

Attendees: Caroline Siverson, Jeannie Ambrose, Mark Ashness, Rick Bolich, Craig Caldwell, Anne Lowry, Bobby Tucker, Billy Yow, Bob Hagemann, Clyde Frazier, Sharon Day, Kim Tyson, Hunter Glenn, Jason Sullivan

- Caroline Siverson started by approving the minutes from the March 17<sup>th</sup> Meeting with one correction, and Jason Sullivan went over the remote meeting guidelines.
- Caroline introduced Billy Yow, President and CEO of D&Y Well Drilling and said she was glad to have a well driller present because we keep circling around questions about dry wells, groundwater, and patterns of dry wells. The best person to answer these questions would be a well driller.
- Billy Yow said he didn't have a presentation per se and said it would work better if the subcommittee posed the questions and let him give the answers with explanations.
- Ms. Siverson asked Mr. Yow to give a brief overview of his business, areas he works in, and a little bit about the well drilling process?
- Mr. Yow explained that D&Y Well Drilling had been in business for over 35 years. Well drilling was in his blood and his dad had a well drilling business before this one. The business mainly specialized in 6-inch residential wells, but also does 8-inch wells for community wells utilized by subdivisions and municipalities. They do a lot of test wells for geothermal. He said he could go into more depth and get more complicated, but he thought the subcommittee was more focused on groundwater supply, so he would discuss that. He said this year he has seen more artesian wells, than he has seen in 35 years. An artesian well is when the static water level comes up into the well and pushes over the casing, which would indicate an influx of groundwater. The influx of rain has changed the water levels.
- Mr. Yow explained that Guilford county had a minimum casing depth of 42 feet and Orange county had a minimum casing depth of 60 feet. Stating that the casing depth is to ensure good water quality and keep out groundwater from the well. The purpose of the well is reaching a good quantity of water deeper down. In Guilford, individual wells at 200 hundred feet deep are required to produce at least 5 gpm. Guilford county requires community wells for subdivisions to also have a minimum gpm. They do this to prevent a shortfall which would create a cone of depression. When you pull to much water from a well and the static water level can't stabilize it creates an area of up to 1800 shaping a V, which is called a cone of depression. This can start to affect neighboring wells. Mr. Yow continued to talk about static water levels and community wells. Please refer the recording for more detail. The video of the meeting is available here:  
<https://attendee.gotowebinar.com/register/8289016265312667150>
- Mr. Yow mentioned that Agricultural wells which are usually deeper and farther away from residential wells would not generally affect a residential well.

- Mr. Yow stated that a family of four, on average, will use 475 gallons of water per day from their well. Even at 1 gpm it would be nearly impossible for a family of four to exceed their wells capacity and create a cone of depression which would affect their neighbors. Residential wells also have low pressure cut offs in which the well pump will stop before it gets overheated allowing the well to recover.
- Continued discussion and explanation of major subdivision wells and state regulations.
- Sharon Day asked if he had ever drilled a well because one has gone dry, and has anyone ever been suspicious that it was caused by a neighbor's use?
- Mr. Yow said that was a great question and he was going to give a direct answer. He just drilled a well last week where the well was 400 feet deep. The well was done in 97, and it had one gallon per minute. The neighbor had a well that had gone dry and had a new well drilled. Mr. Yow had to increase the well depth from 400 to 900 feet which produced a yield of 3 gpm. Mr. Yow stated that yes sometimes you have to go and re-drill or deepen wells, but he hasn't had to replace a well because someone's well went dry because of a neighbor. You could lose volume from a neighbor. He gave an example of a Golf Course taking too much water from neighboring wells.
- Ms. Siverson asked how the neighboring wells are monitored? When doing a pump test how do you measure the impact a community well might have on a neighboring property?
- Mr. Yow said they check the well every hour for 30 hours. Before they start the test, they check the static water level and then they go check every well and note it. During the pump test they go and record surrounding wells every 15 minutes to measure the water level for the first two hours. Then checking every hour for the rest of the pump test.
- There was some confusion as to whether he was talking about community or individual wells. Mr. Yow was talking about community wells, specifically the wells he was contracted to build in the Diamondback subdivision in Randolph county.
- Ms. Siverson asked if the community well process Mr. Yow was referring to was state regulated?
- Mr. Yow said yes.
- Clyde Frazier asked what the threshold was that determines you need to do a pump test?
- Mr. Yow answered it is the basis of the use. If you are going to take over 10,000 gpd the state requires a pump test. Mr. Frazier asked if it was the 10,000 gpd that triggers it? Mr. Yow said that could be different in different counties that set different parameters to what conditions would trigger a pump test. Those rules would have to be in excess of the state requirements.
- Mr. Frazier asked another question. You have been discussing high-capacity wells, to what extend have you see problems from residential wells causing problems to neighbor's water supply?

