

**Northumberland County Planning Commission  
May 18, 2017  
Minutes**

The regular monthly meeting of the Northumberland County Planning Commission was held on May 18, 2017 at 7:00 p.m. in the Courthouse at Heathsville, VA with the following attendance:

Chris Cralle	Absent	Garfield Parker	Absent
Vivian Diggs	Present	Albert Penley, Jr.	Absent
Alfred Fisher	Present	Wellington Shirley, Jr.	Absent
Ed King	Absent	Heidi Wilkins	Present
Richard Haynie	Absent	Charles Williams	Absent
Patrick O'Brien	Present		

Others in attendance:  
Stuart McKenzie (County Planner)

**RE: CALL TO ORDER**

The meeting was called to order by Mr. Alfred Fisher, Chairman.

Mr. Fisher stated that there is not a quorum, but that the meeting would proceed.

Heidi Wilkins led the Commission in the Pledge of Allegiance to the Flag.

Alfred Fisher gave the invocation.

**RE: AGENDA**

As there was not a quorum, the agenda was not considered.

**RE: MINUTES- April 20, 2016**

As there was not a quorum, the minutes were not considered.

**RE: COMMISSIONERS' COMMENTS**

There were no member comments.

**RE: STAFF MEMBERS' COMMENTS**

Mr. McKenzie stated that at the last meeting the Commission asked me to contact WestRock and he discussed that with the County Administrator, who stated he wanted to discuss this further with the Board of Supervisors members before the County contacted

anyone from WestRock. The County Administrator said there was a discussion of inviting WestRock to a joint Board of Supervisors and Planning Commission meeting, however no date has been set. The County Administrator is looking to see if DEQ is holding a public meeting on this matter. Mr. Fisher added laying in limbo for the time being until we get word from our authorities. Mr. McKenzie agreed.

**RE: BOARD OF SUPERVISORS' LIASON COMMENTS**

There were no comments as the Board of Supervisor's liaison was not present at the meeting.

**RE: CITIZENS' COMMENTS**

Mr. Newton asked if the Bear Island paper plant that recently announced it was closing is drawing of the same aquifer as WestRock does. Mr. McKenzie asked if that plant was in Hanover? Mr. Newton stated yes. Mr. McKenzie noted he saw the newspaper article announcing it, but did not know whether the plant uses surface water or ground water. Mr. McKenzie brought up another paper mill that is slated to be built in Chesterfield County, but has been delayed. The Tranlin paper mill, once constructed, will be using plant material to create paper products and is owned by a Chinese company. Mr. McKenzie stated he was worried about how much water that paper mill will use once constructed.

**RE: PUBLIC HEARINGS**

There were no Public Hearings scheduled.

**RE: WORK SESSION ITEMS**

There were no Work Session Items scheduled.

**RE: DISCUSSION ITEMS**

Mr. Fisher stated we can get into the groundwater discussion now. McKenzie started the discussion by saying he had some graphics to help answer some of the questions that Planning Commission Members had at the last meeting. One of the questions at the last meeting was how much water, in the scheme of things, was WestRock using. The graphic shown was from the JLARC Report, Effectiveness of Virginia Water Resource Planning and Management, 2016, which showed the ten largest (in volume) groundwater users in the coastal plain of Virginia. The highest user was WestRock, at 7.2 billion gallons per year, the next highest user is the other papermill in Smithfield at 5.0 billion gallons per year. Mr. McKenzie stated that this graphic should show how great an impact that WestRock has on the groundwater in Virginia's coastal plain. Mr. McKenzie moved on to another graphic, explaining at the last meeting Mr. Williams asked, how old is the water in the aquifer, and how long does it take to replenish what WestRock takes out? Mr. McKenzie presented Planning Commission Members with an illustration from the USGS Study entitled The Potomac Aquifer of the Virginia Coastal Plain, that shows the water under the Northern Neck to be from 10,000 years to 35,000 years old, which tells

