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**BOARD OF COMMISSIONERS  
WORK SESSION    April 18, 2005**

**ALEXANDER COUNTY  
STATE OF NORTH CAROLINA**

**PRESENT:**    William L. Hammer, Chairman  
                  W. Darrell Robertson, Vice-Chairman  
                  Wesley E. Bolick  
                  W. Norris Keever  
                  Larry Yoder

**STAFF:**        Rick French, County Manager  
                  Jamie Starnes, