Saluda RBC Meeting Minutes

Members Present: Michael Waddell, Rick Huffman, Eddie Owen, KC Price, Rett Templeton, Larry Nates, Josie Newton, Rebecca Wade, Thompson Smith, Ed Bruce, Robert Hanley, Jeff Boss, Katherine Amidon, Tate Davis, Kevin Miller, Patrick Jackson, Melanie Ruhlman, David Coggins, Charlie Timmons, & Kaleigh Sims

Members Absent: Jason Davis (Katie Moore, alternate, present), Brandon Grooms (Barrett Willis, alternate, present), David Lawrence (David Gobbel, alternate, present), Jay Nicholson (Guy Schmoltze, alternate, present), Paul Lewis, Justin McGrady, & Devin Orr

Planning Team Present: John Boyer, Scott Harder, Tom Walker, Leigh Anne Monroe, Joe Koon, Alexis Modzelesky, Andy Wachob, Hannah Hartley, & Iffy Ogbekene

Total Present: 42

K.C. Price called to order the October 18th meeting of the Saluda RBC at 10:00 a.m. He introduced the meeting structure and reviewed the meeting objectives, including receiving recommendations for assessing flow-ecological health relationships, reviewing surface water model scenario results, model updates, and inter-basin transfers and touring Unity Park and ReWa Mauldin Road WWRF. He requested motions to approve the agenda, minutes, and summary documents from the previous meeting. The Saluda RBC members unanimously approved the RBC meeting agenda 1st – Rick Huffman and 2nd – Kevin Miller and the last meeting minutes and summary 1st – Tate Davis and 2nd – Michael Waddell. The housekeeping items (Parking Lot) and announcements included:

- Update and revise water use projections with utilities
- Engagement of the public with this process-what, when, how
- Engagement of public officials in pertinent municipalities to promote the plan when we get to the public comment period and beyond
- Identify and engage stakeholders that are not involved in the basin council but have an overlapping or adjacent connection to our efforts
- Development and maintenance of a public-facing data clearinghouse for all things water with the Saluda Basin

- Hydrological impairment on the Saluda, acknowledgment of this within the final report and within our recommendations
- Funding for implementation
- Report on which watersheds have watershed-based plans and the status of those plans
- We have discussed some data, making sure we acknowledge those in our final report and determine how to mitigate those in the future.
- If we want to request additional surface water demand scenarios we need to decide when? (ideally, before we start Phase 3, but could be as late as midway through Phase 4, per CDM Smith)
- Determine how and when we will coordinate with basin councils

There were no public comments or agency comments

Flow-Ecology Relationships

Joe Mruzek facilitated this session and discussed the Ecoregions we have in the Saluda Basin. We looked at some strategic nodes and then applied their relationships with our projected water use under four scenarios. There are three Stream Classes, but we will look at the Perennial runoff, which is moderately stable flow and has distinct seasonal extremes. And none of the perennial sites have water withdrawals, so that they would stay the same under any of our projected water use scenarios.

Strategic Nodes: we selected four strategic nodes: Reedy River above Fork Shoals, Rabon Creek, Bush River near Prosperity and Twelvemile Creek.

Selected Metrics: He discussed two selected metrics, which are:

- Fish Species Richness: number of fish species found in a stream or river reach. In other words, fish richness as a response to changes in mean daily flow.
- Brood hiding fishes: Brood hiders place their eggs in a concealed location but do not guard or provide any parental care. They can be sensitive to changes during low flow metrics.

Questions: How are the risk ranges developed?

Answer: The risk ranges are developed based on a paper from Luke Bower that used a statewide dataset. And then, within the state data set, we broke it down to sites within the stream type and Ecoregion. They are based on Random Forest Regression (we looked at changes in stream flow and correlated that with changes in the Fish Richness across historic flow and current flow). We then use that to project our Risk Ranges in the future.

Questions: Risk ranges?

