

**MINUTES OF THE SPECIAL MEETING
OF THE TOWN COUNCIL
TOWN OF CAROLINA BEACH**

February 7, 2011

The Town Council of the Town of Carolina Beach met in regular session on February 7, 2011 at 10:00 a.m. in the Council Chambers at the Municipal Administration Building, 1121 N. Lake Park Blvd., Carolina Beach, North Carolina. The following were present: Mayor Joel Macon, Mayor Pro Tem (MPT) Pat Efird; Councilman Lonnie Lashley; Councilman Bob Lewis and Councilman Dan Wilcox. Also present was the Town Manager Tim Owens and Town Clerk Lynn Prusa.

Mayor Macon called the meeting to order.

***GMA, INC. - ASR STUDY AND DISCUSSION ON FUTURE DIRECTION OF
WATER SUPPLY FOR CAROLINA BEACH***

Dr. Spruill said they would go over some basic hydrology for the new board members before going over the rest. ASR stands for aquifer storage and recovery and the idea is to use it as a management tool to put water underground where we have some extra water and leave it there and then pump it back out when we need it. You put it underground and it's potable and when you take it out of the ground it also has to be potable. It doesn't help you very much if you put high quality water underground and when you pump it back out you have to treat it again. That's not good. The whole idea is high quality water underground can be stored and then that same water can be taken back out and not treated again. He said groundwater does not occur in rivers and lakes underground here, it occurs in the pore spaces between grains of sand, silt and clay and sometimes in slightly larger pore spaces in rocks like limestone. In the subsurface of this area there are layers of material that have substantial pore spaces but only about 20% or 30% of the total volume of the material underground is pore space. Most of the time limestone can be pretty good materials that can transmit useable quantities of water. He showed different types of wells and aquifers. Often the water quality of the deep aquifers is superior to that of a shallow aquifer because of contaminates. Water from a limestone aquifer tends to be very hard and sometimes smells like rotten eggs because of the hydrogen sulfide, sometimes called beach water. There are two different aquifers and today we are going to be mainly talking about the aquifers that are in depth. The aquifers that you utilize at Carolina Beach are basically overlaid by some lower permeability materials, most of the time, and that there is a shallow aquifer above it that is not being utilized. Your water supply is mostly from the deep aquifers. In coastal environments we have saltwater in our aquifers, usually at depth and they worked out this relationship between the freshwater and the saltwater where the less dense fresh water floats on top of the salty ground water. For every foot of freshwater above sea level there is 40 times that in vertical distance down to the place where it goes salty. This is a big issue for you if you live in coastal environments because of saltwater intrusion. Aquifers here can have a series of different layers of fresh and saltwater and here you can have different layers that

can produce useable quantities of water. They have figured out fairly well where the freshwater and saltwater interfaces are in the sub-surfaces. He showed the location of different aquifers in our area. There are deeply buried aquifers in the lower and upper Cape Fear region relative to the town's position on the coast. The aquifers that sustain us are in Greenville, Kingston and Jacksonville. If you drill a well near the coast and drill down into the black creek or aquifer that we use in Greenville the water would be salty. There is a large aquifer called the Castle Hayne aquifer, just north of Wilmington, that is very close to the land surface. There is also the Pee Dee aquifer that underlies the Castle Hayne aquifer. Both of them are susceptible to saltwater intrusion because they are so close to the boundary between fresh and saltwater. These two aquifers are the dominant source of drinking water for this community. A well could be open to both aquifers, accessing both, or to just one. Your well field is really limited by how much water your wells can produce but also by state regulations about the number of hours you can pump the wells and meeting your average day demands. The number we focus in on today is about 2 million gallons a day, a supply you can get from your wells. In an earlier report we also looked at what we call the safe yield of the aquifer which is that volume of water that is in balance with the aquifer system. So if 2 million gallons a day come into the aquifer and you take 2 million out, the system would be in balance. He is talking about freshwater. Increasingly in our coastal environments we are tapping that saltwater and it is an additional source of water but it has to be treated. So when we say the safety of the aquifer system without additional treatment, we really believe that 2 million gallons a day is a safe yield of the freshwater part of the system but there is a lot more water available to you. A lot of your wells are older wells that are on sites that don't meet modern day setbacks so putting new wells on those particular pieces of property are problematic with respect to existing rules. Unfortunately for you, the wells that have the ability to produce the largest amount of water, a well that can produce 700 gallons a minute can produce a million gallons in a day. You just have a few of the high yielding wells and are prone to saltwater intrusion. The more you pump those wells, the more likely that well is to go salty through time. We are working on problems with saltwater intrusion from Hilton Head Island all the way up to Currituck and Virginia Beach. Salinity levels are increasing in the southwest portion of the Carolina well field. He showed geological cross-sections of that that are specific to our well field showing what they think is the source of the saltwater. He said in this area there is an important geological feature called the mid Carolina platform high which is a layer that tends to be pretty thin in this area so you can't get as much water out of it. Chris showed a map of Carolina Beach with well locations, some are test well locations. A lot of the wells in the southwestern part of the system are open to the Castle Hayne and the Pee Dee aquifers. He reviewed cross-sections of the various aquifers. He showed a map of samples from wells that were tested for chloride, 250 mgs. per liter is the regulatory limit for public water systems. All the freshwater is in the center of the island where we have the most freshwater recharge and some of the areas where there is saltwater sitting above the surface we are approaching the regulatory limit. The saltwater is probably coming in beneath the Cape Fear River and affecting some of your wells in that southwestern area of your wells which are, unfortunately, where your highest yielding wells are. ASR is a pretty simple concept and has worked well for a lot of systems and is becoming a proven technology. The nice thing about having water at the surface is that we've got that pressure head up at

the top so we can just hookup the distribution system. You have water towers around town that raise the water pressure up so we are able to use that pressure to push water down into the well and displace water that is not as good. With an ASR you have to have a water source to store underground which could be other parts of your system, a membrane plant that engineers could design or you could buy that water from someone else and at a time when it is cheaper. The better the water quality, the less buffer zone you need. They think that it is not unreasonable at the ASR in Greenville to store 100 million gallons of water at each of their ASR wells for use at a later time. They are working with the CFPUA and they are incredibly advanced right now with respect to how long it took us in Greenville. The wells for ASR are drilled at what is called the Westbrook site which is on Military Cutoff Road not far from Wrightsville Beach. They will be the second producing ASR wells. We tested (pumped) that well at 1,500 gallons a minute and we are assuming we will get 80%-90% of that as far as the ability to push water back in. That can be an incredible amount of water that we can store during off peak times. It could be a little more than 1 million gallons a day pushed underground for storage. They are also working with Hilton Head public service district, they started ejecting water at their ASR site last week. They have a very similar system to your system but on a grander scale. They are taking water from the mainland in the off season for half the cost and injecting it underground, storing it and then recovering it. This saved them money and increased their supply seasonally. Future demands for Carolina Beach were reviewed. They showed an area where they have looked at putting an ASR site that could be dual purpose - you can store water underground and also prevent or slow the migration of salt from the west to the east. The main reason they were looking at this area is because of the high yields where they could put in a lot of water and take out a lot of water quickly. He said that every drop of the 6 million gallons of wastewater a day on Hilton Head Island is used on golf courses and other irrigation projects by the community. There is no discharge of their reused water. It goes to the wastewater treatment plant, comes out as reused quality water and sprayed on golf courses and other facilities.

