

14 Attendees Present:

Caroline Siverson, Emily Moose, Clyde Frazier, Phil Bradley, Rick Bolic, Jason Sullivan, Kimberly Tyson, Mark Ashness, Hunter Glenn, Anne Lowry, Sharon Day, Ben Shields, Bobby Tucker, Ginger Cunningham

- Caroline Siverson started the meeting and asked Jason to go over the virtual meeting guidelines.
- Jason Sullivan went over the remote meeting guidelines and mentioned that if someone wanted to go back and watch the meeting they could do so by simply following the link for the meeting and signing back in. Jason explained that Dan Garrett made a webpage for the subcommittee within the Planning Departments page, and that all past and future meeting links could be found there.
- Ms. Siverson then went on to approval of the minutes for the October 25th and November 13th meetings. She said they looked good and asked if anyone had any changes. If not they would be considered approved.
- Ms. Siverson said the meeting would be a discussion of the presentations from the past two meetings. She said she would open it up to discussion and started with a question about recharge rates. Studies out of Wake, Orange, and Guilford Counties have been studied to recharge rate and gauging it at different places along streams, and she was wondering if there was any information for chatham and if Rick Bolich could address that?
- Rick Bolich said that he would try. He put up a link to a USGS publication that was written for orange county, but the info and the methods used to estimate recharge are applicable in chatham county as well. Recharge is the holy grail of hydrogeology and there is a great degree of variability. For planning purposes who can make some suppositions and come up with some ideas about what an appropriate recharge rate is for a certain area. He said to answer her question succinctly was almost impossible, but that there are ways to come up with reasonable estimates, and the reliability of those estimates decreases with the spatial area. The larger area, the more uncertainty you are going to have.
- Mrs. Siverson said it seems like that information is essential to understanding groundwater supply. She wished there were more definitive answers. She suggested opening the discussion with Clyde Frazier because she knew he had some prepared questions.
- Clyde Frazier started by asking if we ever got a number for the recharge rate? He was addressing his question towards Rick Bolich. Do we have a way to be precise or is that even a meaningful thing to say?

- Rick Bolich said that he thinks information is available that is useful and applicable that crosses county lines that the USGS did years ago, and that data for the scale the group is looking for could be available. There is enough information to make statements about relative recharge rates. The more precise you want to be, the more data you are going to need. He said he would do some thinking about that. He said obviously the triassic area of the county would have significantly different recharge rates.
- Clyde Frazier wanted to clarify that Mr. Bolich was saying that we could get some numbers, but we don't have them now. To which Mr. Bolich responded no, not on the scale they were requesting.
- Phil Bradley said he had a general comment about the Orange County USGS report. Many of those studies start with interactions between county staff and/or residents with DEQ/USGS representatives and they can spur from grassroots interest in this type of information. Sometimes the USGS can be like a contractor to the county. There have been some staff changes at USGS in Raleigh, and a new staff member that Mr. Bradley has met in the past and might be interested in helping the county. Perhaps have some introductions and he would be happy to give us the email to get a conversation started.
- Rick Bolich reminded the group that contracting with USGS could be costly, and didn't know the budget constraints of the group. He would suggest looking at the orange county study and think about how precise the data needs to be.
- Phil Bradley mentioned that the Orange County study used a detailed geologic map, and that soon Chatham would have access to such a map so now is a good time to reach out to USGS.
- Ms. Siverson said that would be a question for Jason Sullivan. We are contemplating these policy recommendations, how precise do you need to be?
- Mr. Sullivan responded that the more information we have the better informed we will be. But there is a point with diminishing returns and there has to be a sweet spot to say we are comfortable moving forward. When you are making regulatory changes, the people affected by those changes want to know the rationale behind that.
- Ms. Siverson noted that Sharon Day had a question.
- Sharon Day's question was regarding the well depths and water availability. Are shallow wells significant, and if people are hitting water at 200-300 feet, does that mean there is more water in that area? If a well is 500-600 feet does that mean there is less water, and can we use that information to say where the county should put water? If we can say all these farms have 600 foot wells, maybe can use that as a justification for expanding county water?
- Rick Bolich said he would try to answer that question. First he would caution that the depth of a well is not always a function of the amount of water. He also said

not to forget that well drillers get paid by the foot, so keep that in mind. Sometimes wells are dug deeper for storage if the recharge can't keep up. There is info available because well diggers are required (although they may not always do so) to keep a well log of yield zones. An experienced well driller is pretty good at estimating flow rates. There could be valuable info in the well logs. Furthermore, what areas are we defining as agricultural? What are the boundaries of that? He said there was probably some good information to come up with useful estimates to approximate water depths in certain areas.