him that groundwater recharge is slow, at best. Dr. Land mentioned that the USGS has said before that recharge is infinitesimally low. Mr. McKenzie stated that he inquired to DEQ Water a few years ago about any state measures to help protect the aquifer recharges areas of the coastal plain aquifers along the fall line, as that area has development pressure because it is adjacent to the I-95 corridor. More buildings, and parking lots mean less recharge area for our aquifer. Mr. McKenzie relayed that he was told that the recharge is so small it is not worth the effort to try to keep the recharge areas in a natural state. The DEQ staff person stated that the recharge is in millimeters per year, and the drawdown is in feet per year, so it really doesn't matter. Mr. McKenzie stated he does not agree with that assumption. Mr. McKenzie continued explaining that Mr. Fisher had a question at the last Planning Commission on how water withdrawals from Maryland affects us in the Northern Neck. Mr. McKenzie stated the graphic he was going to show was from the 2010 Northern Neck Water Supply Plan that details the cone of depression in Maryland that is centered near Solomons Island and the Patuxent River. Mr. McKenzie continued that while the lines showing the groundwater drawdown do not extend across the Potomac River into the Northern Neck, you can extrapolate where those lines would go in our region. Mr. Fisher asked if Southern Maryland is utilizing the same aquifer we use, and Mr. McKenzie replied yes. Dr. Land clarified that the graphic of Maryland showed the Aquia aquifer that is not as deep as the Potomac Aquifer. Dr. Land continued that not many wells in Northumberland are in the Aquia aquifer. Dr. Land talked about a research project he did a few years ago to look at failed wells, which were right along the Potomac River, which proved that Southern Maryland use is drawing down the aquifer. Dr. Land asked the rhetorical question, what to do about it, and continued that there is nothing you can do, as Virginia cannot control what Maryland does with their water, and on the East Coast, the first in time is the first to right, which means if you have a well, you are entitled to draw on that well in perpetuity because you got there before everyone else. Mr. Fisher recalled a while ago when Lake Cowart was canning tomatoes he irrigated with well water that caused some neighboring local wells go dry, which contributed to him abandoning his tomato operation. Dr. Land stated that it will be a long time before the paper mill water usage affects us, but it will affect us. Dr. Land stated he was surprised to read in the JLARC report, that the Code of Virginia and the Virginia Administrative Code both are very clear that when groundwater permits are granted, human need takes precedence. Dr. Land continued that the paper mill is an outdated facility and it needs to get the screws put to it (to reduce its groundwater usage). Dr. Land added that what DEQ is proposing is to restrict them to 20 million gallons a day, well they only use 18, they should limit them to that and then reduce the amount of water usage allowed by a million gallons every two years of the ten-year permit, and send them a message that we are serious about this. Dr. Land stated he knows what people will say in response to reducing their permitted groundwater usage, what about all of the jobs, what about the people of West Point? Dr. Land stated what are you going to do about the millions of people that live in the coastal plain of Virginia when their grandchildren are going to run out of water. What is more important? Mr. O'Brien asked a question of Dr. Land, asking to clarify his statement, it is going to take a long time before it impacts us here in Northumberland County. Dr. Land explained that the water levels of the groundwater used to be higher than the land surface and it is now down about 50 feet, and is going down about a foot per year. Let us suppose the groundwater level is 50 feet down and that the well we are interested in is 600 feet deep. It is standard procedure not to drawdown a well to what they call management level, which is 80% of depth of the

