've missed anything or if you want to discuss any of these provisions. If these changes are good with you all, we can revise the draft and run it back by you. We need to file a finalized plan with FERC by next Wednesday (10/14), and we'd definitely like to get this to a place where there is no need for either of the Services to file additional comments. We'll include documentation of our consultation on this so FERC is aware that we've been working through this plan. I'm happy to get on the phone or even set up a call in Teams for all of us if that would help.

Thank you!
Patrick

From: O'Rouke, Patrick Michael
Sent: Monday, August 31, 2020 1:49 PM
To: Twyla Cheatwood - NOAA Federal <twyla.cheatwood@noaa.gov>; Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Imm, Donald <donald_imm@fws.gov>; Glassmeyer, Scott T <scott_glassmeyer@fws.gov>; Zapata, Martha J <martha_zapata@fws.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Subject: Eel Study Proposal-Year 2

Thank you to Twyla, Don, and Scott for the discussion on Thursday. Here is a draft proposal for a second-year study for everyone's input. As we mentioned on

Thursday, we'd love to come to a consensus on the study plan prior to filing with FERC if that's possible.

The main changes from the first year of study are:

- Backpack electrofishing effort is doubled in duration and permanently moved to the shoals downstream of Highway 16
- Boat electrofishing remains in place but will move to quarterly sampling, which will provide comparable data to the prior relicensing study
- The flashlight sampling we started this summer will remain in place through next June

Please let me know if you have any questions or want to discuss any aspect of this proposal. We appreciate the opportunity to coordinate with everyone.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

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Facebook *www.facebook.com/usnoaafisheriesgov [facebook.com]*
Twitter *www.twitter.com/noaafisheries [twitter.com]*
YouTube *www.youtube.com/usnoaafisheriesgov* [youtube.com]

From: O"Mara, Courtenay R.
To: O"Mara, Courtenay R.
Subject: FW: [EXTERNAL] RE: Eel Study Proposal-Year 2
Date: Wednesday, October 14, 2020 11:28:20 AM

From: Imm, Donald <donald_imm@fws.gov>
Sent: Wednesday, October 07, 2020 11:06 AM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Cc: Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; twyla.cheatwood <twyla.cheatwood@noaa.gov>
Subject: Re: [EXTERNAL] RE: Eel Study Proposal-Year 2

EXTERNAL MAIL: Caution Opening Links or Files

Hi Patrick,, we have no objections or concerns over this. I believe those statements reflect our position. Sorry for the delayed response, we and our Asheville office are hiring eight new folks, so this week and next week are busy with interviews, etc. More as needed later, Don

---

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Tuesday, October 6, 2020 2:14 PM
To: twyla.cheatwood <twyla.cheatwood@noaa.gov>; Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Imm, Donald <donald_imm@fws.gov>; Glassmeyer, Scott T <scott_glassmeyer@fws.gov>; Zapata, Martha J <martha_zapata@fws.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Subject: [EXTERNAL] RE: Eel Study Proposal-Year 2

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hi, all. I wanted to follow back up on this. I spoke to Twyla a few weeks ago and she relayed some comments based on her conversations with Don. I'm going to recap what I heard from her and then what we think we can do to amend this draft plan to accommodate them.

- The Services would like to see electrofishing occur at night rather than during daylight. We talked it over with our team, and we feel safe converting the boat electrofishing in this study to nighttime with one caveat: there is a shoal just upstream of the Ocmulgee River boat ramp that is fairly difficult to get through during daylight, and some of the samples from the first year didn't make it beyond that shoal under the lowest flows. That means we wouldn't be

able to get the boat all the way up into the tailrace at night. All nighttime electrofishing would take place essentially between that shoal and just above the Highway 16 bridge where the next shoal is found. Our team doesn't feel safe converting the backpack electrofishing portion of the study from day to night. However, we're consistently continuing to catch fish in the day since moving the backpack site to the shoals below Highway 16. We believe we can get the data we need by continuing to sample during the daytime.

- There was an interest in seeing the study continue into July. The reason we planned to end the second year of study in June is because the PLP filing deadline is August 3rd. We're afraid there won't be enough turnaround time to finalize/analyze data in time to complete a report and include any PLP provisions prior to that date, particularly if the weather isn't cooperative in the first week or two of the month.
- The Services wanted to see the study begin in October rather than January. We had already committed to continuing the modified first year plan through October. In Section 4.0 (Methods), we've got the second year plan beginning in November, so that should be taken care of.

