Attachment I
Central Georgia Operations Modeling Summary

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Technical Memorandum

Date:	Wednesday, November 13, 2024
Project:	Wallace and Sinclair Hydroelectric System
To:	Georgia Power Company
From:	HDR
Subject:	**Georgia Power Company Wallace and Sinclair Operations Modeling Scenarios Summary**

Purpose and Background

The Wallace Pumped Storage Hydroelectric Project (Federal Energy Regulatory Commission [FERC] No. P-2413) and the Sinclair Project (FERC No. P- 1951) are owned and operated by Georgia Power Company (GPC), a subsidiary of Southern Company. The two Projects are located on the Oconee and Apalachee Rivers in Baldwin, Hancock, and Putnam Counties Georgia.

Georgia Power Company retained HDR Engineering, Inc. (HDR) to update an existing operations model for the Projects and to utilize this model to simulate alternative operations of the Projects to support GPC's energy portfolio investment planning efforts. The operations model for the Projects has been developed using HDR's Computerized Hydro Electric Operations Planning Software (CHEOPS™) software platform. CHEOPS is specifically designed to evaluate the effects of operational changes and physical modifications at hydroelectric projects. Over the past 30 years, the CHEOPS Model has been utilized to simulate operations at more than 300 water resource developments, 95 of which were used to evaluate physical and operational changes considered during the Federal Energy Regulatory Commission (FERC) relicensing of the developments. One of the many strengths of CHEOPS is the degree of customization each individual model contains. CHEOPS models are tailored to meet the demands of the particular system being modeled. CHEOPS models are also custom configured based on specific system constraints such as flow requirements, target reservoir elevations, and powerhouse equipment constraints. Utilizing a daily average inflow dataset as primary input, CHEOPS simulates operations to allocate water between reservoir storage and required outflow constraints (physical, environmental, and operational) while permitting generation.

Alternative Operations Scenarios

A single scenario was developed to show results of simulated operations associated with potential incremental changes from Baseline operations. This scenario was developed to simulate the removal of Wallace dam and was simulated for the hydrologic period of record of 1978 through 2023. This scenario represents the removal of Wallace dam, including the associated storage operations, operational requirements, and powerhouse (both pumping and generating capacity).

Table 1 summarizes the simulated Projects (System) total generation for each alternative scenario as compared to the simulated Baseline scenario. The overall simulated average annual generation loss as compared to the Baseline scenario is 72.9 percent, all being realized with the loss of Wallace generation. The simulated removal of Wallace dam and the associated operations does impact the simulated Sinclair impoundment (Lake Sinclair) elevations, where the impoundment is carried at a higher elevation with less fluctuation. Figure 1 shows a comparison of the simulated Lake Sinclair for the Baseline and No Wallace scenarios.

In addition to the impacts to generation and Lake Sinclair levels, the removal of Wallace storage also decreases the ability of the System to dampen high flow events and would potentially result in increased spilling and downstream flooding below Sinclair dam. The simulated volume of water spilled at Sinclair increases by approximately 3 percent under the NoWallace scenario as compared to the Baseline scenario.