Mayor Macon said that is what he wants to do with the wastewater from the park. We shouldn't be using drinking water to water anything that the town has. He has tried to get the town, every time they run a new water line, we also run that is for that and eventually you fill in those spaces whenever you're running the water and eventually work it into a system that is useable but you have to start putting the pipe in.

Councilman Lashley said we're only 3.5 miles here and there are only so many people who can get on this island, why does our capacity or need for water increase as you show on your charts? It looks like it would level off.

Dr. Spruill said there is not a tremendous amount of increase here, actually. When I finally saw the numbers I was a little surprised. He showed the 2007 demand where the max demand for a day was about 2 million. If you start projecting upward, that max day demand goes from 2 million to a little more than 3.5 million, an increase of 1.5 million over 23 years.

Mayor Macon said the largest area of development is either single-family or duplex. There are very small areas that are multi-family where you are going to be able to go higher.

Councilman Lashley asked what is the expense for an ASR storage area?

Dr. Spruill said the state's first ASR well in Greenville took 11 years and \$2 million to produce and that is because we have analyzed for everything in the chemical cookbook at least 3 times, we've drilled it repeatedly and every time we do something new, a new person takes over at the state level and says do this again. But here's what we found. When we moved to Wilmington and started the state's second ASR well we jumped through all those hoops and I expect this well will be about half the cost. You can't use Greenville as a guide.

Chris said he has seen the project at Hilton Head progress from scratch to injection in 6 months time.

Dr. Spruill said it has taken 12 years to get beyond the regulations against injecting anything underground.

The town manager said there has been some discussion at the state level about putting reused water from wastewater treatment plants and doing the same type of situation here. Is that good or bad?

Dr. Spruill said that actually happened in Onslow County. They have no place to put their wastewater so they spray it in a forest and it has notoriously killed different types of trees they have tried to grow there. So they said let's inject this water into our deep aquifer system. I didn't support the idea then and I don't support it yet. They went to the state with this idea to take the water from the wastewater treatment plant, which is reused quality, and we'll put it down in deep aquifers and store it down there and never pump it back out or maybe pump it back out and use it later on. The state looked at this thing for about 6 months and finally decided we didn't have enough information to make a rational decision for a rule and it's been tabled for study. The current projection is that it will be 3-5 years before the state makes a decision about whether or not we can inject reused water into our deep aquifer system. I don't think it is going to happen in my lifetime. We have the ability to design and build treatment plants that can remove impurities from the water. We are drinking wastewater in Greenville and Tarboro and it is perfectly safe. The whole idea for ASR for Carolina Beach is to find a source of water. It could mean going to another aquifer that is salty, or going to the Pee Dee or Castle Hayne aquifer where it is salty and pumping saltwater out, treating that saltwater and then you can inject some of that water underground in the winter months. It could mean buying water nearby and bringing that water over to this peninsula and storing that water underground.

Chris said it is a water management tool and the only reason to do it is to save money. The other potential benefit was you might benefit the groundwater.

Dr. Spruill said you are designing for a day when you go from a 2.5 million to 3.5 million and that only occurs about 30 days of the year. So you have to have a system out there in place to meet those peak demands for over a 30 day period. ASR allows you to meet those peak demands with water that has already been treated and stored underground.

Chris said there could be a lot of secondary benefits too like if you put your ASR well, say you were getting a connection from CFPUA, putting it in the northern portion of the system you would have fresher water and more pressure up there but as you get towards the southern part of the system then maybe there's not as much pressure and you're having longer residency time and problems with disinfection byproducts. That would be a great place to put an ASR well because in the summertime you can raise the pressures in that part of the system by turning on the pump at the ASR wells.

Dr. Spruill said with an ASR well you have to have a source of water and Carolina Beach currently doesn't have a source that is developed. He said he sees at least several sources of water. You could use existing aquifers that have gone salty, pump that saltwater out and build an RO plant/membrane plant that could be in the winter months, if the plant is large enough, some extra water you could store underground. He sees deeper aquifers that could be used as a source for RO water. At Hilton Head they just drill deeper and found a source of water that is salty which they pumped out and put through an RO plant. He sees water from the CFPUA or west of the river as a potential source. North of you the authority has 2 sources of water, ground and surface water. The City of Wilmington treats surface water and uses it. They have gone north of the city and built a new well field and the Castle Hayne and Pee Dee wells are supplying it to a new plant that they built which is a membrane plant and is treating the water from those two different aquifers which goes out into the distribution system and gets mixed. Now Wilmington is building an ASR well near Wrightsville Beach and that ASR well will take their system water in the winter months and store it underground so they can pump it out when they need it. There is talk of building another ASR well for Wilmington towards the southern end of their distribution system. He does not recommend taking water from the town's existing wells during lower usage periods because the longer and harder you pump those wells the more it draws saltwater in. What they have been thinking is to take the wells you have now and minimize their use, especially in the winter months.

Chris said he has seen at Hilton Head where the wells they have used for many years and are able to turn off in the wintertime they have seen the chloride concentrations go down when they turn them on in the summertime when they need them.

Dr. Spruill said that in the coastal environments they are seeing the transition from a more tourist based economy to a more permanent based economy and suspects it will happen here and wintertime demands are increasing which spells the ruination of these aquifers because the only way we have survived as long as we have is because the wells rest a lot in the wintertime and that slows the migration of saltwater.

Mayor Macon asked where we're at as far as technology on an RO and how much cheaper has it gotten?

Brian Cox with Engineering Services said the technology has gotten better and the price is coming down for smaller systems, similar to what you are thinking about as a possibility. It used to be that you had to have a large facility and all of the site requirements met in order to do that. Over time it has gotten better so that you can purchase say a \$250,000 package plant and if you ever expanded you just buy another one.

Dr. Spruill said there are a lot of RO systems in coastal North Carolina. There is one just north of Wilmington, they are building one at the west end of Emerald Isle, Ocracoke Island has membrane plants, Rodanthe, all up and down the coast. They are more comparable now to conventional water treatment plants in terms of operating costs.

Mayor Macon said he would rather build an RO plant and remain independent as well as not using down the water source from the aquifer system. He also reiterated that they should not be using the drinking water supply for watering the parks and things of that nature, they should be using the water from the wastewater treatment plant.

Councilman Lashley asked about the number of wells that we have. Gene Gurganious said we have 13 operating wells.

Mayor Macon said you have to have land for more wells. The areas where we do have open land is where the saltwater intrusion coming in because we're in the buffer zone. That's on the west side of the island, off Dow Road.

Dr. Spruill said some of the wells are already interfering with each other quite a bit and are too close together to operate simultaneously. It's not just the rate at which you pump water out of the well that affects the interference, it's how good the aquifer is. It's not the same everywhere.

Mayor Macon said when you are talking about the future of Carolina Beach's drinking water this is what you are looking at, you are looking at 3 things - buying water from Cape Fear Utilities, buying water from Brunswick County or drilling into the deeper aquifers that are salty anyway and having your own treatment plant and treating that water to do the ARS.