well. So, for safety sake, let's say the 80% of 600 feet is 500 feet, you should never draw down the well more than 500 feet. Take the decline of one foot a year from the existing level of 50 feet down, from and you will see that it is not going to affect us or our children in their lifetimes, but it will affect future generations down the road, and relatively speaking 450 years is not that long. Mr. O'Brien stated that it likely will affect some people within 10 years. Dr. Land said yes, that near the plant, yes that is likely. Dr. Land said he often wonders that some wells near the plant must have gone dry, and whether the plant takes responsibility for that, or what. Dr. Land stated that from our perspective, the water withdrawal from West Point will likely affect us in 100 years or so. Mr. Fisher asked if they had done a comprehensive study of the Kilmarnock well and how far it has dropped? Dr. Land stated you have the Kilmarnock well, the Montross well, both are old school wells, plus the wells that they drilled in Surprise Hill, and they are all doing the same thing, a drop of about a foot a year. Mr. McKenzie stated that the well data is available online, if you go to the DEQ water page and follow the links. Mr. McKenzie followed up this with a handout from an email sent to Staff from Dr. Land that he wanted all planning Commissioners to have which has excerpts from the Northern Neck Regional Water Supply Plan. Mr. McKenzie paraphrased Dr. Land's email, stating that what the Northern Neck draws from the aquifer is paltry compared to what is drawn from around us, 4.4 million gallons is used per day on the Northern Neck, while the Middle Peninsula draws 27 million gallons per day to the south of us and Maryland to the north of us draws 43 million gallons per day. Mr. McKenzie summarized that the Northern Neck is wedged between two large cones of depression to the north and south of us. Mr. O'Brien asked why Southern Maryland usage is so high? Staff responded a large population, a metropolitan area. Mr. McKenzie passed out another graphic which shows a 2009 groundwater simulation model run that shows the cone of depression created by the paper mill in West Point, dated from 2009, from the publication [A Simulation of Flow in the Coastal Plain Aquifer System](#). Mr. McKenzie noted that on the graphic the negative 40-foot contour goes along Rt. 600 on the boundary between Lancaster and Northumberland, and the 30-foot drawdown contour goes up the Great Wicomico River up to Callao, with the negative 20-foot contour being positioned in Southern Maryland. This graphic is from 2009 so it is a little bit dated. Mr. McKenzie asked if the commission members whether they had time to go to the DEQ public notice website to look at the maps published for the WestRock groundwater permit, or not, but Mr. McKenzie stated he was not impressed with the maps, as the maps did not show the drawdown, only the critical cells. Staff explained that the critical cells are those cells that violate the 80% rule mentioned earlier, which is a state mandate that DEQ is supposed to uphold to protect the Commonwealth's groundwater supply. The map only shows the critical cells, of which there are none on the Northern Neck, and non-critical cells, which is misleading, like there is no drawdown from the WestRock well showing in the Northern Neck, which is not true, just look at the 2009 groundwater simulation run graphic that staff showed you earlier. Mr. Land stated that the USGS has found that when you remove groundwater, the land subsides, and that happens whether it is oil, or gas, or water, and the map of land subsidence looks exactly like the 2009 groundwater simulation graphic shown earlier. Mr. McKenzie that VIMS, who were commissioned by the Virginia General Assembly to conduct a study on recurrent flooding in Tidewater Virginia a couple of years ago, had, as one of their recommendations, to reduce the groundwater pumping to slow down the ground subsidence in the region, so that was a

recommendation from a flooding study to reduce groundwater withdrawals, which is a telling statement regarding the interaction of groundwater pumping and land subsidence. Mr. Land mentioned he has gone by the well in Lottsburg several times when they are pumping water from the well into the curb along US 360, and stated he does not understand why they do that. Mr. McKenzie noted that he has seen the same thing Dr. Land is describing, and offered that it might have involved work on the water tank, so they had to drain the water, but that he was not sure. Mr. Land noted that maybe the Lottsburg well needs to be abandoned and a new well dug. Mr. Land stated that the bottom line is the WestRock needs to quit using so much groundwater and find alternatives. Mr. Fisher asked why WestRock does not use freshwater from the stream next to the plant. Mr. Land noted that the water next to the plant is not freshwater, but is saline. Mr. Fisher added that just a short distance upriver it is freshwater. Dr. Land stated he guessed because WestRock does not own the land that far upriver. Mr. Newton noted that the paper mill used to use water from the Pamunkey River, which was affirmed by Mr. Allain. Mr. O'Brien stated that from the paper mill's standpoint, constructing a pipeline and buying the land upriver would be an expensive proposition. Mr. McKenzie stated that it would be interesting to know what the company's thoughts are regarding how long they plan on operating the mill in West Point. Mr. McKenzie cautioned those present that the groundwater network is much more complicated than draining a pond or a bathtub, and that water moves underground from areas of high pressure to areas of low pressure which complicates things. Mr. McKenzie informed the Planning Commission Members that the Northern Neck Water Supply Plan is currently being revised by the Northern Neck PDC, as the last revision was done in 2010. Mr. McKenzie shared graphics from a slideshow given by Sara Jordan from DEQ, the first one showing projected deficits in the region for the year 2050, there were no deficits shown in the four county Northern Neck region of the map. Mr. Fisher remarked how they came up with only half of the Eastern Shore as showing a deficit, Accomack County, when its southern neighbor, Northampton County did not show a deficit. Staff noted that there is a lot more population on the northern border of Accomack County than in Northampton County. Dr. Land stated that the Eastern Shore groundwater situation is completely different. Ms. Wilkins surmised that Southern Maryland is probably drawing down Accomack County's groundwater. Mr. Newton asked if these deficits that the map showed was a result of the population not needing water or water being there. Staff responded that the water demand of the population exceeds the available supply. Mr. Newton stated that where the counties west of us have a deficit, and we don't, does that mean that they have more straws into the aquifer, while we don't have as many straws in our aquifer? Staff stated that may be part of the reason. Ms. Wilkins asked if the counties that do have a deficit, does that mean they are going to try to pull groundwater from counties that don't have a deficit? Mr. McKenzie explained that many counties west of the fall line use surface water for their potable water supply. Mr. McKenzie stated surface water sources have to abide by the DEQ minimum in stream flow rule, where you have to leave a certain amount of water in a creek so the fish and other critters in the river have enough water to survive. If the river is in low flow condition due to draught, then you cannot pump out water for use if it is below the minimum instream flow level. Mr. McKenzie further explained that the Water Supply Deficit Map does not differentiate between groundwater and surface water supply sources. Referring back to groundwater, Mr. McKenzie noted that the counties in the Water Supply Deficit Map that are shown as having a deficit are those counties west of us, along the fall line, where the aquifer is the shallowest, which means their aquifer does