Please let me know if I've missed anything or if you want to discuss any of these provisions. If these changes are good with you all, we can revise the draft and run it back by you. We need to file a finalized plan with FERC by next Wednesday (10/14), and we'd definitely like to get this to a place where there is no need for either of the Services to file additional comments. We'll include documentation of our consultation on this so FERC is aware that we've been working through this plan. I'm happy to get on the phone or even set up a call in Teams for all of us if that would help.

Thank you!
Patrick

From: O'Rouke, Patrick Michael
Sent: Monday, August 31, 2020 1:49 PM
To: Twyla Cheatwood - NOAA Federal <twyla.cheatwood@noaa.gov>; Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Imm, Donald <donald_imm@fws.gov>; Glassmeyer, Scott T <scott_glassmeyer@fws.gov>; Zapata, Martha J <martha_zapata@fws.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Subject: Eel Study Proposal-Year 2

Thank you to Twyla, Don, and Scott for the discussion on Thursday. Here is a draft proposal for a second-year study for everyone's input. As we mentioned on Thursday, we'd love to come to a consensus on the study plan prior to filing with FERC if that's possible.

The main changes from the first year of study are:

- Backpack electrofishing effort is doubled in duration and permanently moved to the shoals downstream of Highway 16
- Boat electrofishing remains in place but will move to quarterly sampling, which will provide comparable data to the prior relicensing study

- The flashlight sampling we started this summer will remain in place through next June

Please let me know if you have any questions or want to discuss any aspect of this proposal. We appreciate the opportunity to coordinate with everyone.

Thank you,
Patrick

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Georgia Power

DRAFT PROPOSED STUDY PLAN AMENDMENT

AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS

LLOYD SHOALS HYDROELECTRIC PROJECT
(FERC NO. 2336)

Prepared with:

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Lexington, South Carolina
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October 2020

PROPOSED STUDY PLAN AMENDMENT
AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS
LLOYD SHOALS HYDROELECTRIC PROJECT
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(FERC NO. 2336)

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) proposes to amend the study plan for the American Eel Abundance and Upstream Movements Study being conducted for the Federal Energy Regulatory Commission (FERC) relicensing of the Lloyd Shoals Hydroelectric Project (FERC No. 2336) (Lloyd Shoals Project, the Project). The approved study plan consists of Georgia Power's Revised Study Plan (Georgia Power 2019) and FERC's Study Plan Determination issued on May 20, 2019 (FERC 2019). [1] Based on the findings of the first year of study in 2019-2020 and consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS), Georgia Power proposes to extend the study from November 2020 to June 2021 and to modify the study area and the sampling methods to provide additional information on the abundance and upstream movements of American Eel (*Anguilla rostrata*) in the Ocmulgee River below Lloyd Shoals Dam. The proposed survey efforts in November 2020-June 2021 will include backpack electrofishing to further characterize the life stages, size distribution, and abundance of the eel population below Lloyd Shoals Dam, nighttime boat electrofishing, and nighttime observations using flashlights and trapping to document the seasonal timing and size characteristics of eels migrating to the base of the dam.

The 18-megawatt Lloyd Shoals Project consists of a dam, a powerhouse, and a reservoir (Lake Jackson) on the Ocmulgee River in Butts, Henry, Jasper, and Newton Counties, Georgia. Georgia Power operates the Project in a modified run-of-river mode for generation during peak power demand hours to meet electrical system demand. Georgia Power is not proposing to make

[1] On December 20, 2018, FERC issued a process plan and schedule (PP&S) for the relicensing of the Project. On April 30, 2020, Georgia Power filed a letter requesting that FERC modify the PP&S to account for the effects of COVID-19 and high inflow conditions and 1) allow Georgia Power to conduct the study results meeting on July 29, 2020, instead of June 3, 2020, and 2) extend the remainder of the first study season by about two months. On May 5, 2020, FERC granted the request and issued a revised PP&S for the Project. *See* Letter to Courtenay O'Mara, Southern Company Generation, from Vince Yearick, FERC (May 5, 2020).

any major modifications to the Project under the new license. The Project does not occupy federal lands. The current license expires December 31, 2023.

Appendix A documents Georgia Power's consultation with NMFS and FWS on the study plan amendment.

