Pee Dee River Basin Council (RBC) Meeting #22 Minutes
March 26th, 2024

RBC Members Present: John Crutchfield, Jeff Steinmetz, Snipe Allen, Doug Newton, Buddy Richardson, Cliff Chamblee, Frances McClary, Tim Brown, Cynthia Walters, Megan Hyman, Walt Beard, Mike Bankert, Cara Schildtknecht, Eric Krueger, Hughes Page, Lindsay Privette, Jason Gamble, & Bob Perry

RBC Members Absent: Cricket Adams, Jeff Parkey, John Rivers, & Michael Hemingway (Robby, alternate, present)

Planning Team Present: JD Solomon, Scott Harder, Andy Wachob, Joe Gellici, Brooke Czwartacki, Alexis Modzelesky, Joe Koon, Leigh Anne Monroe, Hannah Hartley, Matt Lindburg, Tom Walker, Jeff Allen, & Chike Isiguzo

Total Present: 41

1. **Call the Meeting to Order (Buddy Richardson, J. D. Solomon - Facilitator)**
   a. Review of Meeting Objectives

   J. D. Solomon (the Facilitator) called the meeting to order at 9:05 AM and welcomed members to the 22nd Pee Dee RBC meeting. The highlights of the meeting included receiving an update on the Coastal Plan Groundwater Model, reviewing existing groundwater mitigation strategies, and revisiting existing groundwater information. JD Solomon emphasized that as part of the meeting, the members of the Pee Dee RBC will begin discussing Pee Dee policy options and upcoming decisions and receive updates on the writing of the River Basin Plan Chapters.

   b. Approval of March 26th Meeting Agenda and February 27th Meeting Minutes and Summary

   The members unanimously approved the March 2024 Pee Dee RBC meeting agenda. Jeff Steinmetz made a motion to adopt the minutes of the February 27th, 2024, Pee Dee RBC meeting, seconded by Buddy Richardson.

2. **Public/Agency Comment (JD Solomon)**
   There were no public/Agency comments.

3. **Status of Groundwater Modeling (Andrea Hughes, USGS)**

   Andrea Hughes informed the Pee Dee RBC members that USGS was on track with the revised plan to develop the groundwater model. She noted that the plan to update model inputs for the parent model and run prior Monte Carlo simulations is on track for the end of March 2024. The run of prior Monte Carlo simulations will continue in the 2nd quarter of 2024 and lead to the run of full PEST++ Model calibrations. The USGS team plans to run model scenarios in the parent model by the end of September 2024, and Andrea assured the members of the Pee Dee RBC that the revised plan will be achieved.

4. **Groundwater Mitigation Strategies (Leigh Anne Monroe, DHEC)**

Preceding the breakout sessions in the March 2024 Pee Dee RBC meeting was a presentation by Leigh Anne Monroe on Groundwater mitigation strategies. She commenced her presentation by reminding the members of the Pee Dee RBC that Guiding Principle #4 of the Framework expects that river basin plans should utilize supply and demand-side strategies. Consequently, water conservation should be an integral component of water resource management, and river basin plans consider strategies that promote the efficient use of existing water supplies. Also, river basin plans should utilize sound science and recommend suitable but cost-effective management strategies that use new, proven technologies, procedures, and practices to enable more efficient water use and maximize water availability. She noted that management strategies should be flexible and responsive to monitoring and feedback as they consider conjunctive use and surface and groundwater management.

Leigh Anne explained that in South Carolina, new surface water withdrawers are required to describe how applicable industry standards on the efficient use of water have been considered in determining the quantity of water requested as part of the permitting process. Also, new surface water withdrawers must present a proposed contingency plan addressing operations when the surface water flow is less than or equal to the minimum instream flow plus any flow necessary to protect downstream users.

She made a detailed presentation on elements of the best management plan for water use and conservation. The best management plan is designed to protect water quality and reduce water consumption. She described best management practices and strategies in water supply, agricultural Irrigation, industrial, and golf course irrigation. She provided the members of the Pee Dee RBC with examples of strategies that have been successfully implemented in other basins.

