Lower Savannah-Salkehatchie River Basin Council

April 4, 2024 Meeting Minutes

RBC Members Present: Dean Moss, Sara O'Connor, Courtney Kimmel, Jeff Hynds, Pete Nardi, Tommy Paradise, Reid Pollard, Brian Chemsak, Joseph Oswald, Kari Foy, Bill Wabbersen, Ken Caldwell, John Carman, Leslie Dickerson, Brandon Stutts, Lawrence Hayden, Lynn McEwen, Brad O'Neal, Taylor Brewer, Brad Young, & Heyward Horton

RBC Members Absent: Danny Black (Kathy Rhoad, alternate, present), Austin Connelly, Sam Grubbs, & Will Williams

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

Total Present: 46

1. Call the Meeting to Order (Ken Caldwell, RBC Vice Chair) 10:00–10:10
    a. Review of Meeting Objectives
    b. Approval of Agenda
        i. Agenda approved.
        ii. Dean Moss – 1st and John Carman – 2nd
    c. Approval of March 7th Minutes and Summary
        i. Minutes and summary approved.
        ii. John Carman – 1st and Dean Moss – 2nd
    d. Housekeeping and Newsworthy Items
        i. Coastal GA Regional Water Planning Council Southern Coastal Subregion outreach meeting 4/18, 10 am-12 pm
            1. Likely Savannah Area Outreach meeting in the summer/ early fall
        ii. Greenville News drought in the Upstate article
        iii. SC Office of Resilience guests

2. Public Comment (John Boyer) 10:10–10:15
    a. Public Comment Period
        i. none
    b. Agency Comment Period
        i. none

3. March Meeting Review (John Boyer) 10:15–10:25

a. Agriculture overview- Dr. Smith
b. Aquatic saltwater resources of LSS- Dr. Ballenger
c. Flow ecology relationships- Drs. Bower and Peoples
d. Water use in LSS- Alexis Modzelesky
e. LSS water demand projections- Dr. Sangha
f. Be prepared for pop quizzes in the future.

4. Hydrology 101 (Kirk Westphal, CDM Smith) 10:25–10:45
    a. Purpose of this information
        i. Next 12 months, we will view a lot of hydrologic information.
        ii. Other RBCs have said brief info is helpful.
    b. Hydrologic cycle
        i. Modeling looks at water that starts in the ground and flows in streams.
        ii. Looking at stream flow. How do management measures that you'll look at affect stream flow?
    c. Measuring hydrologic data
        i. Toby Feaster from USGS gave an intro to flow gauge monitoring.
    d. Displaying simulated hydrologic data
        i. Basic stream flow hydrograph (SWAM)
            1. Daily vs monthly simulated flow in SWAM.
            2. Visualizing small differences with a log scale
        ii. Flow exceedance curve/ flow duration curve.
            1. How often each flow level in that time series is above/ below a certain level.
        iii. questions
            1. Q: Why did we pick the 1950s for the database?
               A: Just the example. Period with low flows and not recent
            2. Q: Are flow exceedance graphs cumulative distribution plots?
               A: Essentially, yeah
    e. Other information and interpretative guidance
        i. Data from Saluda Basin
        ii. Frequency and magnitude of shortage
        iii. Important hydrologic statistics
            1. 7Q10
            2. Median monthly flow
            3. Mean monthly flow.
        iv. Question
            1. Q: will we be looking at each water user in the basin? If so, what is the goal? Should no user have a shortage or are some shortages acceptable?
               A: that's for RBC to decide.
               C: Worthy goal to have no shortages. Find some shortages for small users (golf courses/ agriculture) at headwaters of tributaries because there is not a lot of regular flow, but they have on-site storage. Larger municipalities have real shortages. We have to figure out what's causing a shortage.