1.1 GOALS AND OBJECTIVES

The goal of this study is to develop current baseline information on the abundance, life stages, size range, and timing of upstream movements of American Eel that approach Lloyd Shoals Dam within the project boundary. This information will enable NMFS and FWS to evaluate whether passage may be needed for American Eel at Lloyd Shoals Dam.

The objectives of this study are:

- Objective 1 – Identify the life stage and size range of American Eel migrating to Lloyd Shoals Dam.
- Objective 2 – Identify the timing of upstream movements of American Eel migrating to Lloyd Shoals Dam in terms of seasonality and correlation to environmental variables, including discharge, water temperature, and the percent of moon illumination.
- Objective 3 – Calculate indices of abundance of American Eel migrating to the Lloyd Shoals Project.

1.2 RESOURCE MANAGEMENT GOALS

American Eel is an interjurisdictional diadromous[2] fish species and federal trust resource. The Atlantic States Marine Fisheries Commission (ASMFC) coordinates interstate management for American Eel along the Atlantic Coast via an Interstate Fishery Management Plan (ASMFC 2000) and subsequent addenda. Applicable objectives of the fishery management plan include:

- Protect and enhance American Eel abundance in all watersheds where eel now occur.
- Where practical, restore American Eel to those waters where they had historical abundance but now may be absent by providing access to inland waters for glass eel, elvers, and yellow eel, and adequate escapement to the ocean for pre-spawning adult (silver) eel.

A goal of NMFS is to restore American Eel to historical habitats and ensure safe migratory pathways to build abundance and resilience in the population.

[2] Diadromous species migrate between freshwater and marine/estuarine environments to complete their life cycles.

FWS' overall management goal for the Altamaha River basin and its sub-basins is to protect, enhance, and restore a diverse, healthy, and native aquatic community and the aquatic habitats on which this community depends. This goal includes an objective to provide safe, timely, and effective upstream and downstream passage for native Altamaha River basin fishes, particularly diadromous species.

2.0 EXISTING INFORMATION

As reviewed in the Revised Study Plan (Georgia Power 2019), previous fisheries investigations have documented the ongoing presence of a widespread and relatively abundant population of American Eel downstream of the Project. The results of Georgia Power's American Eel and Upstream Movements Study from 2019-2020 (Georgia Power 2020a, 2020b) update the existing information on the abundance, life stages, size range, and seasonal occurrence of eels migrating upstream to the Lloyd Shoals Project.

2.1 PREVIOUS FISHERIES INVESTIGATIONS (1987-2014)

Fisheries investigations on the Ocmulgee River in 1987-1988 for the previous Lloyd Shoals relicensing (EA Engineering, Science, and Technology, Inc. [EA], 1990a, 1990b) identified the size range and life stages of 77 American Eels in the current study area below Lloyd Shoals Dam and provided catch per unit effort (CPUE) by number and biomass. In 1988, EA (1990a) sampled quarterly at four stations, including three between Lloyd Shoals Dam and Juliette Dam and one downstream of Juliette Dam. Daytime boat and backpack electrofishing were used exclusively. American Eel was among the top ten numerically abundant species overall, comprising 2.74 percent of the total catch. Forty-seven eels collected at the upstream-most station (Station 1), within the current study area, ranged in total length from 168 to 825 millimeters (mm) and averaged 343 mm. The electrofishing catch rate of eels at Station 1 was highest in the summer and spring, and lowest in the winter (Table 1). Backpack electrofishing proved to be a much more effective method of eel capture than boat electrofishing.

EA (1990b) also conducted electrofishing sampling at two sites downstream of Lloyd Shoals Dam in September 1987, as part of the instream flow study, and found American Eel comprised 5.6 percent of the total catch. Fifty-one eels were collected, ranging in total length from 190 to

610 mm and averaging 295 mm. Thirty of the eels were collected between Lloyd Shoals Dam and the Georgia Highway (Hwy) 16 bridge, within the current study area.

Fisheries surveys for the U.S. Environmental Protection Agency's (EPA's) National Rivers and Streams Assessment (EPA 2016) documented the recent occurrence of American Eel downstream of the Project. Boat electrofishing conducted in July 2009 near Georgia Hwy 83, about 13 miles downstream of the Project, yielded two eels. Sampling by the Georgia Department of Natural Resources (GDNR) Wildlife Resources Division in July 2014 at the same locality captured 10 eels, representing 2.8 percent of the total catch (GDNR 2019). Relative abundance of the species within the riverine fish community was similar to that in 1988.

