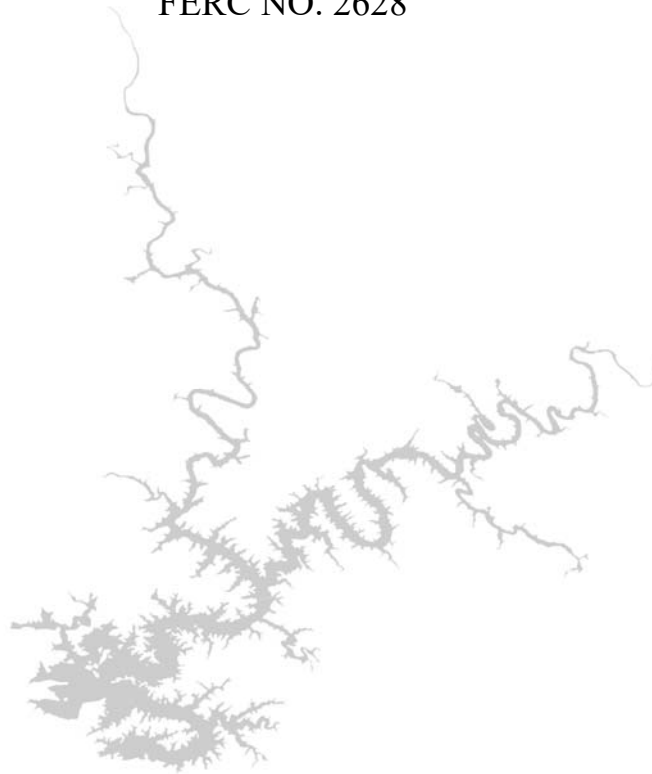




EROSION AND SEDIMENTATION STUDY PLAN

R. L. HARRIS HYDROELECTRIC PROJECT
FERC NO. 2628



Prepared by:

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BIRMINGHAM, ALABAMA



FINAL May 2019

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EROSION AND SEDIMENTATION STUDY PLAN

1.0 INTRODUCTION

Alabama Power Company (Alabama Power) is initiating the Federal Energy Regulatory Commission (FERC) relicensing of the 135-megawatt (MW) R.L. Harris Hydroelectric Project (Harris Project), FERC Project No. 2628. The Harris Project consists of a dam, spillway, powerhouse, and those lands and waters necessary for the operation of the hydroelectric project and enhancement and protection of environmental resources. These structures, lands, and water are enclosed within the FERC Project Boundary. Under the existing Harris Project license, the FERC Project Boundary encloses two distinct geographic areas, described below.

Harris Reservoir is the 9,870-acre reservoir (Harris Reservoir) created by the R.L. Harris Dam (Harris Dam). Harris Reservoir is located on the Tallapoosa River, near Lineville, Alabama. The lands adjoining the reservoir total approximately 7,392 acres and are included in the FERC Project Boundary. This includes land to 795 feet mean sea level (msl)¹, as well as natural undeveloped areas, hunting lands, prohibited access areas, recreational areas, and all islands.



The Harris Project also contains 15,063 acres of land within the James D. Martin-Skyline Wildlife Management Area (Skyline WMA) located in Jackson County, Alabama. These lands are located approximately 110 miles north of Harris Reservoir and were acquired and incorporated into the FERC Project Boundary as part of the FERC-approved Harris Project Wildlife Mitigative Plan and Wildlife Management Plan. These lands are leased to, and managed by, the State of Alabama for wildlife management and public hunting and are part of the Skyline WMA (ADCNR 2016b).

For the purposes of this study plan, “Lake Harris” refers to the 9,870-acre reservoir, adjacent 7,392 acres of Project land, and the dam, spillway, and powerhouse. “Skyline” refers to the 15,063 acres of Project land within the Skyline WMA in Jackson County. “Harris Project” refers to all the lands, waters, and structures enclosed within the FERC Project Boundary, which includes both Lake Harris and Skyline. Harris Reservoir refers to the 9,870-acre reservoir only; Harris Dam refers to the dam, spillway, and powerhouse. The Project Area refers to the land and water in the Project Boundary and immediate geographic area adjacent to the Project Boundary (Alabama Power Company 2018).

Lake Harris and Skyline are located within two river basins: the Tallapoosa and Tennessee River Basins, respectively. The only waterbody managed by Alabama Power as part of their FERC license for the Harris Project is the Harris Reservoir.

