Saluda River Basin Council, May 17, 2023, Meeting Minutes

RBC Members Present: Michael Waddell, Jason Davis, KC Price, Larry Nates, Eddie Owen, David Lawrence, Rebecca Wade, Josie Newton, Katherina Amidon, Rick Huffman, Tate Davis, Devin Orr, Rett Templeton, Justin McGrady, David Coggins, Kevin Miller, Patrick Jackson, Jeff Boss, Ed Bruce, Paul Lewis, Jay Nicholson, Melanie Ruhlman, Mark Farris, Charlie Timmons, Robert Hanley, & Thompson Smith

RBC Members Absent: Brandon Grooms (Barrett Willis, alternate, present), Jim Moore (Frank Daniel, alternate, present), & Sharon Appell

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

Total Present: 50

Call the Meeting to Order (John Boyer) 10:00–10:10

John Boyer called the May 17th meeting of the Saluda RBC to order at 10.00. He introduced the meeting structure and reviewed the objectives, including learning more about the basin's changing land use and socioeconomic characteristics, streamflow monitoring and low flow characteristics, basin climatology and Drought Response Act, and finalizing RBC Vision and Goals. Members approved the RBC meeting agenda and the approval of the April 19th meeting minutes and summary. There was no public comment.

Motion to approve the agenda – 1st Justin McGrady and 2nd – Michael Waddell – unanimous approval

Motion to approve the minutes and summary from April – 1st Kevin Miller and 2nd Michael Waddell – unanimous approval

April RBC Meeting Review (John Boyer) 10:15–10:20

John Boyer facilitated the review of the April RBC meeting; he reiterated what members learned in the last meeting about the surface water and groundwater resources of the Saluda River Basin, Selected Process Metrics, and how the RBC began developing the Vision Statement and Goals. He asked a question, and members provided the following answers, including the upper Saluda Basin generally has a higher base flow while the lower Saluda Basin has a lower base flow. The basin has nine reservoirs used for hydroelectric power and six hydroelectric projects licensed by the Federal Energy Regulatory

Commission. The legally available water is calculated to be 80% mean annual daily flow at the point of withdrawal for streams and rivers not influenced by an impoundment.

1. **Saluda River Basin Land Use and Socioeconomic Characteristics 10:20-10:30**

Evan Patrohay facilitated this session with an overview of Chapter 2 of the River Basin Plan, including physical environment, climate, natural resources, agricultural resources, and socioeconomic environment. He discussed the socioeconomic portions of Chapter 2. The Saluda River Basin Land covers 4% of open water, 2% of wetland, 7% of shrubland, 17% of developed land, 16% of agricultural land, and 54% of woodland. While Broad River Basin covers 3% wetland, 1% water, 15% developed land, 8% shrubland, 13% agricultural land, and 60% woodland. The total land area is 2524.0 sq miles, and the counties are Pickens, Greenville, Anderson, Laurens, Abbeville, Greenwood, Newberry, Saluda, and Lexington. Saluda County is about 100% in the basin, and others are about 50% in the basin. The farmland type includes 35% of prime farmland, 23% of statewide importance, less than 1% of farmland of local importance, and 41% of not prime farmland. The difference is that farmland type is a function of best chemical, best physiological characteristics, etc. Nonetheless, Saluda is suitable for farming. From 1992-2017, the number of farms with irrigation and irrigated acres was higher statewide than in Saluda. The summary of the 2017 Census of Agriculture Data for Counties in the Saluda River Basin (values in a million $) includes 710 total commodity sales, 133 total crop sales, and 577 total animal sales. And the percentage and values of timber in Counties in the Saluda River Basin and State are 65%, $70 million harvested timber stumpage, $137 harvested timber delivered, and 66%, $518 harvested timber stumpage and $1,092 harvested timber delivered, respectively. He further discussed population change from 2010-2020. The area with higher density has a higher population than others with lower density.

Discussion: Discussion included the reliability and accuracy of NASS Census data and that it is not very reliable but it is the best data available.