2.2 AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS STUDY (2019-2020)

Under the approved study plan for the American Eel Abundance and Upstream Movements Study, Georgia Power sampled monthly for American Eel in the study area in September-December 2019, January 2020, and March-July 2020 (Georgia Power 2020a, 2020b). Georgia Power also completed sampling in August and September 2020 sample and will continue sampling monthly through October 2020, for a total of 13 months of sampling effort in 2019-2020. The monthly sampling was extended beyond June 2020 in consultation with NMFS and USFWS to make up for electrofishing sampling efforts that were cancelled in spring 2020 due to high river flows or Covid-19 health and safety concerns (Georgia Power 2020b). Georgia Power also implemented study modifications in consultation with the agencies to better adapt the sampling methods to Covid-19 restrictions and site-specific constraints. The modifications included:

- Extending the study area to include the shoal complex immediately downstream of the Georgia Hwy 16 bridge to improve safe access to shallow-water habitats for backpack electrofishing;
- Deploying a ramp trap on the west side of the tailrace within the confines of the project works to reduce the risk of vandalism; and
- Performing nighttime observations in the tailrace and spillway area using flashlights to enhance detection of eel migrating to the base of the dam.

Through July 2020, Georgia Power has collected and observed a total of 61 eels in the study area (Table 2). Thirty-one eels were captured, measured, and weighed; 29 of these eels were also tagged but none have been recaptured to date. An additional 30 eels were observed but not

captured; their lengths have been estimated. The total length of captured eels ranged from 184 to 575 mm and averaged 313 mm. Sixty-one percent were captured by backpack electrofishing, 36 percent by boat electrofishing, and 3 percent by trapping. Of the eels observed but not captured, 60 percent were observed during boat electrofishing, 27 percent during backpack electrofishing, and 13 percent by flashlight at night. Since instituting flashlight surveys in June 2020, four eels have been observed along the base of the dam, while one eel has been captured by trapping in the same area.

Table 1 compares electrofishing catch rates between the 1988 sampling by EA (1990a) and the 2019-2020 sampling by Georgia Power. Although high flows prevented backpack electrofishing in several months between December 2019 and June 2020, extending the study area to the shoal area downstream has dramatically improved backpack electrofishing catch rates when river discharge is below 1,500 cubic feet per second (cfs), allowing for safe wading access. The backpack electrofishing catch rate of 26 eels per hour in July 2020 was similar in magnitude to the peak catch rate of 37 eels per hour in summer 1988. EA also conducted backpack electrofishing in the shoal area below Hwy 16. Similar to the EA study, boat electrofishing in summer 2020 yielded substantially lower catch rates than backpack electrofishing, when backpack electrofishing was first conducted downstream of Hwy 16. Boat electrofishing catch rates were similarly low overall in 1988 and 2019-2020.

The size range of eels collected by Georgia Power in 2019-2020 (Table 1) indicate that a population persists in the study area below Lloyd Shoals Dam and remains stable, with representation by multiple age classes.

3.0 STUDY AREA

The proposed study area includes the mainstem Ocmulgee River from Lloyd Shoals Dam downstream about 1.4 river miles to include the shoal complex immediately downstream of the Georgia Hwy 16 bridge (Figure 1).

4.0 METHODOLOGY

Sampling for American Eel within the study area will be conducted using backpack electrofishing, boat electrofishing, and eel traps during the period November 2020 through June 2021 when water temperatures are above 10°C. Backpack electrofishing will be conducted monthly to supplement the catch data from 2019-2020 and will be effective for characterizing the current size range and life stages of American Eel inhabiting the study area and calculating CPUE (Objectives 1 and 3; Section 1.1). Because it has yielded substantially lower catch rates of eels than backpack electrofishing, boat electrofishing will be conducted at night on a quarterly frequency to provide seasonal information on abundance and size classes in open-water habitat. In addition, nighttime eel trapping and flashlight surveys will be conducted monthly to detect and characterize upstream migrant American Eels actively approaching the base of the dam (Objective 2).

Sampling will be conducted during the winter and spring seasons of 2020-2021 to encompass the onset of spring upstream eel migration, as water temperature rises above 10°C and river discharge is higher on average. Sampling will conclude in June 2021 to allow sufficient time to consult on the study results prior to the filing of Georgia Power's license application by December 31, 2021.