not have the volume that the aquifers in the Northern Neck do. Mr. McKenzie presented the last graphic, which was a projection of the users in the Northern Neck for 2040, from the DEQ Northern Neck Regional Water Supply Plan revision presentation. Mr. McKenzie noted that the green dots were ground water monitoring wells, and that the size of the other dots on the map are proportional to the amount of water they use. Mr. McKenzie noted that the largest users of water is only 2.5 million gallons per day, and both of those have some surface water that they use. Mr. McKenzie noted that obviously the amount of water withdrawn in the Northern Neck is very small as compared to what is withdrawn to the south and north of our region. Mr. O'Brien asked when the revised Northern Neck Regional Water Supply Plan will be completed. Mr. McKenzie indicated it would be sometime in 2018, and that the NNPDC has contracted with a consultant to do the revision work. Dr. Land mentioned that the entire JLARC Water Supply and Management study was perpetrated by the representative from West Point that said, we need to study the groundwater issue. Dr. Land continued that the NNPDC water supply study was based on USGS data, and nothing has changed since then. WestRock was simply using a delaying tactic to have access to the water for a longer time before being forced to reduce. Mr. McKenzie noted that it bought them two years. Dr. Land stated that the science is crystal clear, there is no question (that current groundwater usage levels in Virginia are unsustainable). Ms. Wilkins asked if they (the paper mill) are ever going to listen to us, here in a projected 2040 groundwater non-deficit county? Ms. Wilkins stated that she is concerned about whether there will be adequate water here in forty years, because it takes a long time to build reservoirs, get the land, get the permits, the filtration system, it doesn't happen overnight. Forty years could go by fast, if that is the way the county wants to go forward, not sure that is what we want to do, but the longer we look good on these groundwater projections, DEQ what do they care about, they are worried about the deficit localities, not us. Mr. McKenzie stated he talked with DEQ at length about water supply as well as the Army Corps of Engineers about this, and the King William Reservoir. Army Corps of Engineers staff stated you know what really killed the King William reservoir was the fact that the need wasn't there. Newport News projected that in 20 years they would be without water, and it took twenty years to move forward on the reservoir and it showed that the need for the water wasn't there. Mr. McKenzie stated the regulatory environment created a Catch-22, where you can't get a permit for a reservoir until there is a need for it, and if there is a need for it, you are already too late. Dr. Land mentioned that there is a difference, the King William reservoir wasn't local, as that reservoir was for an urban area building in another jurisdiction, whereas here it will be a county building a reservoir in its own jurisdiction serving its own citizenry. Ms. Wilkins clarified that the King William reservoir was serving another jurisdiction besides King William, and Mr. McKenzie stated Newport News. Mr. Newton stated that the permitting process should be easier for a county, but of course they are going to look at wetlands. Dr. Land stated there were no wetlands, lets take Lodge Creek as an example of something the Planning Commission can do is to look into the Lodge Creek reservoir, it's the biggest and should produce sustainably about a million gallons per day. Now remember the whole Northern Neck uses 4 million gallons a day, of course there is the matter of getting water to the people and that is an issue, no doubt about it, but the amount of water that that reservoir could produce is huge. Mr. Newton asked where the reservoir would be located, and Dr. Land stated you would see it from US 360. Dr. Land noted that the question you have to ask yourselves is would this be an economic engine now, and he said he doesn't know the answer to that, but there are a couple of things to