Chris said they decided to drill deeper and test the Pee Dee aquifer site because they knew they would get some well interference from the closer wells. On the same site they also tested the Castle Hayne aquifer to see if they could operate 2 wells on site, 1 well, what's the water quality like. There was a problem with both wells during final operations and they lost both wells. They built replacement wells and they tested them again and what we found was that the water in the upper Pee Dee aquifer was 4, it had higher chloride and some other issues with water chemistry so at this site the upper Pee Dee is not going to be useful. What we found at the Castle Hayne aquifer was that is had pretty moderate yield with 100 gallons a minutes which is something they may want to look at. We are now looking at another site at the state park but the issue is the state

park's requirements. They said if you build a well there it will have to be hidden from site and there will be some issues and additional expense.

The town manager said they have been working on that for 4 years. They won't allow treatment on site so you have to carry it somewhere else so we're talking about taking it a site across the bridge and possibly treating it there. We have probably tested since I have been here at least 5 wells and what we are seeing a lot of times are low yields and poor water quality.

Chris said in the Pee Dee aquifer the flows/capacity is higher, 300 to 500 gallons, but the quality is poor. Castle Hayne is good quality but lower yields, 100 to maybe 150 gallons. The Pee Dee you will have to treat. In the past you have been fortunate enough to be able to pull out of mainly the Castle Hayne, disinfect it and put it into direct distribution and now you are running out of sites that are available that meet state requirements. When you are looking at spending maybe \$250,000 for a well and you're getting 100 to 150 gallons per minute, which is about 80,000 gallons a day, you're not getting a whole lot of bang for your buck.

Councilman Wilcox asked if the state requirements only apply to building new wells or is there some point in time where they are going to come around and change requirements and find that our existing wells no longer qualify for use.

Chris said as long as they are in operation they are grandfathered in but as soon as a well casing gets a hole in it or something happens that you have to abandon that well, anytime you make any repairs to it you have to abide by the current state regulations. They won't allow drilling next to a well or pulling out an existing well and drilling at the same site.

Dr. Spruill said the Pee Dee aquifer has strategic locations on the island which may be an ultimate source for RO technology.

Chris said you wouldn't have to put as many in to generate the water you would need to treat so, from a cost standpoint, you would get more water for the same amount of money to put a well in.

Dr. Spruill said if you take salty water out of the ground, or surface water that is salty, and you treat it with membrane technology, for every 10 gallons that you treat at the plant you are going to produce around 2 gallons of wastewater because you are going to concentrate that salt and you have to dispose of that wastewater. You're not going to spray that on the land and you're not going to deep well inject it. Most likely you're going to put it in the surface water bodies. I like the western area because it is closer to the Cape Fear which is already salty and it makes it easier to get the state to approve the disposal of the brine. The further you are to the east the more difficult it is because I don't think you are going to put it into the ocean. So far the State of North Carolina has said no to putting saltwater into the ocean. We don't have ocean outfall easily permitted in North Carolina.

The town manager said Brian did take a look at some of the numbers and it looks like the numbers to do some of the things that we are talking about today are about the same, whether it's go to the CFPUA or treat salty water/RO plants. My biggest concerns are that we have 13 wells, roughly half of them are over 50 years old so there are some concerns there and they don't have the proper buffer zones. Also, the testing we've done hasn't been that great and we've had to rely on Sunny Point buffer zone sites and now we're talking about entering the Sunny Point buffer zone site and putting an RO plant, will they let us do it or not, permitting issues. The state park recreation area, they haven't been very open to putting in wells over there so I have some real concerns about the future of our town as far as water goes. I have talked to the CFPUA and I think they would be open to doing a further feasibility study to really answer what is best for Carolina Beach long term. It is keep our independence and do an RO or is it to buy all of our water from the CFPUA or is it buy some of the water and hopefully we can co-mingle it with some of our wells. I think we need to go a step further and really look at the numbers. It is going to be too much for us to handle as a smaller town and distribute those costs over 4,000 customers to put in an RO, an ASR, to do all of these kinds of things that we are talking about doing. It may be cheaper to just connect into CFPUA and purchase their water. We don't have a lot of customers to distribute all these projects out. CFPUA does. Maybe there is something here that we are doing here that would help their water supply, they're talking about ASR, maybe that we keep our system on line and they somehow benefit each other. I don't know. There is a lot of stuff that I don't know and that is what concerns me. We've been talking about it and they are open to doing some kind of feasibility study. I think we would have to come up with an RFP and I don't know what the cost structure would look like, whether we pay part and they pay part or they pay all. We talked to Kure Beach about allowing us to look at their system. I think they are pretty convinced that they are going to be fine because of limited development potential. They have been sort of open to allowing us to look at their system. It would be smart to let the Carolina Beach guy come look at both of them. Their water comes from Monkey Junction. Right now, looking at the cost of doing that vs. the cost of doing an RO and whatever, and there's some cost savings there that I don't know about. We'd have to hire more employees, there could be some things that we may not need to do capital-wise like produce new wells, we've got a \$3 million dollar grant so we're thinking about building. At some point maybe they would bring that line down and there may be some ways to recoup the cost of that line too. If CFPUA runs a line to Carolina Beach then people hook on and pay us. We're talking about the hardness of the water and the mayor wanted us to look at that, what can we do to soften our water. For \$1.5 million dollars we can soften our water. I would like for Council to allow me to go back to CFPUA and say let's do a feasibility study.

Councilman Wilcox asked if this cost analysis of an ASR to meet our needs?

Brian said yes vs. compared to tying into CFPUA and that is running a transmission line from Myrtle Grove Road south. They have an 8" line there now that they say we could tie into and potentially get 500,000 gallons a day and that is what we were looking for initially. An RO would produce 500,000 gallons. What we looked at was the cost to produce the ASR system supplied with an RO facility vs. purchasing your water from

CFPUA and running that line from Myrtle Grove, not Monkey Junction. In talks with CFPUA they are looking at and planning to run a line from Monkey Junction south this way and the interest coming from Carolina Beach to maybe participate with them, they are happy to hear that. One of the things that we looked at and don't have an answer for and the study that Tim is describing would help us get some additional information is what would the rates be if you went with CFPUA. A good selling point for the ASR is that you have a lot of control over how you use that water but you can negotiate that price from CFPUA who wants to sell water in the wintertime and would probably sell you that water at a reduced rate. If you are purchasing water in the wintertime and storing it, not purchasing water from them in the summertime, you're using what you have stored plus your existing well system to supplement. That is where a lot of the savings is. With the RO facility, same way. You can run it, produce the water as you need it if you have an existing well that goes down, it's kind of that buffer. You've got your RO facility to produce that water to compensate for that. If your system is eventually aging out where you have to take them off line then you can just add another RO facility, another half million or quarter million gallons on the RO facility and keep right on going.

The town manager said he thinks they have advanced this about as far as they need to at this point but there are still a lot of other questions out here about what the best long term solution is. I think this is great but you've still got to go buy 500,000 gallons of water from CFPUA. Why don't you buy all of it or why don't you buy half of it? I want to do what we think is the most cost effective way of getting water and hopefully have some control over destiny. It's hard to let go of that control and have to rely on their rate structures and they have gotten off to a rocky start.