4.1 BACKPACK ELECTROFISHING

Backpack electrofishing sampling will be conducted monthly from November 2020 through June 2021 when water temperatures are above 10°C. Sampling will be conducted in the shoal area downstream of Georgia Hwy 16 (Figure 1), where shallow-water habitats are most accessible, and which yielded the highest electrofishing catch rates of eels in 2019-2020 and in the previous study in 1988 (EA 1990a). Monthly backpack electrofishing in winter and spring will provide for seasonal comparisons of catch rates to backpack electrofishing conducted in the same shoal complex in summer 2020 (July-August) and fall 2020 (September-October).

Backpack electrofishing will be conducted using a Smith-Root Model LR20 unit, or other standard backpack electrofisher, in wadeable shoals, shallow pools, backwaters, and along shorelines. The backpack electrofisher will be operated in pulsed direct-current (DC) mode, with a pulse width of 60 hertz (Hz) , a duty cycle of 25-50 percent, and a voltage of 200-250 volts. Two individuals will net stunned fish. Sampling effort will total up to 2 hours of electrofisher run

time to represent the range of wadeable habitats available in the shoal area. All eels collected will be held in water-filled buckets or coolers with aeration for processing.

The sampling team will coordinate closely with Georgia Power operations personnel in advance of each backpack electrofishing event to identify off-peak periods when project releases are projected to be 1,500 cfs or less, allowing for safe wading access. All backpack electrofishing will be conducted during daylight conditions for safety, visibility of stunned eels, and for comparability with the previous surveys downstream of Lloyd Shoals Dam.

4.2 BOAT ELECTROFISHING

Boat electrofishing will be conducted as two quarterly, nighttime events in winter 2021 and spring 2021, when water temperatures are above 10°C, to provide seasonal comparisons of catch rates and size characteristics of eels to boat electrofishing conducted during daytime in 2020. Four, 30-minute boat electrofishing runs (totaling 2 hours of effort) will be made during each sampling event to represent the range of boatable habitats available in the study area (> 2 ft water depth). Each boat electrofishing survey event will begin no earlier than 1 hour after sunset.

A Midwest Lake Electrofishing Systems (MLES) Elite Series Boat (16 foot; 60 horsepower outboard) equipped with an MLES Infinity control box and powered by a 6,750-watt generator, or comparable standard boat electrofisher, will be used for all boat electrofishing. The boat electrofisher will be operated in pulsed DC mode, with a pulse width of 30 Hz, a duty cycle of 25 percent, and 425 volts. During each run, the boat will be maneuvered slowly downstream along the shoreline while stunned eels are collected by two netters. All eels collected will be held in a live well for processing.

4.3 EEL TRAPPING AND FLASHLIGHT SURVEYS

Sampling will also include one multi-day event per month from November 2020 through June 2021 when water temperatures are above 10°C. During each event, eel traps will be deployed overnight for two consecutive nights and nighttime observations with flashlights will be conducted on two consecutive nights. The eel trapping and flashlight surveys will be performed near the base of Lloyd Shoals Dam, including shorelines within the tailrace channel and spillway area and shallow pools along the base of the spillway (Figure 1). If eels are detected near the base of the dam via either survey method during a given event, the survey frequency will be

increased to two events per month (two nights per event) until no eels are detected in two consecutive events, when survey frequency will revert to monthly.

Eel Trapping

Eel trapping will be conducted using cylindrical 9-inch (in) by 31-in galvanized steel wire traps with 0.25-in mesh and 2-in diameter entrance openings on each end. Four eel traps/pots will be baited (e.g., canned sardines) and deployed in various locations around the tailrace and spillway area near the base of the dam (Figure 1). Eel traps will be deployed in late afternoon and retrieved the following morning for two consecutive days.

In addition, one ramp trap will be deployed overnight for two consecutive nights on the west bank of the tailrace between the powerhouse and Tailrace Fishing Pier to minimize the potential for vandalism (Figure 2). The ramp trap will consist of an 8-foot (ft) long by 2.5-ft wide wooden raceway with an ABS strip drain as the climbing substrate. Water supplied from a spigot at the dam will be used to keep the ramp wetted and provide an attraction flow to eels at the toe of the ramp. The ramp trap will be set in late afternoon and checked and emptied after sunrise the following morning.

Trapped eels will be held in water-filled buckets or coolers with aeration for processing.