¹ Also includes a scenic easement (to 800 feet msl or 50 horizontal feet from 793 feet msl, whichever is less, but never less than 795 feet msl).

Background and Existing Information

During the October 19, 2017 issue identification workshop, several stakeholders noted the location of some possible erosion areas and suggested causes. Erosion areas were located both around Lake Harris as well as downstream of Harris Dam. Specific causes cited by stakeholders included wave action from boats, construction adjacent to the Project Boundary, and the effect of Harris Project operations in the Tallapoosa River downstream. Information provided by the Natural Resources Conservation Service (NRCS) describes the erodibility of soils around the Harris Project shoreline as slight to moderate (NRCS 2017a). The NRCS also describes the erodibility of soils downstream of the Harris Project as slight to moderate, with a small area of severe erodibility downstream of the confluence of Chikasanoxee Creek (NRCS 2017b).

Stakeholders also noted the location of areas on Harris Reservoir where sedimentation may be a problem. Although no existing information sources regarding sedimentation rates or amounts have been identified, Alabama Power does have Light Detection and Ranging (LIDAR) data and aerial photography for Lake Harris that may provide some value in evaluating sedimentation issues. In addition, Alabama Power has an Aquatic Vegetation Control group that periodically inspects Lake Harris for nuisance aquatic vegetation. Nuisance aquatic vegetation may occur in areas where excessive sedimentation has occurred.

Little Coon Creek, which flows through portions of Skyline, is currently listed as impaired due to siltation. The sources of this impairment include non-irrigated crop production and pasture grazing (ADEM 2016).

1.1 Resource Management Goals

The Alabama Department of Conservation and Natural Resources (ADCNR) and Alabama Department of Environmental Management (ADEM) regulate recreational fishing and water quality resources, respectively, at the Harris Project. As part of that responsibility, their goals are to limit Project related shoreline erosion and its impacts on water quality; to identify areas of sedimentation; to identify areas that currently have or could potentially have nuisance aquatic vegetation; and to identify ways to reduce adverse impacts related to Project operation on these issues.

1.2 Current Operations and Operational Alternatives

The erosion and sedimentation study will involve collecting and summarizing information under baseline operations. Any effects on erosion and sedimentation from potential changes in operations will be analyzed in the R.L. Harris Project Operating Curve Change Feasibility Study and the Downstream Release Alternatives Study.

2.0 GOALS AND OBJECTIVES

The goals of this study are to identify any problematic erosion sites and sedimentation areas and determine the likely causes. Alabama Power will consult with stakeholders to identify erosion and sedimentation areas around Lake Harris, along the Tallapoosa River downstream of Harris Dam through Horseshoe Bend, and at Skyline. Once areas are identified, Alabama Power will perform assessments and collect additional information, as necessary, to describe and categorize each area according to its severity and potential cause(s). Additionally, Alabama Power will assess sedimentation areas for the presence of nuisance or invasive aquatic vegetation.

3.0 PROJECT NEXUS AND GEOGRAPHIC SCOPE

Erosion sites may occur along the lake shoreline or in the Tallapoosa River downstream of Harris Dam due to Project operations and/or other causes. Sedimentation of eroded materials often deposits along the lake (upstream river channel and tributary mouths) and can create areas that are prone to the establishment of nuisance aquatic vegetation and hinder recreation use. In addition, Little Coon Creek, which flows through portions of Skyline, is listed as impaired on Alabama's 2018 303(d) list due to siltation. According to the list, the impairment is due to non-irrigated crop production and pasture grazing. The geographic scope for this study includes Little Coon Creek and Crow Creek Watersheds at Skyline, Lake Harris, and the Tallapoosa River from Harris Dam downstream through Horseshoe Bend.

4.0 METHODS

4.1 Erosion Data Collection and Analysis

Erosion sites on Lake Harris, its tributaries, Skyline, and downstream of Harris Dam through Horseshoe Bend will be identified by stakeholders and will be investigated during low water elevations in the fall through spring (during the fall/winter pool drawdown). Stakeholders can submit locations of potential erosion areas via e-mail submissions, traditional mail, and in-person at Harris Action Team 2 (HAT) meetings. In addition, Alabama Power will perform an assessment of bank erosion susceptibility in the Tallapoosa River from Harris Dam through Horseshoe Bend.