Discussion:
Ag/Irr
Q: Who monitors all of this and ensures people aren't wasting water irrigating? (when it rains - as an example)
A: The user is usually the one monitoring it since they won't irrigate more than they have to irrigate.
C: No oversight or monitoring by any agency?
C: If we get a call then we can look into it since we have limited staff. They aren't going to use more than they need.
Ind
Q: Ag side without permits – how are they monitored (registrations)?
A: Groundwater users are permitted.
C: Soil moisture sensors have been really helpful for ag users to reduce groundwater use. Yields higher and water use efficiency.
Q: Water companies thought of putting anything to keep them from growing?

A: We wouldn't have that ability of authority. More of a local ordinance issue.
C: Water suppliers/water audits is a huge issue for utilities and they are doing more of that now.
C: Water audits are required.
C: Are those available?
C: Doug Kinard @ SCDHEC could help.
C: Water suppliers are very interested in preventing loss.
C: Smaller systems are usually the ones with more loss.
C: Larger water utilities look for 10-15% water loss.
Questions
Q: Do BMP plans need to be updated?
A: On groundwater side we do renewals every 5 years and ask if they have updates to that. Surface Water renewals haven't hit yet so no updates.
Q: Example plan?
A: Don't have one on me. Golf clubs use similar plans across golf courses (as an example).
C: For groundwater side – what are you doing? Bulleted list of options to choose from.
Q: Have you quantified it?
A: We could, we have spreadsheets we could get the info – especially for groundwater.
C: Drinking water section has those audits.
Q: Are there forums where folks can talk about what's worked for them? Get ideas/communicate?
A: I think that's an RBC thing.
C: SCEC and SCRWA meetings.
Q: Water audits (in-house or 3rd party)?
A: In-house but the City of Sumter needed help we were losing water.
C: Rates passed on to customers.
C: Sumter has been behind on rates.
C: Each of our water plants we do not have meters on sewage. Just now putting those in. We were using well data but using water to clean filters. Hard to find the leaks. We can see leaks on the user side now which helps.
C: How do we take generic BMPs and tailor them to this basin?

5. **Current and Historical Groundwater Information (Brooke Czwartacki, Alex Pellett, Andy Wachob, DNR)**

   Brooke presented the current and historical groundwater data for the Pee Dee basin. Based on data from groundwater monitoring wells, She explained that the significant decline seen in the 1970s and 1980s in the Crouch Branch aquifer, Horry County, reversed after 1988 due to decreased groundwater use. There has been a relatively steady annual decline from 2011 to 2018, followed by stable water levels until late 2023. Also, the recent seasonal drawdowns are very consistent from year to year.

   In the McQueen Branch aquifer, the declining water level before the mid-1990s was mainly caused by groundwater pumping by the City of Florence. The recovery of the water level after 2000 was primarily the result of the City of Florence pumping less groundwater because it began using surface water in addition to groundwater.

In the Crouch Branch Aquifer, Georgetown County, water levels declined steadily at almost 2 feet per year until 2023. Reducing groundwater pumping in the Georgetown area may have caused the recovery to begin in mid-2023.

Brooke relied on the results of two studies for her presentation: The Waccamaw Capacity Use Area Groundwater Evaluation Report, Permitting Year 2024, S.C. Department of Health and Environmental Control Technical Report Number: 006-2023, and the Pee Dee Capacity Use Area Groundwater Evaluation Report, S.C. Department of Health and Environmental Control Technical Report Number: 008-2020.

Discussion:
Q: Info on velocity of the water movement?
A: Hydraulic conductivity? Yes for some wells and use the model. We have an idea of the velocity. Several hundred feet per year.
Q: Are these wells used for Pot maps – specific monitoring wells?
A: Mix of wells – people have to turn the system off for 24 hours to get readings.
Q: What year did conjunctive use start?
A: 1992 range.
Q: This is the McQueen and is beneath the Crouch how deep is it to reach?
A: 450 feet.
Q: No Water moving between them?
A: Very thick confining layer.
C: Some wells are in multiple aquifers.

BREAKOUT SESSION
The members of the Pee Dee RBC broke out into groups to discuss and answer the following questions.