2. **Saluda River Basin Low Flow Characteristics and Streamflow Monitoring 10:30–11:10**

Toby Feaster facilitated this session; he began discussing the U.S. Geological Survey Streamflow Monitoring with an overview of the institution established on March 3, 1879, which is a part of the U.S. Department of Interior. The USGS was set up for “classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain.” In 1889 the National Streamgaging Program was initiated with training and station installation on the Rio

Grande River near Embudo, New Mexico. The purpose is to find how much water was out west and adapt measurement mechanisms or devices which inform water usage. He further stated that the USGS South Atlantic Water Science Center (SAWSC) includes states offices: Georgia, GA, South Carolina, SC, and North Carolina, NC. And eight field offices, with 3 in GA, 2 in SC, and 3 in NC. However, using satellite telemetry, the USGS SAWSC operates about 1,100 real-time gaging stations monitoring SW, GW, and WQ. Hence, real-time monitoring services inform us of groundwater levels using satellites. And we can find information on the USGS National Water Dashboard website, including bringing together ALL USGS real-time data into one modern, mobile-friendly interface, adding warnings and weather hazard information from sister federal agencies, and a central data access portal for USGS.

In summary, it gives us a quick snapshot of what's happening across the country regarding water level. The USGS in South Carolina has 216 surface-water stations (water level and/or streamflow), 56 rain gages, and 67 water-quality stations. The dynamic nature of South Carolina caused this number to change from year to year.

In discussing Streamgage Basics, we need to know the purpose of the gage. The streamgage basics help to provide water level/discharge, and we compute for discharge by measuring water level and discharge. The discharge is sometimes adjusted based on new discharge measurements, changes in water level reflect a change in discharge that needs to be adequately defined, and a stream feature "control" the state/discharge relationship. Water level readings are governed by physical features downstream of the station. And these features create a pool for the station gages and sensors, and changes to this feature change the stage/discharge relationship. This feature is called the "control" of the station (gage) pool.

Measuring Water Level: in developing the relationship between the water level and the flow, we use the connection of stilling well gage in South Carolina to explain further. The water in the stilling well matches that of the stream, which shows how reliable the data is. We have Bubbler/Pressure Sensor and Non-Contact/Radar installation for the site-specific installation. The radar helps to send signals down to the surface and record water levels. The Index Velocity measures velocity and gives us the area. The Rating Shifts include negative shifts and base ratings. A negative shift is a shift to the left of the rating. Some reasons we can have negative shifts to the rating include debris piled on the control or seasonal algal or vegetative growth. While positive shifts applied to the rating as material is removed from the control section. Thus, the positive shift increases as more material is removed from the control section.

For management purposes, every 6 or 8 weeks, technicians go out to verify the shifts' rate and give and report about the shifts.

He noted some important reasons for streamgage, including flood warning/forecasting, drought monitoring, state water planning, hurricane surge, recreation, tourism, water effluent discharges, hydroelectric power generation, long-term climate analyses, safe bridge and roadway design, and modeling. In summary, the rating shifts give us an overview of how the streamgage is monitored.