Flashlight Surveys

Based on experience at other dams, most upstream American Eel movement at dams occurs during dusk and evening hours. Nighttime observations using flashlights will be conducted for a minimum of 1 person-hour per night on two consecutive nights during each monthly event to detect eels actively migrating upstream toward the base of the dam. The study area will be partitioned into sections as shown in Figure 2. Each survey will begin no earlier than 1 hour after sunset and will be conducted by a two-person crew. The crew will visit each designated section from land to make observations of spillage/leakage areas and pools along the base of the spillway and nearby tailrace shorelines (within the limits of safety) using a low- to medium-intensity spotlight. At each survey area, the crew will record the date, time, presence/absence of eels, approximate number and length of eels present as visually estimated, and notes on observed eel behavior or predators. Spillage, leakage, and other physical conditions of the migration

pathway will be recorded, sketched, and/or photographed. Prevailing weather, discharge, water temperature, and the percent of moon illumination will also be recorded.

4.4 DATA ANALYSIS

All captured yellow eels will be anesthetized with Tricaine Methanesulfonate (MS-222), dosed at approximately 150 milligrams per liter, measured to the nearest mm total length, and weighed in grams. Captured eels will be implanted with an 8-mm x 1.44-mm, 30-milligram passive integrated transponder (PIT) tag (Biomark HPT8) in the dorsal musculature. Tag numbers will be recorded on data sheets along with the length, weight, and capture location. Large numbers of elvers, if captured, will be counted volumetrically and a subsample measured for total length. Length-frequency distributions will be produced by month of sampling, area of capture, gear type, and combined gear types for the entire sampling period. Minimum, maximum, and mean total lengths will be reported. American Eels collected or observed near the base of the spillway will be characterized separately as sizes and life stages of fish likely to have been actively migrating upstream at the time of capture and their location in the migration pathway.

Data for the environmental variables river discharge, water temperature, and percent of moon illumination will be collected for the sampling periods for correlation to eel catch. Discharge data will be obtained from the U.S. Geological Survey (USGS) gage located about 1 mile downstream (USGS No. 02210500, Ocmulgee River near Jackson, Georgia). Water temperature data will be obtained from the USGS gage on the Ocmulgee River at Hawkinsville (USGS No. 02215000). Readily available percent of moon surface illumination data will be obtained online from the U.S. Naval Observatory for the last day of each sampling event.

The number of eels captured by date will be graphed separately by gear type and combined for the entire sampling period. Any resulting trends will be interpreted. The eel catch by date will also be evaluated for correlation to river discharge, water temperature, and percent moon surface illumination. These data will be presented in graphs and any resulting trends will be interpreted.

In addition, a hydrological comparison will be provided comparing conditions during the EA quarterly fisheries investigation of 1988 and the current American Eel Abundance and Upstream Movements Study of 2019-2021. Georgia Power will evaluate monthly/yearly flows and associated generation data to assess whether the study periods represented occurred during generally wet, normal, or dry years.

5.0 REPORTING

A Study Progress Report will be prepared and filed with FERC by January 29, 2021. The progress report will describe overall progress, summarize preliminary findings as available, and explain any variance from the study plan and schedule.

In accordance with the Lloyd Shoals Process Plan and Schedule, an Updated American Eel Abundance and Upstream Movements Study Report will be filed with FERC by May 19, 2021. The study report will compile and analyze all data gathered since the beginning of the study in 2019, present the findings in tables and graphs, and interpret any resulting trends.

6.0 SCHEDULE

The second year of the American Eel Abundance and Upstream Movements Study will be completed according to the milestones in Table 3. The field studies will be conducted in November 2020 through June 2021. Following the filing of the Updated Study Report by May 19, 2021, an Updated Study Results Meeting will be held on June 3, 2021 and a summary of the meeting will be filed with FERC by June 18, 2021. During the meeting, Georgia Power will consult with NMFS and FWS on the study findings.

7.0 REFERENCES

Atlantic States Marine Fisheries Commission (ASMFC). 2000. Interstate fishery management plan for American Eel. Fishery Management Report No. 36. April 2000.

EA Engineering, Science, and Technology, Inc. (EA). 1990a. Fisheries investigations of the Ocmulgee River downstream of the Lloyd Shoals hydroelectric facility. Prepared for Georgia Power Company. EA Report No. 10277.08. June 1990.