Breakout Group Questions

I. Do you have knowledge of or experience with groundwater management issues and solutions in
II. areas with cones of depression and/or declining groundwater levels? If so, talk about the challenges, effective solutions, and the keys to success.
III. What surprised you most about this information?
IV. How does this information help you make decisions on groundwater strategies and their prioritization?
V. How does this information help you make policy recommendations?
VI. What additional information would you like to see?

Breakouts
Pee Dee River Basin Council
March 26, 2024 Meeting No. 22
Virtual Breakout Group Discussion

Alex Pellett, SCDNR

RBC members present: Megan Hyman, Cara Schildtknecht, Eric Krueger, Cynthia Walters, Jason Gamble, Tim Brown, Mike Bankert

Other present: Pam Wyant, Joe Koon

Breakout Group Questions

1. Do you have knowledge of or experience with groundwater management issues and solutions in areas with cones of depression and/or declining groundwater levels? If so, talk about the challenges, effective solutions, and the keys to success.

Curiosity about this. Starting to get a sense of the consistencies. Would love to know more. Some questions:

2. What surprised you most about this information?

How many thousands of years old is the groundwater, how long it takes to get from recharge zone to use.

Yet, we see maps, like Horry County map 0290 looks like an unsustainable drawdown, losing 70+ft of head. But then it is able to bounce back over 15 years. If that water is so old, why can it bounce back so quickly?

What happens in the sandhills affects what happens in Myrtle Beach. Our conservation planning has to happen in the sandhills. We have to make sure that we protect conservation in the sandhills, to protect the growth along the coastline.

The protected lands report that Matt Lindburg produced has good information on this.

Surprised that they take measurements from active wells. How long does the well have to be shut down before the water level becomes a realistic number? If everyone cuts their wells, how long does it take to recover? Let's say the pump isn't on at the time of monitoring, but it has been used recently, how long does it take before the measurements are considered accurate?

At least 24 hrs and preferably 48+ hrs in advance.

A well driller can move 200 ft and get a totally different well. We are dealing with so many unknowns here.

3. How does this information help you make decisions on groundwater strategies and their

prioritization?

Doesn't that imply a sustainable level of use that we can identify? Can we set levels? Ex: we know we can go down to 140 (in a drought) but we will keep it at 100.

Coastal tax dollars should be sent to the sandhills for preservation.

Is it fair to say that once we are out of the sandhills, then groundwater levels are truly separate from surface water? Or are there exceptions to that?
During intense droughts, we see higher conductivity, reflecting groundwater entering the rivers. Our groundwater table is really high here, very close to the surface. Is there data collection/reporting for those high conductivity observations?

4. How does this information help you make policy recommendations?

Can we agree on benchmarks of what we want to see for each aquifer?

We need buy-in from the different local planning commissions, to make sure the benchmarks are followed. Industries and subdivisions coming in has to have water.

Educating folks in the government agencies that steer growth. We are always pushing growth, but maybe we need to educate folks on sustainable growth. We understand that the dollar drives things, but growth must be sustainable.

As growth happens, this becomes more and more of an issue. Right now, we see a lot of growth along the coast. What if a lot of growth occurred in the sandhills? Then you have direct competition for water between those areas? Who is entitled to the water? They talked about decommissioning wells, to get water out of an aquifer. I might drill up to 700ft, to get the yield I need, but whose water is it?

Another question is: irrigating my yard versus irrigating a crop. Ultimately, the rules of water are going to shape our state and our communities. Whatever we come up with can affect a lot of generations, and it is downright scary.

5. What additional information would you like to see?
What about effluent? How much effluent water is generated, and how can it be used to mitigate? Golf courses certainly can use it.

So, the question is – the methodology behind the sampling.

Matt Lindburg notes from breakout session on available groundwater data and information during March 26, 2024 Pee Dee RBC meeting.

Brooke facilitated the discussion. Below are questions and discussion points that were brought up

during the breakout session. Several of the questions and discussion points were in response to a set of breakout session questions that Brooke posed to the group (questions are in green font).