think about. Building the reservoir would create waterfront property, a lot want to live on the water, but living on the Bay with rising sea levels and hurricanes is not such a good idea, some people would like that. Dr. Land stated that he thinks that would raise the tax base, because you would increase the value of the land by creating the reservoir. Obviously, the lake would be stocked with fish, and since fishing has gone to heck in the Bay, having a recreational fishing base would create jobs and bring in tourists, lodges teaching sailing and kayaking. Mr. O'Brien asked if the land was farmland currently, and Dr. Land agreed. Mr. Fisher said swamp land and said it is probably a dozen people that own it. Mr. McKenzie concurred as all of the property goes to the centerline of the stream with all of the proposed reservoirs in the Comprehensive Plan. Dr. Land noted that the land needed is the steep canyon land that is only good for hunting, you could make a deal with the property owners that they give you the land and keep your tax bill fixed until the owner develops the land. Dr. Land added that if you have reservoir, you have a sustainable source of water. That doesn't have to be for people, it could be for plants. Mr. Newton asked about the 4 million gallons per day figure, stating that is for the whole Northern Neck, correct? Mr. McKenzie stated 4.4 million gallons per day for the four counties of the Northern Neck. Mr. Newton said if we have a million gallons a day we could tell the other counties that they are on their own. Mr. McKenzie clarified, if you can get the water to everyone that needs it, and that's a problem because from Lodge Creek to Ball's Neck is a long way. Mr. Fisher stated that would be a lot of pipe, a lot of pump stations and a lot of right of ways. Mr. Fisher stated that what he was going to do is to keep his surface well in operation. Dr. Land stated to keep in mind that rainfall has increased since 1900 by 4.3 inches per year. Mr. Fisher stated that DEQ people told us there was enough rainwater in the county to sustain shallow wells, and we are privileged in the that regard. Mr. Fisher continued that we do have dry spells, but you could always dig the well a little deeper. Dr. Land you could have vineyards, orchards, truck crops with a sustainable supply of water. Dr. Land added that if it doesn't rain enough, the reservoir would have to be managed, but would that create an economic engine? Mr. Newton mentioned that a nursery between Lyells and Montross built a large reservoir for irrigating their plants. Dr. Land rhetorically asks if the reservoir would create vineyards, orchards and people who grow vegetables, and he said he doesn't know the answer to that. Dr. Land stated that his advice to the Planning Commission is to look into this, would it be good for the County, and good for the people, and create jobs. Mr. Fisher stated that the biggest question for all is who is going to pay for it, and how to pay for it. Dr. Land stated that you are only talking about a couple of million bucks. The original plan said \$270,000 to build the dam and reservoir, not the filtration plant or piping in 1969, in today's dollars that is 1.4 million dollars. Dr. Land asked the commission members this, the artesian wells that we already are in place, have a limited life and one of the things that limit them is the depth you can put your pump. If your well goes dry you pretty much have to drill a new well to go deeper so you can put your pump deeper. What does it cost for construction of an artesian well these days, \$10,000, it doesn't take too many \$10,000 wells to make up a million bucks. Mr. Newton stated the cheapest thing to pay for is the actual dam itself. Mr. Fisher stated the cost of the distribution network and filtration plant would be high, and Mr. McKenzie added that you need land for the plant and the pipelines as well. Mr. Obrien stated that on page 164 of the Comprehensive Plan shows that the small footprint (in acres) and the highest volume is, indeed, the proposed Lodge Creek Reservoir. Mr. O'Brien stated that the size of the reservoir along with its rated capacity, it is pretty obvious that the proposed Lodge Creek