Mayor Macon said even then what you are looking at if we do an ASR system and do the RO and you take care of your needs right now, as they work their way down here with pipe, which they are going to have to do anyway, eventually, and our older wells start failing, that's your solution to today's problems or do an RO depending on what it is. Putting a line from where they have to put it from and us sharing the cost, of course they want to talk to us.

The town manager said we would get paid back long term. There are a lot of questions. I think we know that we can do this, it appears that we can but I am not convinced that this is the best thing. I need to see all the different options laid out and study it a little further. Brian has done some preliminary cost figures but there is so much more than that, there's labor costs, etc.

Councilman Wilcox said you don't know what the potential reduction in water cost buying it in the winter and all those factors.

The town manager said that is what this study would do. He would like to formally approach CFPUA and talk about a feasibility study. The best long term would be all those different solutions but it could be cost prohibitive. After the study we can make a better decision about what we want to do.

Dr. Spruill said let's say you start 100,000 million gallons of water underground and there is 180 gallons of water available to you. Now you have a drought and you need that water, how fast can you get that water out of the ground? The answer is, from that well, 1,000,000 gallons a day even though you have a 100,000 million gallon reservoir, you can only pump that water out at a certain rate. That usually is one well in and one well out. If you strategically locate your ASR wells, let's say they are existing well or if you put another well in the storage zone, it could be a regular production well. Now you can recover more water out of that storage zone. If you were to locate your ASR wells in a position where they could be protective of some of your existing wells, in terms of that saltwater migration, put so much freshwater down there that the saltwater can't get to your existing wells. Then you can improve the life of those existing wells as long as they don't collapse or deteriorate through time.

Brian asked about the quality of the water that you pull out of the ASR. If you are putting a high quality water in, is it intermingling with the limestone structure, when you pull it out is it going to be similar to?

Dr. Spruill said it is a big issue. If you put that water in and it has an adverse reaction to the existing water, that could be problem if it has an adverse reaction to the minerals there. So what you are forced to do is study the water chemistry of the groundwater system and the water chemistry of the water you are putting in and make sure there will be no adverse reaction. Before you can get a permit from the state to put an ASR well in you have to those theoretical studies. Then what you do after the ASR well is produced you push some water underground and then you bring some of it back out and you analyze it for everything in the chemical cookbook and push it out again, that's called the second cycle, and you pull some it back out to make the storage bigger. You have to disinfect it when you pull it back out, you still have to chlorinate the water because it is going to be consumed. If you have to treat that water when you pull it back out of the ground, then it doesn't work.

The town manager asked if we knew that an ASR and an RO plant were what we wanted to do right now, what steps would we take next?

Dr. Spruill said to pick the location and the aquifer system that you want to develop. It seems to me that the logical aquifer system would be the Pee Dee based on everything we have looked at so far. It has reasonable yields, you already have a bunch of wells in the south that tap both the Castle Hayne and the Pee Dee so strategically located wells in the Pee Dee aquifer to the south on the west side of the peninsula seems to be the proper location. Make sure you know what the water chemistry is of the aquifer system and you know what the yield of the aquifer system would be and we already know a lot about the yield and chemistry of the Pee Dee at those locations. The next step is the feasibility study in terms of what it costs to treat that water with that chemistry. That is what Brian does. I'm not saying the wells and the RO system would be at that location but when you look at the geology and the yield of the aquifer systems, that seems to make a lot of sense. There is so much water underneath the ground at this location but most of it is salty but that doesn't stop Ocracoke. It is a proven technology, produces a really high

quality water and the cost is reasonable. He said the west end of Emerald Isle they are building a 1,500,000 gallon per day plant and it would take 2 million to supply it and they said in no uncertain terms that the rates will not increase on that island. Their water sells for about \$1.90 per 1,000 gallons to the customer on Emerald Isle. Tim said our rate is about \$3.20 per gallon. Dr. Spruill said he paid \$8 per gallon in Greenville. At Hilton Head they found that ASR was not feasible until the off peak rate dropped below a certain dollar value and then it became feasible. He said the off peak rate for ASR water didn't come down until we built an RO plant so they are doing both. He said the RO plants are nothing but concrete, pipes and valves. The water comes into these plants through a series of pipes and valves and then they buy these trains and they are pieces of high quality plastic stacked one on top of another in sleds. They slide them in there and plumb them up. Most people who build a membrane plant for \$3 million will go ahead and design the building for \$6 million and so half the building will be occupied with these pipes and the other half will be empty and every time they want to add some additional water, they just bring another train in, another sled in and plumb it up. It takes about 2 people per shift to operate an RO plant, it's not labor intensive. It's all automated. The plant at CFPUA has 2 workers per shift. What you are doing is pushing water through that membrane and the salt won't go through it so it stays on the other side. You don't have to shut these membranes down to clean them but if you do, have a technical problem because you have redundancy, you can shut one of the trains down and operate the other 2 trains. The plant can also be operated remotely. This is perfected technology and there is a lot of competition for membrane technology that it has driven the price down.

Mayor Macon thanked them for coming.

MPT Efirm made a motion to recess for lunch. MOTION CARRIED UNANIMOUSLY.

Mayor Macon made a motion to call the meeting back to order. MOTION CARRIED UNANIMOUSLY.

STORMWATER PROJECTS

Stormwater Study of Discharge Locations to Yacht Basin

Brian Cox said he wanted to go through some of the stormwater projects we have. E&SC is coming to talk about permitting and removing sediment from Carolina Beach Lake. I have given you a map that shows the lake and two stormwater ponds we put in and the stimulus project that was done late last year. The town put in an application to the Clean Water Management Trust Fund that was awarded, contracts are in the process of being signed for the implementation of stormwater devices at three locations, Black's Marina, Scotch Bonnet and Pelican Lane close to the marina. Also I think Brian and the stormwater department is going to install one test system using one of the products that we've looked at in the Clean Water Management Trust Fund grant to review that product, that is basically the filter that is installed in line where stormwater passes through and

filters out the sediment, trash, oil, grease, etc. Brian said they are hoping to get it in prior to July. The town manager said they want to do the test site and some sampling to make sure it's the product that we need and works and move forward with the grant. We have two years to use the grant and they need to get the paperwork in ASAP because the state is looking for other money that they can pull back on.

Wilmington Beach Street Improvements

Mr. Cox said the second project is the Wilmington Beach street improvements project for which they received bids on February 1st. The low bidder was Triangle Grading and Paving and the project had Base Bid A and Base Bid B and two alternates. The A was for paving the streets and the storm drains, Base Bid B was for the additional water and sewer extensions. Alternate No. 1 was for sidewalks on Tennessee, Ocean and Alabama. Alternate No. 2 was for sidewalks on North Carolina, Texas and South Carolina. A councilman spoke up and said he thought we voted not to do sidewalks. The town manager said he decided to go ahead a bid them, we can decide not to do it. Those alternates do not have to be accepted, he just wanted to find out what the true cost would be. Mr. Cox said he thinks they had seven different contractors that bid the job and with those prices you came back and said we only want a sidewalk on Ocean Blvd. we would negotiate that with the contractor based on the bids that we have received. It gives you a little more leverage using the numbers of the seven contractors to negotiate a price. The award was based on the lowest combination of Base Bid A+B which was Triangle Grading & Paving. We have looked at their references, contacted people and they have a license to work unlimited in North Carolina. We checked with DOT and they are a pre-qualified bidder DOT and Cape Fear Public Utilities Authority. They worked on the construction project, installed the sewer system on Oak Island and they are involved in some litigation with Oak Island. It is not based on the work that they did, they did the work according the plan specifications but the cost went over budget because there was a change in the project. It went over budget because of some paving issues and the way it was described to him it had to go to litigation with Oak Island and it came out that Oak Island owed the contractor X amount of money and Oak Island just hasn't paid.