Each identified site will be photographed, georeferenced, and examined to determine the cause of erosion – Harris Project operation, land disturbance (development), or natural processes. Erosion site assessments will be completed under the direction of a qualified Erosion and Sediment Control Professional. Alabama Power will also have a soil scientist provide a Quality Assurance/Quality Control (QA/QC) of the erosion site inventory. The site evaluation form (Appendix A) will be used as a tool to perform and document the assessments. The evaluation form includes the following components:

1. Location: Each assessed site will be assigned a unique identification number/code along with GPS coordinates.
2. Position in Landscape: the general position of the site relative to dominant landscape features.
3. Physical Properties: the length, width, shape, and slope of the site.
4. Erosion Process: the mode of erosion, which may include:
 - a. Direct scour from river or tributary flows;
 - b. Piping, or internal erosion, where voids in soils are caused by seepage;
 - c. Slumping due to undercutting of the bank;
 - d. Gully or rill erosion resulting from surface runoff; or
 - e. Other processes.
5. Adjacent Land Use and Vegetative Cover: classification of the predominant adjacent land use and type/extent of vegetation.
6. Hydrologic Impact information: classification of when/if the erosion occurs during extreme flooding, above normal water levels, or within the range of normal water levels.
7. Description of the exposed soils.
8. General comments about the erosion site.
9. Potential cause(s) of erosion/sedimentation, including:

- a. Project operations (i.e., water level fluctuations or construction/maintenance activities on/at Project facilities or lands);
- b. Natural factors such as seasonal flooding, riverine processes, etc.;
- c. Land use practices such as agriculture, mining, residential/commercial development, etc.; and
- d. Anthropogenic or human-induced such as foot/bike paths, vehicle traffic, boat traffic, etc.

Once each erosion site has been evaluated, Alabama Power will present findings, including the field evaluation forms, to HAT 2 for review and comment.

4.2 Sedimentation Data Collection and Analysis

Sedimentation areas will be identified by stakeholders and assessed by examining available lake photography and LIDAR² data. The LIDAR data will be analyzed using a Geographic Information System (GIS) to identify elevation or contour changes around the reservoir from historic conditions. Changes in lake surface area can be quantified to estimate sedimentation rates and volumes within the reservoir. Identified sedimentation areas will likely be limited to areas exposed during reservoir winter-pool elevations as LIDAR cannot penetrate the reservoir water surface. The GIS exercise will be accompanied by field observations to verify sedimentation areas. Each of these areas will be surveyed for nuisance aquatic vegetation. In addition, Alabama Power will review its records to determine if treatment for nuisance vegetation of these areas has occurred. Alabama Power will prepare a summary of surveys and recommendations and present to HAT 2 members for review and comment.

5.0 REPORTS

As the various components of this study are completed and available for review and comment, Alabama Power will share results with HAT 2 through written documentation and stakeholder meetings, as discussed in Section 2.0 of the PAD. Stakeholders will have between 7-30 days to review and comment on documents, depending on the document length and complexity. Additional meetings (in-person and via conference call) will be held as necessary to discuss study results and solicit stakeholder input. Draft and final reports, if applicable to the study, will be filed with FERC as well as provided to the HAT members and posted to the Harris relicensing website for access by the general public.

As part of the Integrated Licensing Process (ILP), FERC requires licensees to file two status reports: the Initial Study Report and Updated Study Report. These reports provide a status update on all the FERC-approved relicensing studies. Alabama Power will prepare these FERC reports per the requirements of 18 CFR 5.15(c) and (f).

While not required in FERC's ILP process, Alabama Power will also file two Progress Updates during the relicensing process to provide additional updates to FERC, stakeholders, and the general public on the status of the relicensing studies, any interim work products, and any draft and final reports issued. The Progress Update will also include HAT meeting summaries. The first Progress Update will be distributed (and filed with FERC) in October 2019, approximately six months prior

² Light Detection and Ranging or LIDAR uses an airborne laser scanner to collect 3-dimensional data and can be used to construct highly detailed terrain maps.

to the Initial Study Report; the second update will be distributed (and filed with FERC) in October 2020, approximately six months prior to the Updated Study Report.