Reservoir is the most efficient use of the land of any of the reservoirs. Mr. McKenzie stated that the smaller footprint would result in less cost for wetland mitigation, which would be true, and the last time he checked it was \$69,000 an acre for a wetland mitigation credit. Mr. O'Brien asked if that cost is the same for private entities vs. public entities? Mr. McKenzie noted that is for any entities, and cited an example is that VDOT has to buy wetland mitigation credits when they impact wetlands when building roads and bridges. Mr. McKenzie printed out page 160 of the Northern Neck Water Supply plan to show the Planning Commission the order of the short-term alternatives relating to water supply resource planning. The first alternative is conservation of water, while it doesn't help what is happening around us, it does help extend the supply. Low flow toilets and showerheads are required for new construction, however, there is much to be gained by retro-fitting old homes. The second alternative is an increase in permitted withdrawal capacity, which might work for us, but in other parts of the coastal plain aquifer that wouldn't work. Mr. McKenzie opined that this option is actually speeding up the inevitable decline of the aquifers. Some of the long-term alternatives shown in section 10.3.2 of the Northern Neck Water Supply Plan are drilling new, deeper wells, and deepening the location of the well pump of an existing well. Other long-term alternatives mentioned are reclaimed water, rain water harvesting, desalination of surface waters and water marketing transfers. Mr. McKenzie noted that the very last alternative that was mentioned was building surface water reservoirs, and staff assumed because that this the most-costly alternative. Mr. O'Brien stated that no, actually, desalination is the most expensive. Mr. Fisher added that technological advancements are happening rapidly that may make desalination more cost effective. Adding to that, Mr. Fisher was surprised to learn that one of the challenges with desalination is the cost of disposing of the salt that is removed from the water. Mr. Fisher stated that the salt might be able to be used for melting ice on roadways in the Winter, as salt is salt. Mr. O'Brien asked Dr. Land what form is the leftover salt from the desalination process. Dr. Land stated it would be a brine solution. Mr. Fisher stated that that brine solution could be dried into a powder. Dr. Land asked the members, do you really want to flush your toilet with reverse osmosis water? Mr. McKenzie stated Virginia has been water rich for many decades, and now we are not. Mr. McKenzie stated that flushing toilets with drinking water is absurd, and we need to change our ideas about doing that in the future. Mr. McKenzie further explained a system where you could engineer a house that is structurally sound enough to hold a large cistern in the attic to collect rainwater, and some kind of purification so it doesn't turn fetid, and use gravity feed to flush your toilets. Mr. O'Brien stated you would have to build another water system in your house. Mr. Fisher agreed. Ms. Wilkins stated that the paper mill is an archaic system, and we are saying they need to spend money to figure out a different way to do it, and what we just talked about for homeowners is the same thing, we need to be smarter, too. Mr. O'Brien stated that there are various mechanisms to require or encourage that in Northumberland County. Ms. Wilkins stated that DEQ should be doing more to reduce the paper mill groundwater use, if they are using 18 million gallons a day, only give them 15 million gallons a day (not 20), and then next year they can only use 14 million gallon a day, and then maybe they can think of a way to use less water in their process. Mr. O'Brien pondered what WestRock thinks is the useful life of the plant and how long they plan on operating it. Mr. Fisher said he believes as long as there is a dollar to be made, the plant will go on operating. Mr. O'Brien stated that the paper industry is weird, because you have cycles of shortages and excesses. Mr. O'Brien continued that paper prices increase roughly the same as the GDP, but you don't go out and build a new



plant to get only a 2% return on investment. If you did then there would be a paper glut and you would be lowering the price of the commodity you are selling. Mr. Fisher stated that was why he was wondering about the new Chinese paper mill coming Chesterfield. Mr. O'Brien stated that it is an entirely different type of paper, they use various fibers, or cellulose for very low-grade paper, likely unbleached brown paper, cardboard paper. Mr. McKenzie brought up the Bear Island Paper plant that closed that Mr. Newton mentioned, was a newsprint paper factory. Mr. Newton mentioned that when the price of newsprint goes up, it really squeezes the newspapers. Mr. O'Brien stated that during the housing boom, the price of wood went up tremendously, they were using any wood that they could find, and that hurt all industries that use wood. Mr. Newton mentioned that we are sending used cardboard to China, and they are recycling it and sending it back to us. Mr. Newton said that Bear Island Paper contacted the newspapers and said we have newsprint boys, but you are going to pay for it. Mr. McKenzie paraphrased what Mr. Newton just stated and said that they closed the plant to drive the price up. Mr. O'Brien stated likely the parent corporation has multiple mills spread around and it is cheaper for them to close one and ramp up production at the other facilities.

Mr. Newton brought up the Hampton Roads Sanitation District's project for dumping their graywater into the aquifer, how does that play into all of this? Mr. McKenzie stated that the way he understood the project they are going to inject it down in Hampton Roads, so it is going to help keep the saltwater out of the aquifer and possibly reduce the subsidence of the land in that area, but would have no effect on us up here. Mr. O'Brien asked if injecting that water will bring the fresher water to the top of the aquifer? Mr. McKenzie replied that it is keep in the spaces between the sediments open so that they can continue to hold water. Mr. McKenzie stated that when he used to work at the NNPDC, we had a presentation from a consultant who was touting this concept, and they told us that the only influence aquifer injection exerts is east of the injection site (as the water in Virginia's coastal plain aquifer flows from west to east). Mr. O'Brien stated that the project is not helping a lot of people, only those East of the injection site. Mr. McKenzie stated that you are keeping saltwater out of the aquifer in that region and that helps those inland of the injection site from having more saline groundwater. Mr. McKenzie also mentioned that the City of Chesapeake has been using the aquifer as storage, and pump potable water into the aquifer in the Winter and withdraw it in the Summer. Mr. McKenzie stated you can't build a big enough tank to store that water, but you can store it underground in the aquifer.

