Broad River Basin Council
Phase 2/3 Progress Report

April 2023

1.0 Introduction

The South Carolina State Water Planning Framework requires River Basin Councils (RBCs) to prepare and submit progress reports after each phase of the river basin plan development. This progress report covers Phase 2 and a portion of Phase 3 of the Broad River basin planning process spanning from November 2022 to the end of March 2023.

The Phase 2/3 Progress Report summarizes the activities and accomplishments of these two phases, including key milestones reached, and identifies existing and potential issues regarding schedule and funding. Anticipated challenges as the RBC completes Phase 3 and moves into Phase 4 of the planning process are also identified.

2.0 Activities and Accomplishments

2.1 RBC Meetings

Five, monthly RBC meetings were held during the Phase 2/3 planning period. All meetings were conducted as hybrid meetings. Most RBC members attended in person, while some members attended meetings virtually using the Zoom platform. Meeting durations were typically 4 hours. Meeting summaries and minutes were distributed to meeting attendees.

2.2 Phase 2 Objectives

The objectives of Phase 2 were to:

- Select performance measures to evaluate and compare surface water model results.
- Complete surface water modeling and identify surface water shortages over the 50-year planning horizon.
- Evaluate ecological-flow relationships and identify potential risk to aquatic health under each planning scenario.
- Consider and designate Surface Water Conditions and/or Reaches of Interests.
- Form RBC-defined subcommittees if needed.
- Review process metrics and make adjustments where needed.

The objectives of Phase 3 were to:

- Identify and evaluate the effectiveness of water management strategies to reduce or eliminate shortages and enhance water availability.
- Evaluate the feasibility of water management strategies, including assessing costs and benefits.
- Select and prioritize the water management strategies.
- Finalize Reaches of Interests and Groundwater Areas of Concern.

- Review process metrics and make adjustments where needed.

2.3 Accomplishments

Information Sharing

Technical presentations made to the RBC during the Phase 2 meetings included an overview of ecological flow relationships and minimum instream flows; a summary of water availability analyses and reservoir safe yield; and a summary of various demand- and supply-side strategy evaluations. Presenters included staff representing the U.S. Geological Survey (USGS), The Nature Conservancy (TNC), and CDM Smith.

Assessment of Surface Water Availability

CDM Smith completed model simulations to assess surface water availability for the following scenarios:

- Current Surface Water Use
- Permitted and Registered Surface Water Use
- Moderate Water Demand Projection
- High Demand Water Projection
- Unimpaired Flow

The Moderate Water Demand Scenario was performed using projected water demands for 2070. The High Water Demand Scenario was performed using projected water demands for 2025, 2030, 2040, 2050, 2060, and 2070. Water shortages were identified based on modeling using a monthly time-step, and performance measures were calculated and presented to the RBC to facilitate comparisons of simulated flow at strategic nodes between scenarios.

The models developed for each planning scenario were also run using a daily timestep, to facilitate comparison to calculated minimum instream flows at selected strategic nodes that correspond to USGS gage locations. Simulated daily flows and representative statistics selected to characterize flow-ecology relationships at a subset of strategic nodes were provided to the USGS and TNC researchers. The results were used to identify risk levels for each strategic node and planning scenario.

The RBC considered but did not select any Surface Water Conditions or Reaches of Interest.

Evaluation of Reservoir Safe Yield

CDM Smith used the SWAM model to evaluate the safe yield for Lake Bowen and Lake Blalock under current conditions and with all water users withdrawing at their permitted and registered withdrawal amount. Additionally, CDM Smith also evaluated the safe yield of the source water reservoirs for Gaffney, Greer, and Startex-Jackson-Wellford-Duncan (SJWD) under the 2070 High Demand Scenario conditions.

Additional Surface Water Analyses

At the request of the RBC, CDM Smith performed a sensitivity analysis to evaluate the potential loss of storage due to sedimentation in all major water supply reservoirs of the basin. Also at the request of

the RBC, CDM Smith performed a sensitivity analysis to evaluate the impact of increased reservoir evaporation, which might result from an increase in air temperatures, on water availability and downstream flows.