6.0 SCHEDULE

This schedule corresponds to the FERC-approved Harris Project Process Plan and Schedule. Consultation meeting dates will be finalized with HAT 2 members upon FERC approval of the study plan.

| | |
|---|--------------------------------------|
| FERC Study Plan Determination | April 2019 |
| Solicit input on erosion/sedimentation sites from HAT 2 | May 2019 |
| Downstream Bank Erosion Assessment | April – October 2019 |
| Develop GIS Overlays and Maps | June 2019 – July 2019 |
| HAT 2 Meeting to review final site list | August – September 2019 |
| Progress Update | October 2019 |
| Field Verification | Fall - Winter 2019 – 2020 |
| Erosion & Sedimentation Draft Study Report | March 2019 |
| Initial Study Report | April 2020 |
| Initial Study Report Meeting | April 2020 |
| HAT 2 Meeting(s), as needed, | April 2020 – April 2021 ³ |
| Erosion & Sedimentation Final Study Report | April 2021 |
| Updated Study Report | April 2021 |
| Updated Study Report Meeting | April 2021 |
| Progress Update | October 2020 |
| File Preliminary Licensing Proposal | By July 3, 2021 |
| File Final License Application with FERC | November 2021 |

7.0 COST AND EFFORT

Alabama Power estimates the cost to consult on and implement this study plan, including costs to collect and review existing information, conduct site visits, and develop draft and final reports, is \$300K.

8.0 REFERENCES

Alabama Department of Conservation and Natural Resources (ADCNR). 2016b. Wildlife Management Areas. Available at: <http://www.outdooralabama.com/wildlife-management-areas>. Accessed November 2016.

Alabama Department of Environmental Management (ADEM). 2016. 2016 Alabama §303(d) List. [Online] URL: <http://adem.state.al.us/programs/water/wquality/2016AL303dList.pdf>. Accessed December 5, 2017.

Alabama Power Company. 2018. Pre-Application Document for the Harris Hydroelectric Project (FERC No. 2628). Alabama Power Company, Birmingham, AL.

³ Meeting dates will be determined with the HAT 2 members based on results of the initial study season.

Natural Resources Conservation Service (NRCS). 2017a. Web Soil Survey. [Online] URL: <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed December 1, 2017.

Natural Resources Conservation Service (NRCS). 2017b. Web Soil Survey. [Online] URL: <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed December 5, 2017.

APPENDIX A – HARRIS PROJECT
EROSION & SEDIMENTATION STUDY
SITE EVALUATION FORM

R. L. HARRIS PROJECT
EROSION & SEDIMENTATION STUDY SITE EVALUATION FORM

Water Body: _____ Date: _____

Field Personnel: _____ Photo No.: _____

1. Erosion Area Location:
ID: _____ Lat: _____ Long: _____ Time: _____

2. Position in Landscape:
 Levee/Embankment Main Channel/Main Body of Lake
 Steep bank Cove
 Floodplain Terrace Other: _____

3. Physical Properties:
Length: _____ Slope: Steep (> 20%)
Width: _____ Moderate (8% to 20%)
Shape: _____ Gentle (< 8%)

4. Erosion Processes:
 Direct scour from river or tributary flows
 Piping
 Slumping due to scoured toe of bank
 Gully or rill erosion from overland flows towards lake
 Other: _____

5. Adjacent Land Use / Vegetative Cover:
 Agricultural Unvegetated
 Undeveloped, Grassy Early successional vegetation
 Undeveloped, Wooded Exposed roots or root undercutting
 Road Crossing/Bridge Leaning or fallen trees
 Roadway, Gravel Other: _____
 Roadway, Paved
 Park

6. Hydrologic Impact Information (Erosion area affected during or by):
 Extreme Floods
 Above normal high-water level
 Within range of normal water level fluctuations

7. Description of Exposed Soils including Types and Depths:

8. General Comments:

_____ (Provide additional comments on back of sheet)

9. Potential Cause of Erosion/Sedimentation (check all that apply):
 Project operations (water level fluctuations; maintenance/construction activities)
 Natural factor independent of operations (e.g., seasonal flooding, riverine processes, etc.)
 Land use (e.g., farming, ranching, mining, development, etc.)
 Anthropogenic (Foot/bike paths, vehicle traffic, waves from boats, etc.)
 Other: _____
Explain Reasoning for Potential Cause of Erosion/Sedimentation: _____