Mr. McKenzie wanted the Planning Commission to know that the Northern Neck Water Supply Plan does have alternatives in it and the last resort listed is building reservoirs. The other point that staff wanted to make was that the amount of water we have available here in the Northern Neck is largely determined by forces outside of the region, and outside of our control, so we are at the mercy of our neighbors. Mr. McKenzie added that regarding groundwater withdrawals from Maryland, there is no mechanism for a Virginia county to influence their decisions regarding groundwater usage. If in Virginia, we are now in the Groundwater Management Area (GMA), so we have a voice. Another thing Mr. McKenzie brought up was that at the last meeting, I stated I was surprised we got the email notice from DEQ regarding the WestRock renewal, because usually you have to find out through the grapevine. Since we are now in the GMA, DEQ is required to send notice to us now, and previously we were not, so that is why we have begun to receive notices of permit renewals. So it is not such a big paradigm shift in DEQ operations, as Mr. McKenzie had though earlier, rather that now we are part of the permitted users in

the GMA, and a regulated entity. Mr. Fisher stated that it seems to him, the people of Northumberland County who are going to suffer the worst are the ones who live in condos, and subdivisions they are all dependent on this aquifer, whereas those of us who live out in the country can have a surface (shallow) wells dug if need be. Mr. Fisher asked if Dr. Land has any reservations about using a surface (shallow) well. Dr. Land said no, and that he has a shallow well, and he will never run out of water, his property is 4 acres in area, and the amount of rain falling on that land will refill the well in perpetuity. Mr. Fisher said it is a renewable source, and you don't have to wait 10,000 years to get the water. Dr. Land added that there is a limited amount of water that can be used, if you have scattered houses you are fine, if you have houses close together, you run into problems. Mr. Fisher stated that is exactly what he was referring to, people in condominiums and in compact subdivisions don't have that option. Dr. Land added that's where reservoirs can solve your problem, you collect water from a large area and store it for distribution when you need it, 42 inches a year. Mr. O'Brien stated that a lot of subdivision purchase water from private water companies. Mr. Fisher said that most of the subdivision he knows has its own water public system, a community well. Mr. O'Brien stated there is cost associated with that. Mr. Fisher said yes, and Mr. McKenzie stated that is usually part of the homeowner's association dues that are used to keep the water system running. Ms. Wilkins said that Reedville pays a private water company. Mr. Fisher stated that Wicomico Church pays Sydnor Hydrodynamics for their water, and Aqua Virginia also serves some communities. Dr. Land the long-term goal would be to construct the Lodge Creek Reservoir, connect it to the Crabbe Mill Reservoir behind Heathsville, and Sydnor's Mill Pond along US 360, you would have half the county covered. You could then pipe to the community's water system and connect the subdivision using the community's existing pipe network. Dr. Land said laying pipe around here is easy, labor is cheap and the ground is easy to dig. Mr. O'Brien added that since the area is not built up, there aren't a lot of other utilities to avoid and you do not have to condemn people's property to get right of way to lay the pipeline. Mr. O'Brien stated it would be nice to have some rule of thumb information, what does it cost to build a dam, what does it cost to run a mile of pipe? Ms. Wilkins stated that for three years, when we worked on the Comprehensive Plan, we said this was important, and the Board of Supervisors of Northumberland County need to address water supply. Ms. Wilkins stated we can find out how much it cost to build a dam, and to lay pipe, but we are talking and we are not acting. We need serious research, what is it going to cost to get landowners involved in Lodge Creek Reservoir, is Lodge Creek the place to go, it was in the last Comprehensive Plan it is in this Comprehensive Plan, and it is frustrating to me. This information shown here today, maybe these things don't need to be in the Comprehensive Plan, because we are not at risk. Ms. Wilkins clarified that she thinks we are at risk, somewhere down the road, like Dr. Land says, not for me, but for my kids and grandkids, it is going to have an impact. Ms. Wilkins want to know where do we go, and how do we get there from here. Mr. O'Brien stated he completely agrees with Ms. Wilkins. Mr. O'Brien stated that maybe what we get the Board of Supervisors is not let's build a reservoir, but maybe the thing to suggest is to start acquiring the land around the reservoir. Ms. Wilkins added, or lets research and see if that is what we want to do. It sounds like it makes a lot of sense to me, other than water conservation. Mr. O'Brien stated that since it will eventually have to be built, in 50 more years it is going to be more expensive. Dr. Land stated that there is a sentence in the 1965 NNEDC reservoir report that the counties ought to do it right now, as land and other prices are going to increase as