Councilman Lashley asked if we have some leeway on the contractors, an option if we want to pick a second one if the two are within a certain range? We don't want to use the taxpayers money if we are queasy about this company. The town manager said that is a legal question for Steve but he thinks you can, it's the lowest, responsible bidder. Mr. Cox said the other option is to reject all bids and re-bid. These same people may come in and be the low bidder again. I talked with Four Counties Airport Authority where they are currently working on a project and the guy said he was happy with them. They are also working on base at Camp Lejeune and they are happy with what they are doing there. That is a design built project that they are subcontracting to a prime. It sounds like they are certainly capable of doing the work. What has happened on previous jobs is that they try to nitpick things and change things in the job which can increase costs. There was a \$130,000 difference between them and the next bidder. The town manager said he thinks his recommendation is to go with the lowest bidder. There is nothing out there I can really point my finger to and say this is why we can spend \$130,000 more. We can tell them we don't want to see any change orders unless it is truly justified. I put a pretty

high cost estimate on Tennessee because there is a lot of uncertainty out there as to what is in those rights-of-way. The other thing we ran into was utilities, for some reason they thought the utilities in some of these rights-of-way were 50 feet and not 90 feet so they put the utilities in the roadway and they might have to be located by somebody. We don't know how much cost is going to be on our behalf or how much by the utility company. We put an allowance for that. Mr. Cox said that Tennessee is a good example, it's a 90 foot right-of-way. The way the roads are going to be graded, ditched and storm drains put in, a lot of those poles are going to be in the centerline of the ditch so we were asking the contractor to relocate those poles. The town manager said he would have thought the utility would have put them where they are supposed to be put but we still haven't done negotiations. They should be on the edge of the property line – that is normally what they do. Councilman Wilcox asked if they have identified any potential changeovers with the saving part of it, is there anything you think might be an unknown there? Mr. Cox said there hasn't been anything addressed with him from any of the contractors. The only thing that would change is if there was more concrete or asphalt driveways out. There have been some additional residences built since the planning was done and the relocating of the poles but you have a \$60,000 allowance in there based on what Progress Energy told us was the per pole cost to relocate was somewhere between \$3,000 and \$5,000. They didn't have any issue with the pole being inside the right-of-way and not on the right-of-way line. Their only issue was with the grade of the road or the grade of the ditch if you took soil away from the depth of the pole that would be concerned or if they put some above that and a line separation above ground between the ground and the transmission lines have changed. We have unit prices for that work and the only change I can see is if the quantities that were allowed in the bid go over. The town manager talked about the possibility of additional fill out there, the contractor didn't see any issues there but you never know until you start grading. There are a couple of areas that are bad, Tennessee, Snapper. Mr. Cox said the bid came in under what was projected which was \$3.1 million and their total base bid was \$2.75 million. The town manager said Council will look at that at tomorrow night's meeting. They are thinking for the assessment to pay over 7 years to be around \$700 as opposed to \$1,000 so it will be a little cheaper per year. Same thing with the water/sewer part of it. I think we were saying \$200,000 but it will probably be between \$160,000 and \$170,000. Mayor Macon asked what is the projected start date. The town manager said they have to go to LGC, we have to have a public hearing again in March so probably around mid March. Mr. Cox said we have to get contracts signs so I would say early April we would have a pre-construction meeting and begin in May or late April. It is a 300 calendar day project and will continue through the summer and fall. The town manager said we have used some of the contractors who put in bids but not Triangle. Mr. Cox said the contractor who installed the ponds and pump stations for the previous project, they took off this project but they were going to bid as a sub. I talked with him to see how he priced it compared to the way Cape Fear priced it and he said he was actually a little bit under what Cape Fear had priced which made him feel good because they didn't low ball it to get the job and then try to figure out ways they could change. Councilman Wilcox asked what was the last thing they decided on with the sidewalks, we decided to not do the secondary portions and do the ocean portions ... The town manager said they were originally looking at Alabama, Ocean and Tennessee and some people said what about the other

roadways so that is why we bid it two different ways and it was those three roads and also the other three roads. In order to do sidewalks, if for some reason you wanted to change your mind, the three main drags are \$74,000 and if you wanted to do the other three it's \$59,000 or \$133,000 for all of them. The down side to doing sidewalks at this point is that we would have to change our stormwater permit. Not to say it couldn't be changed but the only thing that was included in the original permit was Alabama, Ocean and Tennessee. Council made the decision not to so you would be reconsidering it or not. We need to approve the bids, you don't necessarily have to approve whether we are going to do sidewalks or not. That can be done at a later date. Tomorrow we have to have the public hearing and a couple of other action items before we submit it to LGC. We need to approve the contract in your packet for tomorrow night which is basically it is approved by LGC, the financing comes in adequately, the contractor checks out and a couple of other things. Councilman Lewis asked if there is better financing out there or is it starting to slow down? The town manager said what they got was for 15 years was about 4% and for 20 years was 4.9%. We just sent that stuff out last week and should know by Wednesday what the rates will be. At the March meeting we will have to have another meeting to approve the terms of the financing. He thinks that BB&T will be the only one who bids on it.

SANITARY SEWER PROJECTS

Pump Station #1 Replacement

Mr. Cox said that project began work in December last year and the hope is we will get the wet well installed and all the underground work done before April before the rides come in and installed on the adjacent property but, last week an underground storage tank was found on the site and the town is working with Mactec to test the site to determine if a remediation plan is necessary. Gene Gurganius said the core sample they took from the dewatering system was clean and it was confirmed on Tuesday that they could start back to work. The town manager said then we will know if we need to monitor wells, etc. Considering what the remediation plan may be could delay the project somewhat but so far it sounds like we it good news from the state. The expected completion date for that project is July 2011 and R. D. Braswell Construction is the contractor on that project. Councilman Lewis said if you're getting all the underground work done, all we're doing aboveground is what? Mr. Cox said there is a concern because the site is so small and they have a construction easement with the adjacent property so they are using that property to stage and also we are having to dig about a 23' hole to put the wet well in so they have shored and braced it so we want to get all the underground work and get aboveground and get off of the adjacent site so the carnival rides can come in. Everything aboveground should be able to be done without encroaching on the adjacent property. We're just coming up to the masonry. Councilman Wilcox said we've also decided not the FEMA lot but the SECOF lot, right? The town manager said both. Mr. Cox said the SECOF lot actually has a 10 foot wide access to Canal Drive so it separates the FEMA lot and the pump station lot 10 feet so they've got a 10 foot wide construction easement through there but working with SECOF they are allowing them to use more of their site. We are doing everything we can to get them off by April. The town manager

said one of the other things we have found out about this project too is that we are probably going to have to change the configuration of the recycle bin and trash compactor and how those are configured, the trucks can't get in and out of there like we thought they could so we are going to have to push them further back. They will be located on the Raleigh side and pushed all the way back in the lot because they needed 70 feet of right-of-way.