A: Example of the Broad basin – the basin historic data to help with water withdrawal.
Question: how many are in the set?
Answer: There are quite a few biotic measurements that we expect to have changed, and we looked at the changes, including species type prevalence in the basin, and it's only projecting change in terms of use. So we went down to those two because those are the two that give us the best idea of change in the fish composition in the future.
Question: Is there a difference in the number as compared to the other basin?
Answer: As Joe said, there are limited stream types we could look at, and then there is limited sample data to support that.
Question: What is your target species?
Answer: We are targeting all fish richness, so it's the total number of species within a site. In other words, we are not targeting a specific species but we are targeting a wholistic measure of the entire health of the community.
Question: No nodes on the Upper Saluda, is it regulations or what?
Answer: We tried to put nodes on the North and South Saluda but was not well sampled – will be inaccurate.
Question: North Saluda – ambient monitoring station – why can't that be used?
Answer: It was but relationships are based on Piedmont. One site can't be generalized to the whole basin. Anecdotal evidence.
Question: if you don't have enough sampling to develop a good statistically sound ecology relationship, how many sampling points would you wish to have, say 5 or 10, and would you wish them to be all in one basin, or would you prefer them to be spread across the three basins that are in the Blue Ridge Ecoregion? Could we make this a recommendation to help support this analysis?
Answer: We didn't look at the Blue Ridge because the Blue Ridge within South Carolina didn't have enough samples because it is not a large proportion of South Carolina streams (Luke Bower would have that information). Within the Piedmont, we had ten stable base flow sites. So it's more than 10. The Blue Ridge doesn't take up a lot of South Carolina streams, so there are just not that many streams sampled in proportion to the rest of the state. On the Southwest side, we didn't include them because there's no withdrawal.
Comment: We could potentially collaborate with NC.
We do have a few tributaries on the Southwest side of the Saluda River, especially since the agricultural discharges are very small; hence, in doing the analysis, we will not see any

difference between the scenarios that we are looking at (there will be no information in the analysis).
Comment: Recreation in the Blue Ridge area is important and draws a high interest vs the amount of area it covers in SC.

Review and Update of Surface Water Availability Modeling:

Surface Water Scenarios

Base Scenarios:

- Current Surface Water Use Scenario-uses most recent 10-year average withdrawals (as reported by month) in most cases.
- Permitted and Registered (P&R) Surface Water Use Scenario-Uses current fully permitted and registered amounts.
- Moderate Water Demand Projection, scenario-Future water demand projection, based on moderate growth and normal climate
- High Water Demand Projection Scenario- future water demand projection based on high growth and hot/dry climate.

Additional Scenarios:

Unimpaired Flow (UIF) Scenario- Naturalized condition (no surface water withdrawals, discharge, or reservoirs).

Summary of Average Annual Surface Water Demands by Scenario (in MGD):

In summary, we see the percentage of current use as a percentage of the permitted and registered scenario. Overall, we can see that right now, in the basin, we are averaging only a third of what's currently permitted and registered.

Updates to Current Use and P&R Scenarios:

Lake Rabon:

- Added dead pool storage
- Add minimum release of 9 cfs

Table Rock and North Saluda Reservoirs:

- Add minimum release of 3 MGD (4.65 cfs) of both reservoirs
- Adjusted operating rules to better balance with withdrawals.

Current Use Scenario: Physical Shortage:

The four shortages are all farms, and we looked at the shortages during the 90-some year period – they are all irrigators. They are all located near the headwater of the tributaries both on the north and south sides of Saluda. Their frequency of shortage is pretty small. Watson Jerrold Farm had the largest at 14%, and their shortages were all fairly small. For example, Leslea Farms has storage ponds, and the intakes for this particular farm have two storage ponds not reflected in the model.

Permitted & Registered Scenario: we see here that most of the shortages are the irrigators or farmers. They are typically on these smaller streams that can run dry during dry periods. And again, this scenario is an unrealistic scenario because the infrastructure is not even in place to consider this. Most entities can only hold a fraction of what their permit or registration allows due to the limitations of pumps and conveyance capacity. The most notable one is Duke Lee Station, with about 300MGD. Greenville water (90%), not considering their Savannah source, but if they tried to fully permitted amount, which is really large, they would dry up their lakes.

Summary of water Supply Shortages:

This is the summary of the current and per-minute registered scenarios. This would be more meaningful when we look at the moderate and high-demand scenarios for our planning horizon.

Strategic Nodes are also called performance measures, which are typically flow statistics. And are located on all major streams and rivers, downstream of most withdrawals and discharges. For wadable streams, they also represent potential locations to evaluate flow-ecology relationships. The nodes help us to see if there's any difference in our scenarios because of the water use and tributaries. Also, looking at the management strategies, we will use these nodes to see how effective the strategies are.

Reservoir Storage- Table Rock Lake: one of the changes we made was to better balance Greenville's withdraws from Table Rock and North Saluda. The model was trying to meet Greenville's demands from Table Rock. Once the Table Rock hit the dead pool, it would switch over and try to meet the remaining demands from the North Saluda reservoir. Greenville tries to balance their Lakes; they do not want to draw at the expense of the other, so we have some rules that help to balance that.

North Saluda Reservoir: when Table Rock was the priority and didn't get much demand from North Saluda, that looked pretty good; that was the situation before. And now, it's more balanced- it switches over and pulls water from North Saluda.

C: Min 1.7 Table Rock and Min 2 Rabon

Question: Are there water restrictions?

Answer: Yes, but it has never happened.