- Mr. Yow said he has seen very few problems, but when he does see those problems, it is usually when someone has put in an irrigation system and set it up to run more than the well produces and they create their own cone of depression. You would then pull from the neighbor's static water level.
- Ms. Day asked if Mr. Yow had any idea of the maximum distance a cone of depression can have on a neighboring well?
- Mr. Yow said no. He said they typically come up with an 1800 feet circumference.
- Ms. Siverson said we have had a lot of rain the last couple of years, but in the past, we have had some dry years, thinking back to the early to mid-2000's. Were there more problems with wells during those drought years?
- Mr. Yow said yes. The problem of the droughts is the construction of the wells. Older wells didn't have min casing depths or any regulatory rules. In the past a well driller would stop when they hit water, and that might be as high as 25 feet deep. People can use that until a drought sets in and that water is gone. During the drought he said he saw very few wells impacted if they were constructed under the current regulations. The most failures occurred on poorly constructed wells. For instance, when a casing isn't set into fully consolidated rock. He continued with examples from Chatham County.
- Ms. Day asked if Mr. Yow saw any limit to North Carolina's water supply?
- Mr. Yow said that the limitations of the water supply of North Carolina is in large consumption, but the large consumption rules lay out a methodology of construction to prevent issues. You have to worry about water supply at the coast.
- Mr. Frazier asked if what Mr. Yow was telling us was that problems come from over pumping, but that there is no regulation of over-pumping?
- Mr. Yow gave an example of Guilford County that has regulations on pumping on community and municipal wells. They have a required yield-to-depth ratio. Most regulations are focused on whether there will be enough water to supply the house and the average families water needs, not the long-term availability of the water. If the 24-hour pump test is successful and the well survives the test without affecting the neighboring wells, then there is a very small chance the well will ever affect a neighboring well. That well will never be stressed like that again.
- Ms. Siverson asked how many community wells do you think the diamondback subdivision will need?
- Mr. Yow said they have submitted to do six and they have to have at least 1 primary and one of equal size as a back up to maintain the tank. After they dig one well and do the pump test and send water samples to the state, the state could still say you can't use that well because of water quality issues. Individual wells are not regulated in such a way.
- Mr. Yow said one of the most beneficial things Chatham County could do to prevent well failures is to regulate depth-to-yield and create minimum standards that all wells must meet. You put the burden on the developer.

- Ms. Siverson asked if he was essentially telling the subcommittee that by better well drilling techniques you can fix the problem of failing wells?
- Mr. Yow said yes, but he also wanted to keep mentioning the age of the well. Older wells are more apt to fail because they were not built to any state standard. Those wells are not reparable. They would need to be replaced.
- Ms. Siverson asked him if our agricultural wells were being affected, or at risk at being affected, by more residential development? Had he been called to fix wells that thought they might have been affected by subdivisions near them?
- Mr. Yow said he just recently drilled an ag well for a farmer's cows. If its an ag well for watering animals that isn't usually a large consumption well. If its for irrigation that would be different. He gave an example of a dairy farm that uses five wells at 75 gpm that run water all day long to fill tanks. They could potentially have water consumption issues.
- Mr. Yow emphasized that the real concern should be from Ag wells taking water from residential wells. He didn't think a residential well would be able to take enough water to affect an Ag well. He has never seen an example of a residential well affecting an Ag well.
- Ms. Day asked if that was the case even in areas where there is very poor yield from wells?
- Mr. Yow said in that case the ag well would be what affects the residential well because they are the ones taking the volume.
- Ms. Day explained to Mr. Yow that the subcommittee was looking at it from the flip side. She said the county is currently heavily agricultural and as the development comes in and places more wells are those wells going to pull all of Ag wells.
- Mr. Yow said he would be devils advocate to that. He said you want to think about how much putting the houses on county water would affect the reservoir of water. He was saying that putting 100 houses on wells would be more beneficial to the county water supply than putting those houses on the county water or a municipal utility. He gave the example of everyone in the subdivision turning on their spigots and going on vacation. He couldn't give a scenario in which residential wells would affect agricultural wells.
- Mr. Yow said before the subcommittee makes a final decision, they should look at Guilford and Alamance Counties well rules and community well rules and regulations.
- Ms. Siverson said it sounded like for a subdivision in a rural or ag area a community well might be preferable because of the regulations governing community wells.
- Mr. Yow said that yes that would be preferable, and you could set the community well at least 1500 feet from an ag operation that might be spraying chemicals.
- Continued Discussion
- Mr. Yow said you don't want to make a rule that will run all the developers out of town. There needs to be a workable system.

- Ms. Siverson thanked Mr. Yow and said it was a lot of food for thought and would be a good idea to look at the county regulations Mr. Yow mentioned.
- Ms. Siverson asked Mr. Sullivan if looking at these rules would be part of the UDO process?
- Mr. Sullivan said that we might be getting into the area of state rules and how they are implemented by the health department. He said he would check with Ann Lowry and see. Some of the comments that Mr. Yow was bringing up are good comments, but they are not something that we would touch on the land use side.
- Ms. Siverson asked what would the process be for initiating those rules? Talking to Anne and starting that way?
- Mr. Sullivan said yes, he would talk to Anne because he was not sure how their regulatory process works.
- Mr. Yow said with regards to county level well rules that are enforced by environmental health, he has seen other counties enforce the types of rules he has been talking about.
- Ms. Siverson said that the next meeting will be with County Attorney Bob Hagemann and adjourned the meeting.