Equalization Basin Modifications

Mr. Cox said that project began also in December 2010. The existing equalization basin was an unlined basin and the state has come in through renewing the permit for a wastewater treatment plant and asked that the basin be lined. So we have made it smaller so that is basically sized for the treatment plant. They are going to line the basin, make some pump station improvements and some moderate piping improvements on site. We expect to complete it by April 2011. The town manager said there are some other things we are looking at too. Some of the plant concrete is pitted from all the gasses and stuff coming in so we are looking at both the head of the plant and the outfall of the plant doing some work of putting epoxy on the outside sort of like we did with some of our manholes and fix that work. It needs to be done, it's on an outflow, a small hole in part of the mortar where that water is kind of flowing out of there which is not in a good location. If it were to blow out it would be a bad thing. We're getting close to doing that. The plant is 50 years old.

Lake Park Sanitary Sewer Rehabilitation and Replacement

Mr. Cox said the last sewer job is the stainless project for the Lake Park Blvd. sanitary sewer improvements. We completed all the work on Lake Park Blvd. and added by change orders some additional work because there was a sum of money left over with the project and added in the sewer line rehab on Carolina Beach Avenue N. from Clamshell to Saltwater plus Periwinkle Lane which we either replaced the sewer line or rehabbed it. All the work for that project is complete and should be closed out by the end of March.

WATER PROJECTS

ASR Study

Already covered. Councilman Wilcox asked if there is a timeline. The town manager said his hope is that he and Brian will come out with some kind of scope of work they want to see done as far as that feasibility study goes, get that done soon and get it out for RFP. It would probably take 4-6 months for those to come back, then move on with the study. We still don't know what the funding is going to be, if we are going to end up paying for the full study. I would guess there is going to be some partnership in the study costs. Mayor Macon said he saw where Kure Beach is part of that as well. We have a regional water and sewer treatment plant and it would behoove Carolina and Kure Beach to locate a regional water situation as well for grant funding. The town manager said he thinks they are going to allow us to look at their system to see if they can improve on

things or if they need to buy water from us or Cape Fear but, from conversations he has had with them, they are pretty happy with what they are doing now so I doubt if they would want to enter into any kind of authority. They actually aren't using 3 wells they have on line and feel they have ample water.

Water Storage Tank, Well 15H, Raw Water Lines & SCADA System

Mr. Cox said all of this was going to work in conjunction with the ASR system. The main item of concern is an existing 1 million gallon ground storage tank that is located on Cape Fear Blvd. at the Cape Fear water plant has some potential structural issues. The town manager said that in the next couple of weeks somebody is going to go in there, they dive in, clean the tank and take pictures so we'll know better if there are some structural issues there. Mayor Macon said he thought they already established that years ago. The town manager said we did but it's never been fixed. It is pretty old as well. Mr. Cox said the design for the future is either elevated or a ground storage tank hinges on the feasibility study and what direction the town goes in relation to CFPUA or with an RO facility. We need to put up an elevated tank and then the question is where to put it or a ground storage tank and also the size. Initially we looked at a 3 million gallon tank basically to use to buffer or provide additional storage in your system to cover the peak usage time in the summertime and in the wintertime you bring level down in that tank and not utilize the full body. In the summertime you bring it back up basically filling it Tuesday, Wednesday, Thursday of the week and then using that water to kind of buffer that peak time over the weekend. If things change in regards to ASR, the CFPUA, whether you go to them 100% or just supplemental purchase of water, can vary what size tank and what style tank and that planning can't be done until we get back the results back from the feasibility study and get some direction from the town as to which way you want to go - an RO or tying into CFPUA. Either way you have to have storage. You have a 1 million gallon tank now that has issues and by replacing it on a new site, you can utilize the old site for a park or facility of some kind. There are some changes there that could be incorporated in the way the planning goes.

Test Well 16A (Across from Town Hall)

Already covered.

Test Well 15G (State Park)

Already covered. Mr. Cox said the town has been in talks with the state park in trying to figure out what they would allow for a well on their site. The town manager they finally told us we could do a certain type of well and chose what the well would look like and it turned out that we can't build that well. The state said we can't build a well like that. They won't let us do treatment because they are concerned about what effect that might have on the trees so we would have to send that to another well for treatment. There is a layer of bureaucracy that we will have to go through for all these projects.

North End Street & Utility Improvements

Mr. Cox said the town manager mentioned this earlier, on the north end with the improvements to the sewer that we've done on Clamshell and Salt Marsh we're also going to replace the old cast iron waterline with a new 10" PVC waterline from Periwinkle Lane to Salt Marsh Lane. That project just started and is expected to be completed by April 2011. The town manager said they would then go in at some point and overlay that roadway. They're going to patch back and go back and overlay it before summertime so we will have a good looking roadway.

Future Water Quality Improvements

Mr. Cox said it is their recommendation that the town continue with replacing old water mains as they are now. He showed a map of the town's system which identified all of the 2" galvanized waterlines as red, the greens are your 6" and 8" lines, blues are 12" lines. The red lines he feels the majority of are galvanized. There are some 4" lines but he is not sure what the material is. It is their recommendation that they budget each year some amount of money so that over a period of time you can replace the 2" waterlines to improve your water quality. The town manager said it affects pressure and taste. Mr. Cox said he knows the town has been installing chemical feed systems at their water plants for direct distribution wells, installing a phosphate system as well as an iron removal system at the Alabama treatment plant which should improve the water quality. I know there are a lot of high iron complaints coming from the Wilmington Beach area and some at the north end. There is only one section of line at the north end, three blocks, that has that old 6" cast iron line and is producing a lot of that iron in your system. The town manager said that might possibly be replaced in the fall. Mr. Cox said that with the work they are doing at the north end, we're also working to improve the storm drainage on Georgia Avenue and then resurface the road. That project should be starting in the next couple of weeks. Also resurface the CBAN all the way through Salt Marsh. Mayor Macon said that's a lot of red on that map. Mr. Cox said there is about 11,000 to 12,000 feet. Mayor Macon asked what if when we replace that red line and put a bigger pipe in we actually put in a line to eventually use our effluent from the reuse water to be available for folks to tie into and have a separate meter and they can pay a reduced rate and water their yard with this stuff. That's a lot of pipe. The town manager asked if you can put in dry pipe. Mr. Cox said he knows with public water they don't allow you to put the pipe in that is not in service. He doesn't know the answer with reused water but can find out. Councilman Lashley said he sees storm drainage on Georgia and Canal. I used to live on Florida and Canal and anytime it rains ... Have we looked into that? The town manager said not yet. We are probably going to end up doing something very similar to what you are doing on Georgia at some point. A lot of that water is coming in off the sound where there is no bulkhead or a low spot. The town manager asked about water from the wastewater treatment plant. Mr. Cox said you would have to provide some additional treatment, disinfectant and then you would have to have some way to pump it to the street. Mayor Macon said the cost to chlorinate that water could be offset by the charge to use it. Mr. Cox said it is a matter of changing part of the treatment plant installing a pumping system that can distribute that water so you

basically have a separate distribution system that you have to pressurize to provide the customer. You would have to establish that at the treatment plant. Mayor Macon said we were in the design stage of the storage tank already, right, and the plan approval and all of that was in the works? Mr. Cox said that is right but they have kind of shelved that to see what the direction of ASR or not possibility and tying into CFPUA. That will make some determination as to how large the storage tank will need to be and what type of pumping system you will need there to get it to distribution. Mayor Macon said so replacing the old one was the whole premise of this new storage tank so we don't need the storage tank if we go to ASR? Mr. Cox said you will still need the storage tank but I think you will need a smaller one. If you buy from CFPUA and I believe even if you do an RO it could be a smaller tank also. We originally were using a 3 million gallon tank more as an additional reservoir capacity for peak times. If you have an RO system or buy from CFPUA then they will be your peak type storage people, you just make more water or buy more water. You can then scale back and use the state required amount of storage rather than having to buy yourself more storage to meet peak requirements.