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TABLE 1 AMERICAN EEL CATCH RATE BY ELECTROFISHING GEAR TYPE FOR THE OCMULGEE RIVER BELOW LLOYD SHOALS DAM IN 1988 AND 2019-2020		
	Catch per Unit Effort (fish/hour)	
	1988[a]	**2019-2020[b]**
Backpack Electrofishing		
Spring	14.6	--
Summer	37.4	26
Fall	5.4	0.3
Winter	1.4	--
Boat Electrofishing		
Spring	--	1.8
Summer	1.4	2.5
Fall	--	0.3
Winter	0.6	1.5
Lengths (mm) and Life Stages Present		
Minimum	168	184
Maximum	825	575
Mean	343	313
Standard Deviation	95	87
Life Stages	juveniles, adults	juveniles, adults

[a] Source: EA (1990a)

[b] Source: Georgia Power (2020a, 2020b); catch rate includes captured and observed eels.

TABLE 2 AMERICAN EELS CAPTURED OR OBSERVED IN THE STUDY AREA FROM SEPTEMBER 2019 THROUGH JULY 2020

Date	Method	Length (mm)	Weight (g)	Tag Number	Notes
10/24/2019	Boat	375	90	982F126058800404	-
10/24/2019	Backpack	346	69	928F126058800499	-
11/25/2019	Boat	200*	-	-	Observed/not captured
1/20/2020	Boat	311	46	982F126058800424	-
1/20/2020	Boat	299	45	982F126058800456	-
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	300*	-	-	Observed/not captured
1/20/2020	Boat	450*	-	-	Observed/not captured
1/20/2020	Boat	450*	-	-	Observed/not captured
3/11/2020	Boat	241	21	982F126058800413	-
5/29/2020	Boat	440	181	982F126058800492	
5/29/2020	Boat	575	468	982F126058800489	
5/29/2020	Boat	265	29	982F126058800481	
5/29/2020	Boat	294	38	982F126058800482	
5/29/2020	Boat	450*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
5/29/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Boat	300*	NA	NA	Observed/not captured
6/24/2020	Flashlight	130*	NA	NA	Observed/not captured
6/24/2020	Flashlight	200*	NA	NA	Observed/not captured
6/24/2020	Flashlight	200*	NA	NA	Observed/not captured
7/22/2020	Backpack	292	47	982F126058800418	
7/22/2020	Backpack	345	85	982F126058800467	
7/22/2020	Backpack	268	34	982F126058800421	
7/22/2020	Backpack	267	33	982F126058800448	
7/22/2020	Backpack	231	23	982F126058800493	
7/22/2020	Backpack	295	49	982F126058800487	
7/22/2020	Backpack	212	17	982F126058800496	
7/22/2020	Backpack	212	17	982F126058800466	
7/22/2020	Backpack	335	71	982F126058800476	
7/22/2020	Backpack	433	133	982F126058800451	
7/22/2020	Backpack	278	40	982F126058800429	
7/22/2020	Backpack	277	37	982F126058800416	

TABLE 2 AMERICAN EELS CAPTURED OR OBSERVED IN THE STUDY AREA FROM SEPTEMBER 2019 THROUGH JULY 2020

Date	Method	Length (mm)	Weight (g)	Tag Number	Notes
7/22/2020	Backpack	208	15	982F126058800468	
7/22/2020	Backpack	414	169	982F126058800439	
7/22/2020	Backpack	460	225	982F126058800419	
7/22/2020	Backpack	418	164	982F126058800460	
7/22/2020	Backpack	541	343	982F126058800437	
7/22/2020	Backpack	184	10	Not tagged	
7/22/2020	Trap	200	16	Not tagged	
7/22/2020	Boat	232	23	982F126058800401	
7/22/2020	Boat	310	60	982F126058800484	
7/22/2020	Boat	358	98	982F126058800406	
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Boat	230*	NA	NA	Observed/not captured
7/22/2020	Boat	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	230*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Backpack	300*	NA	NA	Observed/not captured
7/22/2020	Flashlight	250*	NA	NA	Observed/not captured

TABLE 3 SCHEDULE FOR CONDUCTING THE SECOND YEAR OF THE AMERICAN EEL ABUNDANCE AND UPSTREAM MOVEMENTS STUDY

Activity	Deadline
Begin Field Studies	November 2020
File Progress Report	January 29, 2021
Complete Field Studies	June 2021
File Updated Study Report	May 19, 2021
Updated Study Results Meeting	June 3, 2021
File Updated Study Results Meeting Summary	June 18, 2021
Stakeholders file any Updated Study Results Meeting Summary Comments	July 18, 2021
File Response to any Study Results Meeting Summary Comments	August 17, 2021