Question: 3 mgd from each reservoir?

Answer: 3 from each, yes.

Question: Low inflow protocol for the reservoirs?

Answer: We can, yes.

Question: Additional scenario?

Answer: Yes, and we can do that during phase 3. Dams were built for the Upstate (Laurens, Pickens, etc.)

Question: How were they balanced?

Answer: Could do further optimization. Also we are not including the Lake Keowee withdrawal.

Question: We did talk about Woolpert data. Have we been able to get that?

Ans: We haven't gotten it yet. The data along the Reedy and Upper part of the basin.

Comparison to Minimum Instream Flows:

1988 Instream Flow Study:

- In 1983, the Water Resource Commission was directed to:
  Phase 1: identify streams in need of low-flow protection (1985)
  Phase II: make recommendations of MIF requirement to protect instream uses (1988)
- Determined MIF for 33 study sites based on six instream uses with different instream flow approaches.
- MIF to protect fisheries resources determined by the Tennant method, Wetted Perimeter and Usable Width.
- Instream flow should be determined for three periods to maintain natural seasonal variability(higher flows in spring, lower in summer.
- SC Wildlife and Marine Resources Dept. used study to develop MIF for fisheries as 20-30-40.

2009 SCDNR Instream Flow Policy:

- Adopted results of 1988 study: Seasonal variability in flows and Fisheries requirements as limiting.
- Based on variation in fish habitat needs in the Piedmont vs the Coastal Plain, DNR recommended MIFs vary.

- DNR will request MIFs below proposed or existing dams be maintained at minimum levels.

The policy has two different components: the Coastal Plain and the Piedmont. 60% of main annual flow 2040 was the minimum instream flow, and Piedmont was only 40% or 2030.
We compare our hydrologic period record flow to the minimum instream flow. This was done at 6 locations (Saluda River near Greenville, Williamston, Ware Shoals, Reedy River above Fork Shoals, Bush River near Prosperity, and Saluda River of Chappells). What we have done is take the actual gauge data going back in time. The data we have is 80 years, 27 years, 83 years, 32 years, 29 years, 32 years, and 96 years. We figured out what the main annual flow is at each of those sites, and then we applied the 20-30-40 rules depending on which month it was to calculate what the minimum instream flow should be. Then, we compared our scenario flows for those particular months to the minimum instream flow, which shows us the percentage of time we have below the minimum instream flow. These comparisons are run using the model in a daily time step.
Comment: Tennant Method was the basis for the 20-30-40.
Question: Are you familiar with the paper that turns it on its head? Suggests 80% is needed and that 20-30-40 is not adequate.
Answer: Flow by approach – constraining instream flow does.
Discussion: Take into account downstream user's needs?
Answer: No, it doesn't. If we were to run this in a prior appropriation approach we would but we have a regulated riparian law system here in SC.
Question: Lee Station, aren't they just putting the water back in?
Answer: Cooling could evaporate some water but not nearly all withdrawn.
Question: What impact does that have in the system on flow?
Answer: Very little impact.
Question: Can we adjust assumptions?
Answer: We can but we aren't going to pay attention to permitted and registered scenario. The 2070 high demand scenario will be our high scenario.

Saluda River Basin-Interbasin Transfers:

Current Use Scenario Imports and Exports- imports and exports shown represent the amount discharged to surface water. Additional imports and exports, not accounted for here, are consumed /or returned through septic systems. The key information here is import to Saluda total =12.7MGD and export from Saluda total=54.5MGD.

Next Steps:

- Incorporate Moderate and High Demand Projections and present these Scenario results at the November RBC meeting.
- Apply flow-ecology metrics, then evaluate them using SWAM model daily timestep results for each planning scenario (RBC, CDM Smith, TNC, Clemson)
- Other actions, as identified by RBC.

Question: Columbia not bringing any water in?

Answer: Broad Canal discharge goes to the Congaree River.

C: City of Columbia intake is directly into the Broad River.

Saluda RBC Meeting #9, Tentative/Potential Discussion Topics:

- Surface water withdrawal regulation update and discussion (SCGHEC):
  a. Review the PPAC recommended conceptual changes to SW Law and Regulation
  b. Review recommendations related to SW Law and Regulations made by the Broad and Edisto RBCs
  c. Begin to discuss and develop the RBC's recommendations related to SW law and Regulation
- Overview of the draft Broad River Basin Plan
- Learn about the hydrologically impaired stretch of the Saluda River below Saluda Lake

The Saluda RBC agreed to meet in November and skip the December meeting.

Katherine Amidon gave a brief talk and highlighted some images before the Unity Park tour.

Meeting adjourned: 11:06 AM

Minutes: Iffy Ogbekene and Tom Walker

Approved: 11/15/23