- Brooke pointed out very recent improvements in confined groundwater levels in the Georgetown area. Participants wondered when did they started conducting aquifer storage and recover (ASR) and if that is helping. They also wondered if an industrial or other large user had ceased or temporarily reduced water use for some reason.
- Groundwater quality data are collected via a separate network of monitoring (from water levels), and they collect conductivity and temp data in wells.
- Not currently seeing salt water intrusion issues. This could be because water supply wells are relatively deep.
    - Some folks may say that it is a problem, but they haven't really seen evidence
    - ML question – have there been modeling evaluations to see if this could be an issue in the future?

Breakout question #1: Do you have knowledge of or experience with groundwater management issues and solutions in areas with cones of depression and/or declining groundwater levels? If so, talk about the challenges, effective solutions, and the keys to success.

- Walter Beard - Sumter
    - Haven't had issues with groundwater and haven't had cones of depression
    - Industries in Sumpter have really reduced water use. They have really cut back.
    - Some industries are recycling cooling water
    - Walter mentioned that in Maysville, they have had some shallow residential wells that were impacted by agriculture.
    - Folks speculated that Sumpter maybe has not experienced cones of depression because they are close to areas where groundwater recharge occurs. The aquifer in the vicinity of their wells may be getting good recharge.
- We need to know more about per capita water use and/or overall water use to help identify the drivers of groundwater issues.
    - Sumpter has some of the highest groundwater water use in the basin and uses more than Florence, but the aquifer conditions do not indicate the types of drawdown issues that Florence has experienced.
- What is causing the improvement in water levels around Georgetown?
- In Florence, wells drilled into different formations. We need to understand what formation water is being withdrawn from.
- In general, need to better understand the mechanics of groundwater related problems and how considerations like per capita and overall water use, hydrogeologic conditions, well configurations, etc. drive the issues. Solutions are site specific, and not one-size-fits-all.
- How much water does Grand Strand provide to its water users vs how much do they provide to other water providers?

Breakout question #2: What surprised you most about this information?

- Why have some strategies worked in one area and not in another? ASR in Horry Co.
- Surprised in the differences in the configuration of the cones of depression in Georgetown vs Florence
    - Pumping is centralized in Florence, not as centralized in Georgetown

    - Georgetown aquifer may not be as transmissive as in other areas.
- In Sumter, had some interference with some wells that were too close
- Under the impression that groundwater recharges more quickly given how groundwater levels can recover. However, folks also hear that it can take 20,000 years for recharged water in the upper parts of the Pee Dee to reach the lower ends where groundwater is used. Brooke explained the difference between the actual travel time of water molecules vs equalization of aquifer pressure.

Breakout question #3: How does this information help you make decisions on groundwater strategies and their prioritization?

- There's no one size fits all
- Water uses and the nature of water use is an important consideration
    - Coastal communities have periodic use increases from tourism. Use in Florence is more steady.

Breakout question #4: How does this info help make policy recommendations

- When new industry comes to town, is there enough scrutiny on water resources? Should the basin plan include recommendations on this?

Breakout question #5: What additional information would you like to see?

- Near the coast in the north/east (and inland), there aren't many groundwater monitoring wells, but it is an area that may have development pressure.
- Many aspects of earlier discussion inform this question (as described in these notes).

See Appendix for third group discussion

6. **Consensus-Driven Decision Making (Jeff Lineberger, Duke Energy)**

Jeff Lineberger consensus-based decision-making to members of the Pee Dee RBC. He highlighted the complexity of making decisions, especially when stakeholders have different interests. He explained that consensus-driven decision-making is also known as interest-based decision-making. He introduced the members of the Pee Dee RBC to the book "Getting to Yes" by Fisher, Ury, and Patton and invited them to read it. The goal of consensus decision-making is "arriving at a timely outcome all parties can live with."