C: The core responsibility of the council is to look at water availability and mitigate shortages.

v. Other flow statistics- Statistics vs. pattern
vi. Water availability
    1. Not important because there are no reservoirs in the region.
    2. Useful for US
vii. Question
    1. Q: will we have any idea of the relative impact of a 5% shortage on different users? 5% might be insignificant to 1 but cause someone else to go out of business
       A: Will be part of deliberations. Average shortage happens 30% of the time. That is a real shortage. Could that cause significant water stress. Smaller shortage can that be managed by on-site storage or conservation.
    2. Q: Calculate shortage, key is the threshold? Who decides what the threshold for shortage is?
       A: Is there enough water to meet demand? Difference between physical and regulatory shortage. Look at supply and demand.
       C: Basis is demand and meeting demand
    3. Q: DHEC permits specify max withdrawal amount a user can use. How does the model incorporate max withdrawals so we can project in the future?
       A: Look at the results of the permitted and registered scenarios later today. Input the registered amount as their fully permitted amount. Can run the model under the scenario where everyone's pulling out their permitted and registered amount. Projections so far have not exceeded permitted amount maybe 1 or 2 exceptions
viii. New view of the hydrologic cycle

Break *10:45–10:55*

5. Overview of Surface Water Modeling Approach and Scenarios (Scott Harder) 10:55–11:30
    a. Methods for evaluating water availability.
        i. Consistency between basins
        ii. Definitions
            1. Physically available surface water supply
            2. Surface water condition
            3. Surface water supply
            4. Surface water shortage
            5. Reach of interest
    b. Hypothetical water demand scenarios
        i. Increased demand reduces physically available surface water supply.
        ii. Increased demand reduces surface water supply.
        iii. Surface water shortage

iv. Q: Imposed conditions?
A: Managers impose these conditions on the system. RBC will decide whether or not to impose these conditions. “Management Goal”
v. Q: Is the reach of interest a physical place?
A: It can be a specific river or tributary; it depends. No council has identified a reach of interest, but Saluda is likely to at Saluda Lake Dam - hydrologically impaired condition. Surface water conditions can make people nervous – defined by all water in the river or keep some water in the river. Edisto RBC talked about surface water conditions but didn’t settle on anything – low flow condition discussion.
vi. Q: 23 cfs and then 10 cfs. Where does industrial water intake count?
A: Surface water conditions aren’t enforceable so an industry can still withdraw. Would like to manage surface water better and it would break the water management goal.
C: No regulation that would stop the river from being sucked dry.
C: By pumped dry it means dry to the bed
C: We’ve got a hard stop in our permit
C: SRS permit – it is not a factor.
vii. Q: Do all surface water withdrawal permits have limits on them?
A: If you have a grandfathered permit, permitted volume is typically determined by intake capacity. Those permits are not subject to minimum instream flow requirements. New permits are required to have minimum instream flow requirements and requires user to stop pumping using 20-30-40 calculations. Only for new withdrawers
viii. Q: We have to ensure there is some minimum river flow to support natural systems.
A: That’s why RBCs were established – to deliberate these issues.
ix. C: Permitting system wasn’t considering the future. Why not look at historical use and manage the resource
x. C: Sort of how groundwater is managed
xi. C: Be careful with permitted not using permitted amount. We don’t want to discourage people from being conservative with their water use and people may increase use to protect limits. Goal is to use what we need but protect future uses. Encourage conservation but not be penalized
xii. C: We don’t like to pump but we have to so we don’t lose crops
xiii. C: Try some conditions and test them. See what the results are before making decisions

c. Performance measures
i. Quantitative measures to assess the performance of a strategy.
ii. 20/30/40- SCDNR instream flow policy
iii. Performance measures example
iv. Strategic nodes

d. Surface water demand scenarios
i. Current surface water use
ii. Permitted and registered water use
iii. Moderate water demand projection

iv. High water demand projection
v. Process for evaluating surface water availability.
vi. Q: Were working surface and groundwater separate and then combine them?
A: Yes, but some strategies could work in combination
vii. Q: Does the model deal with return flows?
A: yes