- Emily Moose said she had a question relating to Sharon's comments. How was any of the known data used in development of the land-use plan in terms of water resources underground?
- Jason Sullivan explained that well data wasn't really used, and that existing land uses were the primary driver and feedback from residents in the community and different groups as to what they wanted to see. There was some discussion on existing infrastructure, and where infrastructure should be located in terms of future development areas, and where development should be centered. You are seeing more of the conservation minded and ag-conscious development in some of the more rural areas of the county. The ag-conscious future land-uses will be translated in the UDO process.
- Ms. Day had a comment/question regarding the increase in agricultural development as well as commercial and residential development in North Carolina and that we can't be fast enough to nail down some land for ag-use for food supply for this country. Does this come into play, in getting folks to set aside some ag land and to slow development in some areas to some degree? Has that even crossed the commissioner's mind?
- Ms. Siverson, said yes that with the pandemic we need local foodsheds more than ever, not just for NC. That might be too broad for our discussions.
- Mr. Sullivan said that we could touch on those topics in future meetings when we discuss the Comprehensive plan and other land use regulations. He explained that agricultural stakeholders were a big part of the comp plan process, and that the commissioners know how important local ag is to Chatham County's economy.
- Ms. Siverson said that speaking of that future conversation we need to keep in mind whether or not there is a zoning designation for agricultural areas. That is something to start thinking about.
- Mr. Sullivan recognized Anne Lowry who had some questions.
- Ms. Lowry had a question going back to the recharge topic. She had always wondered how the recharge is different between a home where the water goes into the home's wastewater system and an agricultural use? Sharon Day said it depends on the use. Some farms try to recapture as much water as they can.

- Ms. Lowry also asked when it rains how long does it take for that water to get down to recharge the aquifer.
- Rick Bolich answered her. He said it could take 300 years for groundwater to get to the aquifer, based on studies in the area. Recharge can be on average 5 inches per year. So based on the well depth that is how he came up with that number.
- Ms. Day asked if that number would be less/different if you were in contact with creeks and stuff like that?
- Mr. Bolich said maybe. It depends on the fracture network and will be a function of the underground rock, as well as Well construction. It is really difficult to construct a well properly. He said constructing a well in crystalline rock had been described as a violent thing, and it is. It is not a perfect process and it doesn't take much to hinder water access.
- Mr. Frazier asked what do we know about the stresses that are currently being put on the groundwater system? Do we know how often wells fail? Do we have information on our aquifer going down?
- Mr. Bolich said that was a great question. We do have some data on that. You could use the well driller logs and see how the water level is changing. Is the depth to water increasing from the well logs? It's a lot of data. He talked more about well yield data?
- Bobby Tucker had a question for both Phil and Rick. What are your thoughts on a recommended scientific approach for this policy question?
- Mr. Bradley shared his screen to answer the question. As he had mentioned earlier, he said in order to answer the question he needs more data. An evening distributed set of data.
- Mr. Bolich said yes, as you could see from Phils GIS map that more data is needed. He said there may be enough data for recharge rates that could be used for planning purposes.
- Ms. Moose said that the GIS map from Mr. Bradley should be overlaid on the land-use map as well as the hydrogeology map when it is finished. Ms. Day concurred and said also it should overlay with the current county water lines map.
- Ms. Moose asked Mr. Bolich about when he could get some information for recharge rates?
- Mr. Bolich said he doesn't have the resources right now, but first would take a look at the data that is available and also look at how Orange County did it.
- There was some discussion about the report between members
- Mr. Frazier had a follow up question to Ann about wells that have gone dry. Are there any patterns that she is aware of? She answered that it is usually shallow wells and it occurs throughout the county.

- More discussion about the amount of wells being drilled and where.
- Mr. Frazier asked if Ms. Lowry had information on water use throughout the county, i.e agricultural, commercial, or residential water use?
- Ms. Lowry said she might be able to get some of that info.
- Craig Caldwell introduced himself to the group. He had some slides that related to water use in the county. There were some technical difficulties and he was able to share his screen 68 minute mark of the meeting. He discussed the map he created of well data in the shambley meadows subdivision.
- Ms. Siverson said it was about time to end the meeting, but invited Mr. Caldwell to come back to a future meeting. The next scheduled meeting will continue the discussion of these topics. General discussion next meeting.