E7SC - DISCUSSION AND DIRECTION OF IMPROVEMENTS TO THE CAROLINA BEACH LAKE

The town manager introduced Nicky Thomson and Don Wells with S&EC and turned the meeting over to them.

Mr. Wells said the big item here is the lake and the existing wastewater treatment plant which they will refer to an abandoned EQ basin or one that is no longer being used but is still at the facility. With respect to stormwater, situations where areas get flooded and something has to go with water. Currently, several large pumps, an underground pipeline going to Henniger's Ditch and that is currently what is going on. One of the processes that has happened over time is all the stormwater from this drainage area comes into this lake, fine sediment, silt, different things that collect, gather and fall to the bottom. It is all black, slurry mud at the bottom and that has decreased the storage volume and not allowed lake to infiltrate the water to help it soak into the shallow aquifer. They looked at different options on how to clean out this out. One of the options we looked at was pumping and dredging out the sediment from the lake, putting it in tanker trucks and disposing of it in the EQ basin at the wastewater treatment plant. That is a time consuming process. He showed pictures of a small dredge with a pipe in it that moves around, sucks up all the mud and transports it into a series of pipe work into trucks. The contractors they have talked to for estimates are very knowledgeable and they deal with that. They talked to Marco Dredging and Bionomics out of Charlotte. He referred to the table of cost estimate summary. Unfortunately, the Army Corps of Engineers has determined that this lake is it's jurisdiction. Even though it is a stormwater device, they have claimed jurisdiction over that so this requires a permit. To piggyback these things, I was talking with Brian and Tim and the question came up about improving the shoreline of the lake itself, whether you add rip rap or do bulkhead because what is going to happen in certain sections the bank line has eroded down and washing into the lake. So while we are trying to remove the sediment from the lake we are also talking about capital improvements to the lake to increase that storage capacity. Nicky talked with Brian

about several options of doing bulkheads or rip rap but one thing they want to recommend to Council is to give guidance of what options you would like to have. If you go out there now you can see certain sections that have rip rap which are large chunks of rock like around the pipe end. You have to visualize if that is what you want the whole lake to look like, as far as the shoreline goes, or a combination of the rip rap rock areas and the bulkhead, sheet pilings material which lasts longer. Any type of bank improvements is going to require a permit from the Corps of Engineers.

Ms. Thomson said the bottom portion of Carolina Lake closest to the road falls within what CAMA calls an AEC which is Area of Environmental concern so not only are we dealing with the Corps of Engineers and Division of Water Quality we are also dealing with Division of Coastal Management because we are proposing impacts within an area that they have determined is an AEC. So there are three different governmental agencies that we would be discussing this project with and how do we make all of this happy, much like what we went through with Wilmington Beach. The AEC line was pointed out on a map.

Mr. Wells said the sediment in the lake has to be dealt with as it will just get worse with time and lose more storage capacity. Pumping out the sediment and putting it into the EQ basin is a cost. The table shows inputs from dredging contractors based on permits anticipated and dealing with regulatory agencies. With regard to bank stabilization, the town has to decide what it wants it to look like. The table shows the range of cost from \$909,500 to \$1,059,500 or \$1,069,500 to \$1,219,500.

Ms. Thomson said one of the reasons we initially talked about a bulkhead other than rip rap is from an aesthetic standpoint it would look nicer. It's a high density area and lots of families go there. Rip rap tends to house all sorts of creepy crawlies that you don't want there such as snakes, rats, etc. She was also thinking toward the future of this lake as a stormwater lake, you don't want to have to come back and redo this every 10 or 20 years. Installing a bulkhead that is recessed up, even by 5 feet, while they are out there already having the sediment removed, that failing bank could also be removed and would increase the storage capacity with something that would be stable for a long time with minimal maintenance whereas rip rap, over time, slumps off, falls into the lake and needs to be replaced and cleaned up of trash.

Councilman Wilcox asked what is the life expectancy of a bulkhead.

Mr. Wells said he didn't know but at least 30 years depending on the material used.

Councilman Wilcox said regulatory-wise, do they look at rip rap and the bulkhead.

Ms. Thomson said it is going to be a permit, they would still have to go in with answering the same questions of why here, why now, very similar discussions that we would have on any project irrespective of what was chosen. One question that probably will come up is, what are your plans to make sure that you won't have to do this again in 5 years or 10 years?

Councilman Lewis said there was a question about drawing the slurry out and then moving it within the confines of the lake, build an island, mound the slurry and put dirt on top and not having to use trucks to remove it.

Mr. Wells said they did look at a couple of those options in their preliminary study whether to build a bulkhead and pumping that sediment on the other side of the bulkhead and let it settle out or take material and press out the water so you have a cake type stuff. If you were to build an island, that is considered fill and there are regulatory requirements on the amount of fill you can do, you're back to the individual permit (IP) process with the corps and you are talking a multitude of months.

Ms. Thomson said the other bigger issue is one of going to a regulatory agency and saying that you need to increase the storage but we're going to propose to build an island in the middle of the lake.

Mr. Wells said there are pluses and minuses either way.

Mayor Macon said you might be able to take some area out in certain areas, you probably need to add a little bit of area where it is close to the sidewalk where it has eaten away.

Councilman Wilcox said put a bulkhead in and backfill it.

Ms. Thomson said as long as the fill occurred above the ordinary high water mark. The Corps of Engineers' jurisdiction stops there that is why she mentioned recessing that bulkhead so that you would actually be able to gain. In instances where it wouldn't be possible, you would be installing that bulkhead right at that high water mark. Yes, you can backfill behind it we would just need to show the plan, this is what we're doing and the justification for doing it this way. We just need to present them the information.

Mr. Wells said that whichever you go you are going to have agency involvement, get a permit. One of the tasks that we are going to have to do as we move forward with this process is meet with these agencies and say the town has decided to do this and they have to have a preliminary of what things mean, etc., and all the mitigation measures and parameters involved. We have to gather all that stuff. The preliminary meetings are to have them say they understand and you now move forward.