6. Introduction to the Savannah and Salkehatchie River Basin Surface Water Model (John Boyer, CDM Smith) 11:30–12:00
    a. What is a model? Representation of a real-world system that can be solved with computation methods.
    b. Surface water model overview
    c. Simplified Water Allocation Model
    d. Model will be used to assess current and future availability.
    e. Model inputs and supporting info.
    f. USGS gage timeline- Savannah River Basin
    g. Lower Savannah modeled river/streams and locations of USGS streamflow gaging stations.
        i. Municipal and industrial surface water users
        ii. Surface water use for irrigation.
        iii. Savannah River Basin surface water model framework
            1. Lower Savannah River Basin surface water model framework
    h. Salkehatchie modeled rivers/ streams and locations of USGS streamflow gaging stations.
        i. C: In training, we learned the first two letters let you know the type of use
        ii. Q: In legend, what is the difference between active/no and inactive/yes?
        A: Activity and tidally influenced maybe, may be mislabeled
        iii. Surface water use for irrigation.
        iv. Wastewater discharges to surface water
        v. Q: Does the model show where freshwater turns to surface water?
        A: Yes, we stop the model at the lowest user where it becomes tidally influenced
        vi. C: South of I-95 is tidally influenced
        vii. Surface water model framework
        viii. Q: Any reaches that should have gages?
        A: Yes, Little Salkehatchie is an example. If you can think of a reach that we might be missing, let us know
        C: Not enough flow / no good locations – hard to find in some places
        Q: Does that include outflow for Hollow Creek?
        A: No gage period there
    i. SWAM calculations.
        i. Supply
            1. Physically available flow
            2. Legally available flow

ii. Demand
    1. WS: user object
    2. Reservoir objects
iii. USACE reservoir operations and drought plan
iv. Duke Energy low inflow protocol
v. Model time steps.
vi. Model calibration.
    1. Savannah model
        a. Predictive calibration
        b. Prescriptive downstream hydrology validation
        c. Predictive baseline model verification
vii. Comparison of monthly gaged and modeled flows
viii. Comparison of measured and modeled lake levels
ix. 2021 surface water model updates
x. Model limitations.
    1. Areas of greater uncertainty
xi. Evaluating projected demands (example)
xii. Performance measures
xiii. Strategic nodes
    1. Savannah R
       C: suggestion for strategic node- go upstream from Savannah River where City of Savannah's water intake is as its above saltwater line – North of 95. Vogtle is on the Georgia side but it's the largest user on the river – add a gage below that user.
    2. Salkehatchie.
       Q: SALK 5 – labeled near Hampton
       A: Mislabeled – will fix
       Q: Will we model the Ashepoo?
       A: All there is is a discharge (Walterboro) so no unless new user comes in
xiv. Q: are all gages monitored remotely?
     A: yes, remote telemetry for USGS gages in the model
     C: New gages on the Combahee – Edisto Salkehatchie there are some downstream gages
xv. C: Adding a gage would only give 2 years of data, not that helpful. Want long term gage.
xvi. Surface water model access

Lunch *12:00–12:30*

7. Current Use, Unimpaired Flow, and Permitted and Registered Surface Water Scenario Results (John Boyer) 12:30–1:15

a. Surface water scenarios
    i. base
        1. Current surface water use
        2. Permitted and registered surface water use
        3. Moderate water demand projection
        4. High water demand projection
    ii. Additional
        1. Unimpaired flow
b. Upper Savannah summary of average annual surface water demands by scenario.
    i. Q: Thermoelectric nuclear power data is net use?
    A: No, that's how much they need. Most of it is put back in. Even public water supply withdrawals are put back in
c. US scenarios
    i. Current use: No shortages
    ii. Permitted and registered: a few shortages
        1. Q: what is the % and frequency of shortages?
        A: Number of months out of the whole simulation period where there was a shortage. Simulation is 1000 months; 7% shortage means 7% of those months there was not enough water to meet demand.
d. LS summary of average annual surface water demand by scenario
    i. Q: Where does Savannah River Site fall?
    A: industrial
    C: Permit for SRS based on industrial cooling need
    C: Its available and might end up being used
    C: Duke has plans for modular reactor in Broad basin and we included in model
e. LS scenarios
    i. Current use: no shortage
        1. Q: Why does GA run a higher percentage of current use than SC?
        A: Likely because of the makeup of the types of users
        C: Breezy Hill uses 7 lakes on Little Horse Creek. 4 high hazard dams in Woodside
        C: BJWSA wouldn't show shortage but their treatment capacity is far less than the withdrawal intake/permit
    ii. Permitted and registered: odd things going on.
        1. Unrealistic, some places have permits that exceed their capacity.
f. Salkehatchie summary of average annual surface water demands by scenarios.
g. S scenarios
    i. Current use: has shortages
        1. Several users have impoundments that provide storage and allow them to get through drier times.
            a. Connelly (Miller)
            b. Chappell Farms
            c. JCO Farms

ii. Permitted and registered: ag users have shortages.