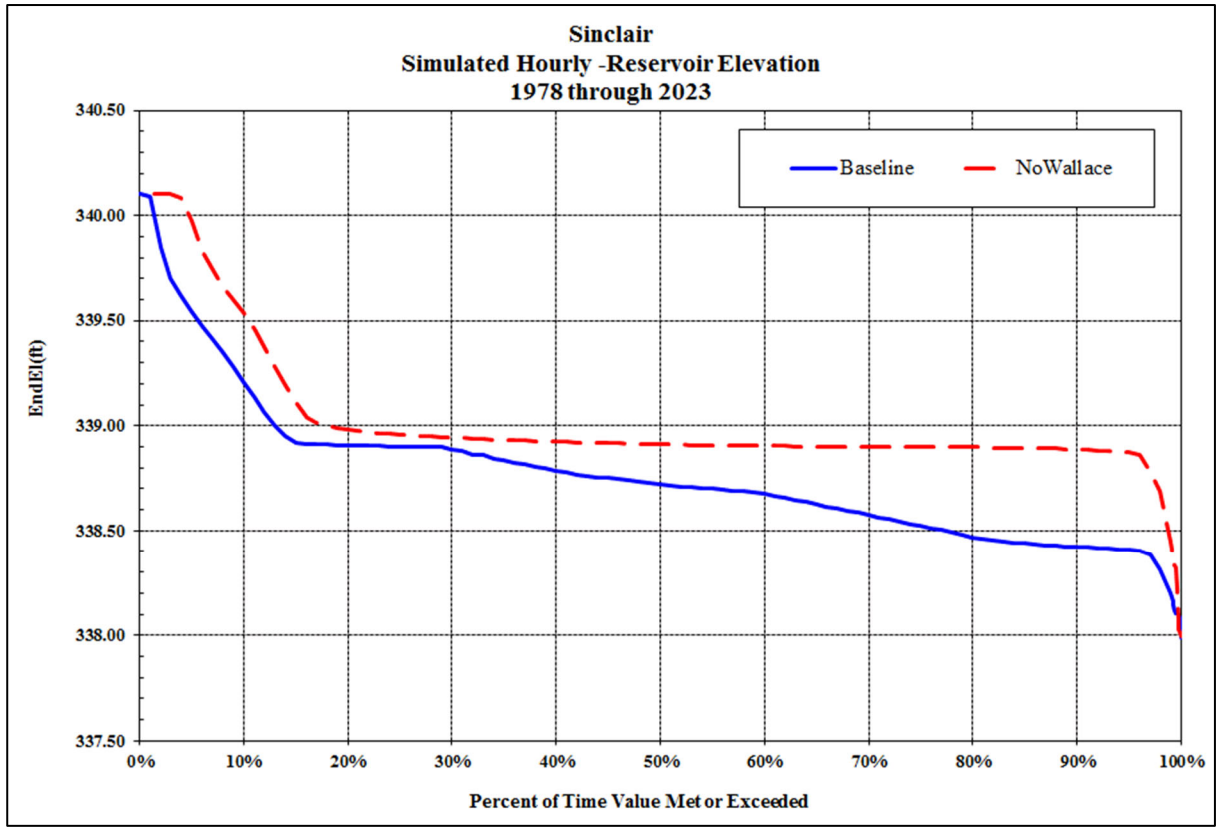

Figure 1. Simulated Lake Sinclair Elevations

Table 1. Simulated Generation Summary (simulated for 1965 through 2023)

Scenario		Average Generation (MWh)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Baseline	***System Total***	***50,700***	***50,600***	***55,900***	***48,000***	***40,000***	***33,900***	***32,100***	***29,900***	***27,100***	***30,700***	***33,700***	***42,700***	***475,300***
No Wallace	***System Total***	***16,300***	***17,000***	***18,800***	***15,800***	***11,200***	***8,000***	***6,600***	***5,500***	***4,200***	***5,700***	***7,800***	***11,900***	***128,800***
	Difference from Baseline (MWh)	*-34,400*	*-33,600*	*-37,100*	*-32,200*	*-28,800*	*-25,900*	*-25,500*	*-24,400*	*-22,900*	*-25,000*	*-25,900*	*-30,800*	*-346,500*
	Difference from Baseline (%)	*-67.9%*	*-66.4%*	*-66.4%*	*-67.1%*	*-72.0%*	*-76.4%*	*-79.4%*	*-81.6%*	*-84.5%*	*-81.4%*	*-76.9%*	*-72.1%*	*-72.9%*

Conclusions

From a generation standpoint, the modeling indicates removal of Wallace Dam would have little to no impact on Sinclair total generation but would reduce the average annual system total generation by approximately 72.9 percent due to the loss of Wallace generation. Additionally, removal of storage operations also has the potential to increase spilling and downstream flooding due to the reduced ability to buffer high inflows to the System.

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