Low-Flow Characterization of South Carolina Stream: The USGS has been computing low-flow statistics in SC since the 1960s. Recently between 2007 and 2014, the USGS, in cooperation with the South Carolina Department of Health and Environment Control, updated low-flow statistics at continuous-record streamgaging stations. We published 6 reports which include Pee Dee River (March 2007), Broad River (March 2008), Saluda, Congaree, and Edisto Rivers (March 2009), Catawba-Wateree and Santee Rivers (March 2012), Savannah and Salkehatche Rivers (March 2014), and summary report published in 2017. The detail of low-flow statistics report published contains an annual minimum of 1,3,7,14,30,60, and 90 days average flows with 2,5,10-,20-,30-, and 50-year recurrence intervals (depending on the available length of record) and daily flow durations for the 5, 10, 25, 50,75,90, and 95 percentiles. In addition, in April 2022, the USGS, in cooperation with SCDNR and SCDHEC, began a two-phase study to update these statistics again, (a) update low-flow and mean annual flow statistics at USGS streamgages in SC and (b) develop regression equation that can be used to estimate low-flow and mean annual flow statistics at ungagged locations. Nonetheless, we are thankful we have signed cooperative agreements in North Carolina, Georgia, and South Carolina, which provide much more data to work with. One of the most common low-flow statistics is the 7Q10, the annual minimum 7-day average flow with a 10-year recurrence interval. In terms of probability of occurrence, there is a 1 in 10 or 10% probability that the annual minimum 7-day average flow at a site will be less than or equal to the estimated 7Q10. The 7Q10 in SC State Regulation was adopted as the minimum flow for applying water quality criteria as early as the South Carolina Rules and Regulations of 1967. It is used for such things as; Water Quality Standards (reg.61-68), Source Water Protection (Reg.61-68, and Interbasin Transfers (Reg.121-12). 7Q10 helps us to understand daily mean flow, annual minimum 7-day flow, and 7-day average flow.

Remember, the climate year begins on April 1, ends on March 31, and is designated by the beginning year. Why do we use the climate year instead of the water year, which begins on October 1, ends on

September 30, and is designated by the ending year? So, we must consider cyclical patterns, where the lowest flows are usually in summer or early fall; hence, we are using climate year.

Question: How often are flood maps updated?

Answer: Every 5 years or so

Question: Do you collect temporary gage data?

Answer: We use rapid deployment gages

Question: Can the public get calibration data for each gage (calibration of the gage)?

Answer: Curve data points to that – they go out every 6 – 8 weeks and online data shows some of it. The program looks at data every day and if there was something odd, they would go into the field to check it out.

Question: Regarding 7Q10 – how long would you expect to get to a stable value?

Answer: 7Q10 would be fairly stable with extremes captured in the data. The 7Q10 is qualified by the period of record

Question: Is 7Q10 the best measure?

Answer: No opinion – it is the law

3. **Saluda River Basin Climatology (Elliot Wickham and Hope Mizell, SCDNR) 11:20–11:50**

Hope Mizzell facilitated this session by briefly introducing the SC State Climatology Office Team, including Melissa Griffin, Elliot Wickham, and Frank Strait. The state climatology office aims to "promote climate and weather awareness and knowledge through the development and delivery of science-based climate services and tools on a local and state level." The climate office is responsible for the following: (a) coordinate and collect weather observations for the purpose of climate monitoring, (b) summarize and disseminate weather and climate information, (c) perform climate and weather impact assessments, (d), demonstrate the value of climate information in the decision-making process and (e) conduct applied climate research. She noted South Carolina's Monthly Average Temperature between 1895-2022, and we noticed less variation for the winter months and average temperature for January through June; there was also some variation. We witnessed cooler temperatures in the fifties and sixties. However, SC has warmed one-degree Fahrenheit over the past 120 years. For the South Carolina stations with Data 1900-2020, we have 100 stations created with the

most consistent long-term period of record. This is also a similar trend or pattern through 2022. Using the long-term stations, we see that only in the 50s and 60s, the variation of average annual temperature shows what trend an individual station has for just seasons, including maximum and minimum in summer, winter, and spring. So, we have more stations in Spring, especially in the basin with a warming-friendly maximum temperature. In Summer, there is a lot of inconsistency, such as a statistically significant decrease in the precipitation trend, and in fall, we see more stations. The number of days maximum temperature above 95º F average from South Carolina long-term stations as far as number of days per year while the number of days minimum temperature above 75º average from South Carolina long-term stations is high as far as showing the number of days per year. If we fail to do anything about the emission level, the warming trend in the year 2100 will potentially lead to a range of 2 to 3 Fahrenheit and increase to 12 Fahrenheit. There is no trend in annual precipitation for South Carolina Annual Precipitation, but extreme rainfall has risen recently. 3 of 10 driest occurred during 2001-2020, and 5 of 10 driest occurred during 1921-1940. While 4 of 10 wettest occurred during 2001-2020, and 2 of 10 wettest occurred during 1921-1940. 70% of the state witnessed a large portion of precipitation in the last 100 years.