FIGURE 1 LLOYD SHOALS AMERICAN EEL STUDY AREA

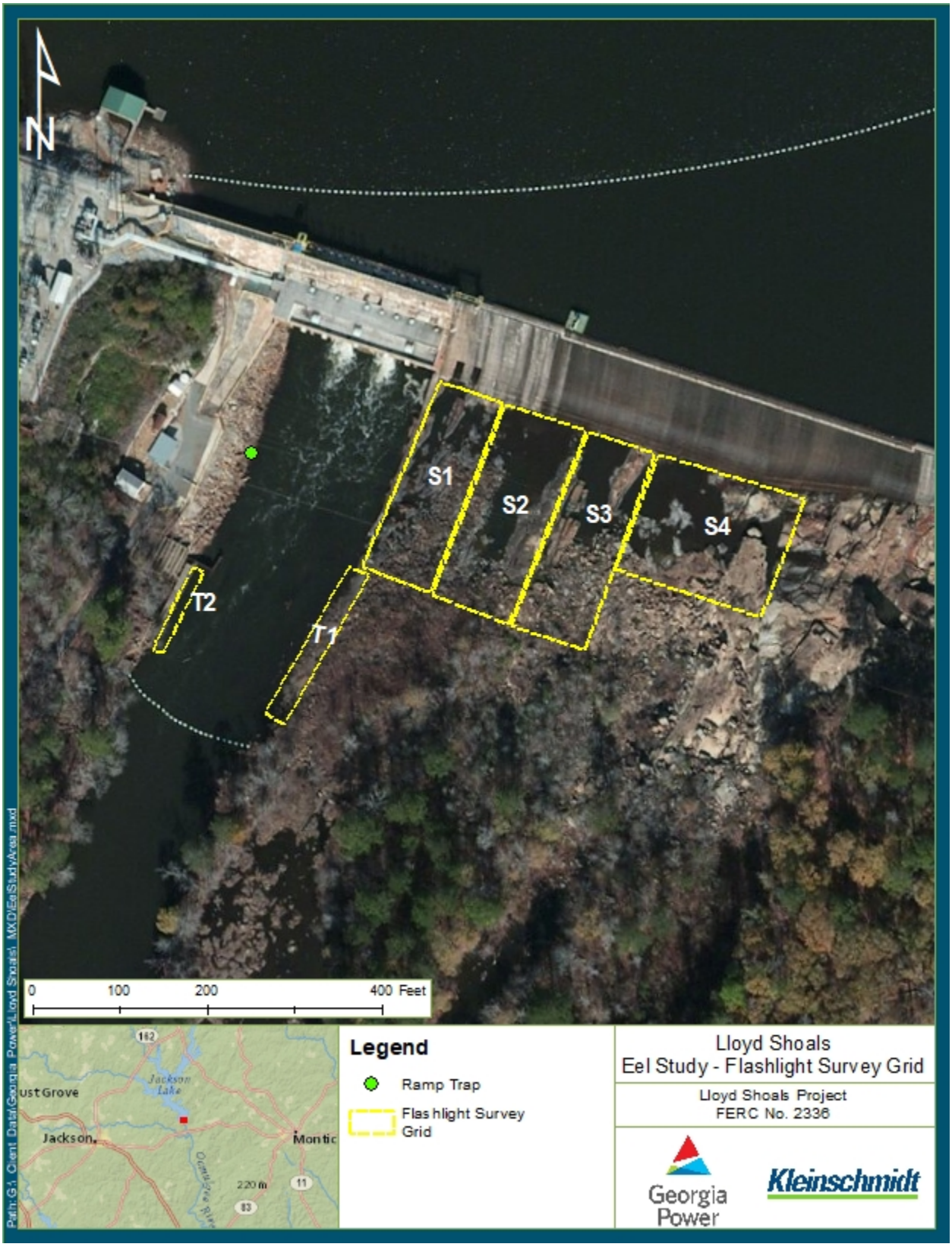

FIGURE 2 AMERICAN EEL FLASHLIGHT SURVEY SECTIONS

APPENDIX A

CONSULTATION DOCUMENTATION