The town manager said we manage this thing and now we're going to open all this up and show all the agencies what kind of chemicals we put in there. Right now we pump directly into a ditch that goes directly into a water body. Are they now going to make us dig a retention pond? There are a lot of things there that I am just terrified of after going through that Wilmington Beach project and having to build two 3 acre ponds for roads platted in 1913. There is sand going into the ditch now that has been going into the ditch. We are opening ourselves up to a lot of stuff. After we sit down at those meetings we may decide not to worry about it.

Ms. Thomson said the issuing end is Henniker's Ditch was determined by the Corps of Engineers to be their jurisdiction and subject to the Clean Water Act as water of the State of North Carolina and water of the U.S.

The town manager said they need to hopefully hire these folks and I will bring a budget back at the March meeting, hire these folks to have that initial meeting with the mayor or council member and us and talk with these agencies and find out what their issues are with the way they are doing this now and what will they be if they decide to add a pump, deepen the lake, add bulk heading, etc. and it scares him.

Ms. Thomson said she would like to sit down with Jennifer Fry from the Corps and with DCM because they will be involved, and the coastal stormwater lady, the DWQ representative for this area, and show them what happened last March when the lake flooded. What we are proposing to do is move the sediment, here's what we would like to do and we would also like to add a bulkhead and rip rap - bank stabilization and see what they come back with. Let them answer some of those questions and then we can sit and discuss it.

Councilman Wilcox said you say that the amount of bank stabilization is pushing us into a permit issue. What do you mean by that?

Ms. Thomson said you are only allowed 300 linear feet of bank stabilization before you can no longer use what is considered a nationwide permit, it's a tear sheet. The assumption is that if you follow these conditions under these thresholds it can be granted. Once you go above 300 feet, that's where you step into an individual permit. Carolina Lake is approximately 3,850 feet, the entire perimeter. The meeting would help them to provide to the town a more defined scope of what they can do. I need to know what direction the different agencies want to go. She thinks in AEC, DCM takes the lead and the corps kind of takes a backseat.

Mayor Macon said he thinks they should move forward and look at putting the rip rap in the area that abuts the wetlands and the more developed areas they should put the bulkhead.

The town manager said they need to stabilize that also.

Mayor Macon said I guess we need to figure out how deep we're going to go.

Mr. Wells said they were looking at 2-3 feet on the average some places are a little bit deeper than others. Some places might even go down deeper. The cost estimates we gathered is based upon a price per gallon in these trucks. If you are sucking more water than sediment, you're dealing with more gallons, so what we did, using the surface area of the lake which is around 11 acres, taking that tube with 3' of volume and converting that to gallons and coming up with some rough estimates. This would give you the storage volume you were looking for.

Councilman Wilcox said you are basically pumping the slurry into these trucks, pulling it out and drying it somehow and moving it in a more dry state.

Ms. Thomson said the reason for that is because of the permitting hurdles. If you take it out and then put it somewhere to de-water, the Corps of Engineers and DWQ have problems with that because they want to know where is it going, what is going to happen to the water that comes off because of the assumed contaminants that are in the the bottom.

Mr. Wells said the EQ basin, having that slurry come out of the truck and go in there as opposed to the cake, does anybody have equipment if you had a cake spreading that stuff around. The answer is yes we are looking at a slurry type mixture.

Ms. Thomson said the nice thing with using the old EQ basin is that it is already there, there is already a liner of sorts so that will hopefully take one of the questions everyone is going to have with what is going to happen to the water.

The town manager said no matter what we do, we can go over some of those costs when we get to that point, it's going to be a manual process. You're going to have a float system but it's not failsafe. It could be that we have 24" of rain and we'll pump as fast as we can with everything we have but it's still going to be a manual process.

Mr. Wells said this could be scheduled with the contractors to fit in as far as timing and the town's needs. They have talked to 3 contractors but the estimates that they gathered are from over a year ago and the cost could have changed.

Mayor Macon said he would like to know, too, after you guys go talk to these folks, what the volume of that is vs. inches like compared to the 22" or 25" of rain we got, what are we looking at because if you put it conceptually if we had let it pump down then there would have been no flooding. That's a significant storm event and that is something that people can wrap their head around why they are spending this money. Can you do a comparison of that? If you know the area of the lake, volume and all that, then you could put some type

Mr. Cox said you could figure an amount of increase in volume but I couldn't tell you a rain even like you had back in October...

Ms. Thomson said it's not the just the initial days, it's still running on days after that full service.

Councilman Wilcox said if this is jurisdictional waters, are there restrictions on how you dredge in jurisdictional waters?

Ms. Thomson said yes, depending on the area you are in. That is at times when dredging is disallowed but that is when there are essential fish habitats and things like that. I don't believe we have to worry about that.

Mayor Macon said we already had some money put away for this and now we're using that money?

The town manger said we're using that money for the other stormwater stuff but there should be some more funds coming in this year, maybe \$50,000, and can probably use that money for debt service.

Mayor Macon said he would like to do this sooner than later.

The town manager said they are going to talk to them about it and move forward.

Ms. Thomson said that was for the IP. I set a budget of \$7,500 just to get us through this initial scoping process and the initial scoping process with the agencies assuming I can get them all in the same meeting.

The town manager said tomorrow Council will need to authorize \$7,500 to move forward.

Ms. Thomson said she can send him tomorrow a standard form, scope and proposal.

The town manager said he will bring it up. There is a segment of our meeting that is a recap of this meeting. He said there is 11 million gallons of water in the lake in general and about 150 million during the flooding.

Ms. Thomson said it makes sense because when she did some of these rough calculations we were looking at moving 7.5 million to 11.5 million gallons of material out of the lake.

Mayor Macon said we can still pump into those 2 new ponds 24/7 in that type of event and that doesn't change and we should be able to get a fairly good idea of this is how much of the average depth was and come up with something to What I'm trying to say is when you are talking about spending this kind of money and talking about doing \$1 million dollars of debt service, you need to be able to wrap your head around why you are doing it, is it worth it and is it actually going to stop that from flooding in that type of scenario and I think that is something we need to spend the time on.

Mr. Wells said with an additional pump and force main you'll be able to get it out quicker.

Ms. Thomson said it would help if she had pictures she could take with her. She said that DWQ and stormwater, their issue is more for the stuff you can't see like nitrogen and phosphorus which washes off the land surface. They may push back because it is going to a jurisdictional ditch and additionally pumping it to the other two stormwater ponds and those stormwater ponds were specifically for the streets.

Mayor Macon said that wasn't being pumped from the lake.

Ms. Thomson said that is something we need to be very careful with how we address if that question does come up. She explained how jurisdictional water is determined.

Mayor Macon said I say we handle this tomorrow and deal with it.

Ms. Thomson said she can send out the first e-mails without getting into too many details, show pictures of what exists now and say there are some areas where they would probably like to do bulkhead, rip rap, maps, etc.

Mayor Macon said we have been talking about doing this for a long time and I am tired of talking about it. I am ready to make something happen and sometimes you have to bite the bullet to make it happen. We have a funding source which is the stormwater fee.

The town manager said the first step is to meet with those agencies and see what happens.

Mayor Macon thanked them for coming.

MPT Efirm made a motion to adjourn the meeting. MOTION CARRIED UNANIMOUSLY.

Respectfully submitted,

Melinda “Lynn” N. Prusa
Town Clerk

Approved: _____