Evaluation of Surface Water Management Strategies

CDM Smith identified a portfolio of demand-side surface water management strategies and evaluated the effectiveness of the portfolio of strategies in reducing or eliminating shortages and enhancing water availability. Demand-side strategies that were evaluated using the model included: (1) the existing drought management plans of the basin's major surface water users and (2) a portfolio of municipal water conservation measures.

Supply-side strategies evaluated (as of the end of March) included: (1) optimizing reservoir operations; (2) increasing the capacity of Lake Whelchel; and (3) additional storage from an offline quarry downstream of Lake Whelchel. The results of these water management strategy evaluations were presented to the RBC, and additional strategies were identified for evaluation, including a regional reservoir, a new intake for Gaffney on the Broad River, and adjustments to FERC-allowed withdrawal amount from Gaston Shoals. Work was also initiated to assess the feasibility of the demand- and supply-side strategies.

2.4 Activities Not Completed

All activities outlined in the Planning Framework for Phase 2 were completed. Work under Phase 3 continues.

2.5 Feedback from the RBC

At the March RBC meeting, the RBC members were asked to review the process metrics and provide feedback on performance towards those metrics. The process metrics center on the effectiveness of the facilitation, content, and format of the meetings; the pace of the planning process; and the use of the best available scientific information. Feedback from the RBC indicated that the performance and actions over the Phases 2 and 3 have met the criteria identified by the process metrics.

3.0 Issues Impacting Schedule and Funding

No issues have been identified that are expected to impact the schedule or funding of the planning process through completion of Phase 4. The process is currently on track to potentially finish several months ahead of schedule.

4.0 Challenges

The only identified potential challenge is maintaining adequate representation from all water interest categories. During Phase 2/3, one member representing the Water-based Recreation interest category resigned due to personal reasons. There are still two active members in this category. A member representing the At-Large interest category resigned due to personal reasons. A third member was added to the At-large interest category, but then decided to resign after several meetings due to other

commitments. The At-large interest category currently has two active members. The Local Governments interest category has only one representative on the RBC. The RBC currently stands at 20 members, with interest group representation as shown in **Figure 1**.

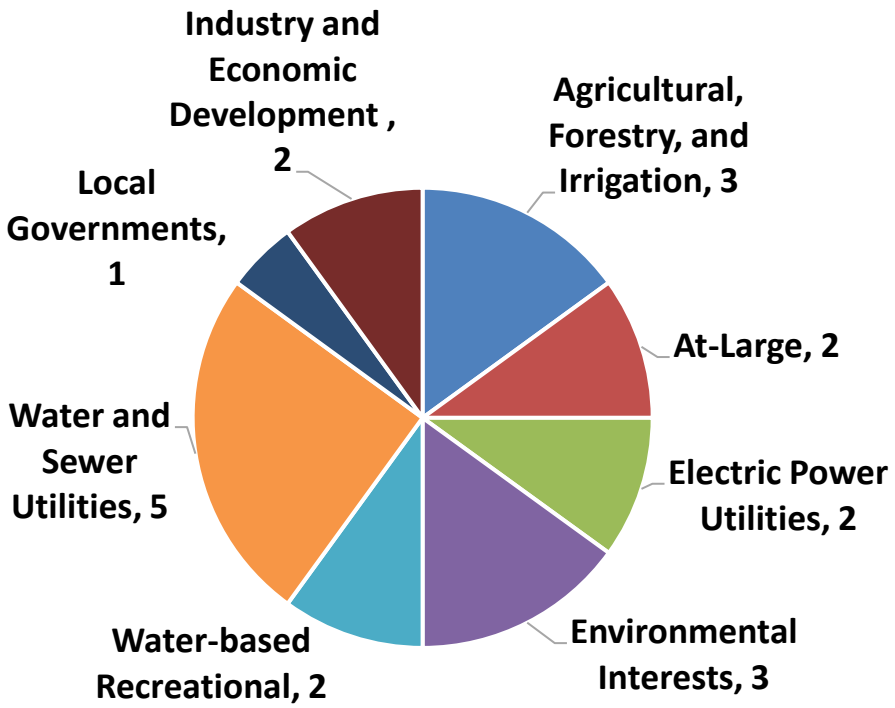

Figure 1. Broad RBC Interest Category Representation (as of 3/31/23)