Using the Catawba-Wateree Hydro Project as a case study, Jeff explained how consensus decision-making helped achieve the success that the project enjoyed. He explained the need to understand the process, negotiate interests with stakeholders, measure expected outcomes, adjust expectations, and make cuts that can lead to an outcome all stakeholders can live with. To achieve consensus, he explained the Consensus Rating Scale for Near-Final Draft

I. Full Endorsement
II. Endorsement with Minor Points of Contention
III. Endorsement with Major Points of Contention
IV. Stand aside with Major Reservations (requires changes)

V. Withdrawal

Furthermore, he explained that a two-step, consensus-based process allows collaborative problem-solving, prevents domination by the majority, and allows for trust-building and information sharing, especially under conditions of conflict. He reiterated that consensus does not mean everyone will be equally happy; however, all accept that the decision is the best that could be made at the time.
Finally, he emphasized the need to exhibit attitudes that promote consensus-building, such as active listening and identifying and talking about interests.

Discussion:
Q: 14 years ago – toured hydro dam on the Columbia River and a light was on one generator in a hydro dam. Government says nuclear or coal can run 24 hours/day but hydro cannot. Does that happen to you?
A: Most hydro stations are bigger because the water it takes to generate electric is very high running all generators. If we could we would generate 100% of our power through hydro but we would have impacts on recreation, water quality, etc. FERC is part of the fractured authority system. Those limit our decision-making. Times in Catawba we aren't running those units. Governed by license. *Example* Power company drawing lakes down being focused on bad decision to generate electricity. Should have slowed hydro production – low inflow protocol (LIP).

7. **Pee Dee Policy and Future Decisions Discussion (Buddy Richardson)**

To guide the discussion, Buddy presented the following potential policy recommendations for ongoing discussion:

I. Surface water withdrawal registrations should be limited to the actual need.
II. Develop a cost-share program to drill deeper wells into aquifer units with less development pressure.
III. Fund a joint compact between SC and NC for the Yadkin-Pee Dee basin.
IV. RBCs (where applicable) should consider coastal community (tidal) issues.
V. Water utilities should review and update their water management plans and response ordinance every five years (or more frequently if conditions change).
VI. When drought occurs, drought impact observations should be submitted through the Condition Monitoring Observer Reports (CMOR).
VII. Provide ongoing funding for plan implementation:
    a. Administration.
    b. Technical evaluation, data collection, and research.
    c. Grants to stakeholders for water projects.
VIII. Support and fund education programs.
    a. Funding for RBC-led education programs.
    b. Funding for a program based on statewide water education.

Discussion:
#2
C: Cost associated with drilling deeper wells (maintenance/infrastructure).
C: 2 weeks ago the NYT article about East Coast sinking due to groundwater use. Deeper aquifer,

would it help to prevent land subsidence?
#3
C: How to formalize a Yadkin – Pee Dee compact?
#4
C: Leading into surface water planning effort there was a TAC formed during SWAM development. Maybe more of a technical starting point. Not policy recommendation maybe.
#5
C: Not just utilities but also industries as well.
C: All permitted surface water users and groundwater users have plans.
C: Drought Response Act: Public water suppliers are required to have a plan but not to update those plans. Recommend systems that their plan make updates they need.
#6
C: Add a line about cooperation 6 different water companies in our county. Smaller utilities have almost no influence. Dislocation between water companies and rule-making authority.
Q: Give us a specific on $9.5 million from Catawba-Wateree?
A: 1st – comprehensive groundwater monitoring network (example). Have to fix groundwater after droughts. 2014 water supply master plan revisiting it now with the integrated water resource plan and will include water quality – water quantity first and water quality second. Now looking to protect water supply. Each entity has a contingency plan if unable to use their intake on the reservoir. All of them are on our website. CWWMG website.
Q: Lacking data from wells – support more wells and update technology?
A: 3 categories (Ch 9) – planning process, technical, and policy recommendations.
Q: Wells at certain depths?
A: Geographical gaps we could fill in.
Q: Are old wells usable?
A: They are if constructed properly. We are lacking data in a specific well.
A: Always looking for wells to adopt.
A: Integrity of the well and screens at the right level.
A: Don't take over wells that don't meet criteria.
C: One strategy is to expand groundwater monitoring network.
C: Important to have good well resolution.
C: Drilling near wells.
C: Coordination and get it more uniform.