h. Additional data in memos

i. Q: Is acreage only measurement tool for these?
A: No not necessarily, these are estimates we could use but it isn't in the model
C: Probably pretty shallow there so not factored into the model

j. Q: LIDAR data?
A: Yes
C: Easily calculable

k. Q: Is the DHEC permitting system like how banks manage cash?
A: When everyone pulls out their permitted amount, there are shortages. No priority of use. Once the drought act kicks in it would supersede the regulations. Governor declaration
C: Specified amount by intake per intake and by month

l. Q: Will there be projections for future demand? We see current and permitted and registered – what about the mod 2070 and high 2070?
A: Yes, either next month or following month we'll look at moderate/ high water demand projection scenarios

m. Q: Will we define reaches?
A: You'll define them based on what criteria the RBC decides is important

8. Upcoming Meeting Schedule, Topics, and Field Trips (John Boyer) 1:15–1:30
   a. Brad working on videos, moving his presentation to June.
   b. Move June field trip (Hilton Head PSD, Waddell Mariculture Center, and BJW&SA) to May
   c. Q: Is field trip weather dependent?
      A: Would still do if a bit rainy, would cancel if high winds and thunderstorms
   d. EPA sewer citizen water training class free in Augusta on the 16th and Beaufort on the 20th
   e. Q: Other Field Trip ideas?
      A: Potentially Savannah River site field trip- worth pursuing, August/ September time frame.
      Q: Is the data in our model for SRS?
      A: We have the data
      C: A lot of processes in the next 10 years which may be water intensive. Cleanup mission ending. National security issue will expand. Could do a tour w/ security checks – would take some time to set up
   f. Q: Investigation of dams – reports are available?
      A: Yes, 2015 inspections w/ Dam Safety Office
   g. Carpool for field trip.

Ken Caldwell closed the meeting and the RBC meeting adjourned at 1:38 PM.

Minutes: Taylor Le Moal and Tom Walker

Approved: 6/6/24

RBC Chat:

10:30:25 From to Thomas Walker(direct message):

It seems flow exceedance graphs are cumulative distribution plots

10:30:40 From to Thomas Walker(direct message):

Is that correct

10:37:51 From to Thomas Walker(direct message):

On slide 21 will we be looking at each water user in the basins. If so, what is the goal? Should no user have a shortage or are some shortages acceptable

10:40:41 From to Thomas Walker(direct message):

yes

10:43:07 From to Thomas Walker(direct message):

Will we have any idea of the relative impact of say a 5% shortage to different users. In other words, 5% may be insignificant to one user while putting another out of business.

10:50:06 From Thomas Walker to Everyone:

10 min break or so

10:56:05 From Jeff to Everyone:

Is the DHEC permitting system anything like how banks manage cash? For example, banks won't have enough cash on hand if every customer wants to withdraw their money at the same time. How does DHEC manage the permitted withdrawals? If everyone tried withdraw their permitted amount of water at one time would some users not get enough water, like some customers don't get their money in a bank run?

10:58:30 From Thomas Walker to Everyone:

John will answer that question in his presentation regarding the permitted and registered scenario. I'll remind him when we get to that part of the meeting if that works

10:58:47 From Jeff to Everyone:

Great thanks!

11:08:56 From Thomas Walker to Everyone:

for all online, these are just examples and not results for the rbc to make decisions on

11:09:41 From Jeff to Everyone:

11:45:48 From Thomas Walker to Everyone:

break for lunch until 12:05

13:38:45 From Thomas Walker to Everyone:

meeting adjourned