time goes on. They knew that at that time, but Mr. Land goes back to trying to determine if the Reservoir as an economic engine. Mr. Newton agreed saying that if there is some return on investment, then it is much more likely the Board of Supervisors would fund an undertaking such as building a reservoir. Ms. Wilkins stated, how do you start with that, how does that occur in the County? Mr. McKenzie stated that with everything we talked about here today, it all boils down to funding. If we don't have money we can't make substantial progress. Mr. McKenzie stated he can do research on behalf of the Planning Commission, but that he is not an economist, and that the way he sees it, the county would need to spend money to hire a consultant. Mr. O'Brien asked what is a ballpark figure for a reservoir study? Mr. McKenzie could not answer that question. Ms. Wilkins asked if you can get grant money to study reservoirs, and staff indicated he did not know off hand who would fund such an endeavor. Dr. Land asked about the reservoir near Montross that was recently built. Mr. Newton stated that it was built by the Hutt family to provide irrigation to their nursery, Red Hill Nursery, and they do sell water to the Town of Montross. Dr. Land said the reservoir locations are cast in stone, the 1965 report defined them, and the topography has not changed in the Northern Neck since that time. Mr. Land stated that they identified all of the likely reservoir sites, and that doesn't need to be redone. Mr. McKenzie mentioned that it needs to be understood that the 1965 study was done before the advent of the Clean Water Act of 1970 and wetlands laws, so that the regulatory environment is very different today than it was in 1965. Dr. Land stated that it doesn't make any difference, these areas are wooded canyons. Mr. O'Brien stated from a topographical standpoint these are the best places for reservoirs. Mr. McKenzie reiterated that he is not sure these locations are the best locations under current day regulatory environment. Mr. Newton stated that the regulatory environment could very well be vastly different a year from now. Mr. McKenzie stated that very well could be true. Mr. McKenzie asked about how much seepage there would be, as the soils in Northumberland are mostly sandy and permeable, will we have to bring in clay to line the reservoirs to keep the water in the impoundment. Dr. Land stated that there is plenty of clay locally. Dr. Land stated they would go into the reservoir footprint, clear cut and make test borings to see the soil composition was an adjust accordingly. Mr. McKenzie stated he was not trying to be negative, but trying to look at every possible complication so we can be aware and factor that into our decisions about constructing a new reservoir. Mr. McKenzie added that in his conversations with Army Corps of Engineers about reservoirs is that they prefer reservoirs off the main stem of a river, with smaller watersheds, so when a tropical storm like Bertha comes in and drops 10-12 inches of rain in a day, the dam does not blow out. Dr. Land stated the engineers can design a dam to withstand that amount of water. Ms. Wilkins summarized by saying that the bottom line is the beginning point is a study that will require consultants, consultants require money, and there is no money in the budget for that this year. Mr. McKenzie stated he can analyze the number of acres of wetlands, but doing soil profile borings and other field work, that is engineering. Ms. Wilkins said that type of work isn't exactly cheap either. Mr. Allain stated to look at what the economic benefits of building a reservoir might be a quicker way to make substantial progress toward the goal of getting a reservoir built. Ms. Wilkins stated that an economic study might also require consultants. Dr. Land concurred stating that none of us are qualified to do an economic study. Dr. Land stated would there be orchards, vineyards or truck crop interested in locating in Northumberland to use the reservoir water? Ms. Wilkins said there are a lot of vineyards that have appeared recently. Mr. McKenzie noted that there were generous state benefits, from marketing help to technical

help that were put in place to kick start winery businesses in the Commonwealth and that is why we had a boon. Mr. McKenzie state he thought most of those incentives have since expired. Mr. McKenzie added that when you go from field crops such as wheat, soybeans and corn to truck crops the farming is much more intensive, and you get a much higher profit from each acre farmed, which is high dollar low volume farming, whereas field crops are more high volume low dollar farming. That would generate more money in smaller areas of land which would increase the value of the farm land, which translates into more revenue for the county. Mr. O'Brien stated he would be interested in seeing, and he will try to look into it, any sort of a representative study, and it doesn't have to be in this area, the benefits of reservoirs. Examining those studies may give us a laundry list of factors to consider. Ms. Wilkins agreed. Mr. Fisher stated that for not having a quorum, the commission carried on quite the discussion. Mr. Fisher thanked Dr. Land for joining the Planning Commission meeting and lending his expertise.

**RE: PUBLIC COMMENTS**

There were no public comments.

**RE: PUBLIC HEARING**

There were no public hearings at this meeting.

**RE: ADJOURNMENT**

With a motion from Patrick O'Brien, seconded by Heidi Wilkins, and approved by all, the meeting was adjourned at 8:20 pm.