8. **Chapter Status Discussion (Matt Lindburg)**

   Matt Lindburg presented an update on the draft of the Pee Dee RBC plan. He noted that he had drafted the subsection on Land protection for Chapter Two and invited the members of the Pee Dee RBC to review it and send in their comments. After the reviews, it will be included in Chapter Two.

   Chapter Three data reviews from members have been received and will be updated.

   The draft of Chapter Five has been emailed to members for review. The draft focuses on surface water analysis and will be updated when groundwater analysis is completed. Matt encouraged the members to review the draft and send in their comments.

Another subsection will be included in Chapter Eight to address how different water use sectors react to draught conditions. The revised Chapter Eight draft will be recirculated for review.

The next focus will be on Chapter Four, which focuses on current and future demands and Chapter Six which focuses on mitigation strategies. Also, the discussion on potential policies will be used to kickstart work on Chapter Nine.

9. **Closing Comments and Upcoming (Buddy Richardson and JD Solomon)**

Buddy Richardson appreciated the members of the Pee Dee RBC for their consistency since the RBC was established and encouraged them to keep it up, especially with the depth of knowledge they gained during the process. JD Solomon encouraged more members to attend the next meeting in-person.

The next meeting will be held on April 23, 2024
The meeting concluded at 12:37 PM.

Minutes: Chikezie Isiguzo and Tom Walker
Approved: 4/23/24

APPENDIX
RBC Chat:
09:02:21 From Thomas Walker to Everyone:
starting at 9:05
09:02:30 From Pam Wyant to Everyone:
Reacted to "starting at 9:05" with 👍
09:43:05 From Thomas Walker to Everyone:
5 min break
10:18:10 From Andrea Hughes, USGS to Everyone:
Thanks everyone! I'll be dropping off now.
10:18:15 From Thomas Walker to Everyone:
ok bye
10:19:30 From Thomas Walker to Everyone:
for everyone else in the lobby here we are in breakout sessions and we'll return about 10:45
10:21:23 From Devendra Amatya to Everyone:
Tom and Brooke, Thanks for letting me in to listen to the GW related presentations and discussion until now. I am leaving now. Have a good meeting and day to all!
10:21:38 From Thomas Walker to Everyone:
thanks devendra
11:04:33 From Thomas Walker to Everyone:
5 min break
12:36:42 From Thomas Walker to Everyone:
meeting adjourned

Breakout Group Questions

1. Do you have knowledge of or experience with groundwater management issues and solutions in areas with cones of depression and/or declining groundwater levels? If so, talk about the challenges, effective solutions, and the keys to success.

Florence
- use surface & groundwater. • Use more surface water, less groundwater
  • hunting for leaks
- Grad - mainly McQueen Branch
  some Creech
- 30 wells, use about ½
- 12-15 mgd grad
- 7 new for river
- 60/40 surface / grad
- surface 10 → 20 mgd capacity

- Georgetown → also using river

2. What surprised you most about this information?
- Cone around Georgetown was surprising - especially the depth
- ~ 2x year intakes set to satisfy for surface water
- some areas lacking wells / data

3. How does this information help you make decisions on groundwater strategies and their prioritization?
- More information we have, better decisions we can make.

4. How does this information help you make policy recommendations?

5. What additional information would you like to see?
- wells in areas where they are lacking
- look for other wells could get info from like landfill wells
- better info company pumping areas use

Breakout Group Questions

1. Do you have knowledge of or experience with groundwater management issues and solutions in areas with cones of depression and/or declining groundwater levels? If so, talk about the challenges, effective solutions, and the keys to success.

lack of growth in Sumter; Green lean economics Industry + industry recycle cooling water. Shallow wells in Sumter

2. What surprised you most about this information?

- ~~Dee~~ does Georgetown not use the same water management strategies as Grandstrand
- difference in cones of depression due

3. How does this information help you make decisions on groundwater strategies and their prioritization?

- 2 foot decline means that action needed now
- each area needs site specific managements

4. How does this information help you make policy recommendations?

~~KNOWING WHERE~~

- this information needs to be shared with to make policy changes

American Planning Association

5. What additional information would you like to see?

water use amounts in the various aqu. at certain locations

how many pulling from Pee Dee?

are we seeing everything?