Question: Regarding the blue dot – what is the change?

Answer: Not really sure – may be unreliable. Clusters of similar results are more reliable

Question: Is there a relationship between development to the increase in temperature?

Answer: It can have that impact

In addition, she presented information about the areas impacted by one or more of the recent extreme storms, for example, October 2015, Hurricane Mathew 2016, and Tropical Storm Florence 2018. She discussed the timeline of 4-day rainfall for the Saluda River and the purposes of ARI/AEP analysis using the following scale of an average recurrence interval (AEP) between 1,000, 500, 200, and 100 years. In the confirmed South Carolina Tornadoes (1950-2020), we have experienced EF2, EF3, and EF4 but never EF5. Tropical Storms are part of South Carolina's Climatology and History. We have seen the inland portions of the state impacted by heavy rain, flooding, high winds, and tornadoes. Also, South Carolina is among the 10 states where hurricanes hit the most. There is an 80% chance of being impacted by a tropical system each year. The breakdown of the tropical cyclones includes 260 systems that have affected SC, 138 have tracked into the state, and 60 category 1 or higher—44 direct landfalls on the coast and 4 majors (CAT. 3+) landfalls.

4. South Carolina Drought Response Act (Elliot Wickham, SCDNR) 11:50–12:20

Elliot Wickham facilitated this session on SC drought monitoring and management. He started by asking what the meaning or definition of drought is. He highlighted one of the values of the Saluda RBC is to understand better how different stakeholders think about drought. SCDNR provides a more robust approach to protecting water resources for all users in the basin. Some notable droughts recorded in South Carolina include 1925-1927, 1930-1935, 1950-1957, 1985-1986, and 1998-2002. 2007-2008, and 2010-2012. South Carolina's Climate divisions are mountains, Northwest, North Central, Northeast, West Central, Central, and Southern.

The Drought Monitoring and Response Act in SC (2000) and supporting regulations formally establish and describe the responsibilities of the South Carolina State Climatology Office and the South Carolina Drought Response Committee, the state's major drought decision-making entities. The South Carolina Drought Response program consists of legislation, regulations, and procedures that establish recommended and required responses. We have drought Monitoring and Response in SC to monitor, conserve, and manage the State’s water resources in the best interest of all South Carolinians carefully and closely. The Drought Response Committee and Department of Natural Resources- State Climatology Office are responsible for this action, for the drought response committees consist of Statewide members and local members (12 per DMA). Saluda is included in the Central Drought Management area. The state uses multiple indicators and indices to monitor drought and determine drought severity levels, including Percent of Normal rainfall, Crop Moisture Index (CMI), Palmer Drought Severity Index (PDSI), Keetch-Byram Drought Index (KBDI), and U.S. Drought Monitor for South Carolina. He identified the conditions and response to be **Incipient,** which include drier than normal, soil moisture declines, water demand increases, **Moderate** which includes water levels decrease, crops and plants wither, and irrigation increases, **Severe** which includes water levels continue to drop, number of wildfires increases and poor grazing and agricultural conditions and **Extreme** which includes widespread impacts to agriculture, forestry, water utilities, and water-dependent businesses.

However, SCDNR, SCO, and DRC monitor conditions, share information and make recommendations to manage drought. State and federal agencies, water utilities, and reservoir managers monitor conditions. As drought conditions and impacts become more severe, response actions increase accordingly. The State Emergency Response Team (SERT) is activated to lead the state-level response to the water shortage emergency. The SC Emergency Operation Plan identifies follow-on state-level actions to assist with and provide relief from severe or extreme drought conditions that have reached a

level of disaster beyond the scope of the South Carolina Drought Response Committee. Components of SC Drought Response Program include SC Department of Natural Resources, which chairs DRC, provides support, and coordinates response; SC Drought Response Committee (state and local members) consults with stakeholders and issues drought declarations; Public Water Suppliers and Reservoir Managers. While the Drought Response Act requires local water systems to have a drought plan, there is no legal requirement to update the plan. Many plans in the state have not been updated since 2003. He stated that if any public water supply system plan has been updated, please send it to drought@dnr.sc.gov.

The objectives of the Tabletop exercise are to improve awareness of local, state, and federal players in SC's drought response, identify key mission areas for each State Emergency Support Function, and identify and understand the breaking points in the SC Drought Response Act, Regulations, SC Emergency Response Drought Annex and local drought plans and procedures. Some breaking points are plans and procedures, communications, education and awareness, and data information. The USDM Drought Indicators include precipitation, soil moisture, vegetation health, surface water, groundwater, and impact and condition monitoring reports. While SC Drought Indicators include Palmer Drought Severity Index (PDSI), Crop Moisture Index (CMI), Standard Precipitation Index (SPI), Keetch-Byram drought Index (KEDI), average daily streamflow, and Groundwater Levels.

Question: Who enforces water restrictions? Does the DRC meet as needed? What triggers it?

Answer: Data drives it

Question: In a severe drought situation, can the State step water use/non-essential water use?

Answer: Recommendations for curtailment and at that point we'd be talking to the Governor's office about voluntary/mandatory restrictions. The Governor has the Executive authority to impose mandatory restrictions

Comment: For power utilities we have a set of protocols for drought operations built into the FERC license

5. **Vision and Goals Development and Working Lunch 12:45–1:50**

John Boyer facilitated this session, discussed the purpose of developing water management strategies and recommendations to support the vision statement, and agreed with everything we are committed to.

In other words, our plans are specifically tied to some of our recommendations and strategies to support the vision statement and goals.

Our goals should focus on the framework that requires a communication plan. How do we get the word out about this plan and serve as ambassadors? Saluda RBC Vision Statement Options:

1. Vision Statements:

1. The Saluda River Basin, Plenty of clean water for all.
2. A resilient and sustainably managed Saluda River Basin that balances human and ecological needs.
3. A resilient Saluda River Basin that provides a clean, abundant, and sustainable water supply that balances human and ecological needs and uses.
4. Sustainable water quality, quantity, and consumption for users and ecosystems in the Saluda River Basin.
5. To lead the effort to protect and enhance the benefit, health, and harmony of the Saluda River Basin for current and future generations.

Final RBC Vision Statement: **A resilient and sustainably managed Saluda River Basin that balances human and ecological needs.**

Motion to approve: Robert Hanley 1st and Tate Davis 2nd – unanimously approved

2. Saluda RBC Goals: these are the following goals members collectively agreed on:

1. To perform a review and update of the plan every 5 years at a minimum or sooner should a significant event occur requiring plan update.

2. Develop and implement an education and communication plan to promote the strategies, policies, and recommendations developed for the Saluda River Basin.

3. Apply science-based resource management and conservation strategies that consider resource availability and allocation.

Motion to approve: Michael Waddell and Thompson Smith 1st and Larry Nates 2nd – unanimously approved

Possible Reach of Interest: EPA hydrologically impaired stretch below Lake Saluda Dam

6. Upcoming Meeting Schedule, Field Trip, and Topics (John Boyer) 1:50–2:00

Saluda RBC's next meeting will be on 21st of June- The Ridge at Laurens (10.00-12.30), and a field trip at Laurens County Water and Sewer Commission Water Treatment Plant. And part of the RBC discussion for the next meeting will be to elect RBC chair and vice chair positions. Firstly, the chair and vice chair must be from different interest groups, not serving the same interest group. The role of the chair will be to serve as effectively as the executive officer, organizing, planning, and supporting running the meeting agendas, building consensus, advocating for the plan, the spokesperson of the RBC, and helping monitor the overall progress of the RBC. The vice chair will assume the duties when the chair is unable to do. The chair and vice chair will serve the rest of this calendar year plus the following 2 calendar years. This is the period of campaign and nomination and interested persons should let us know (John).

Minutes: Iffy Ogbekene and Tom Walker

Approved: 6/21/23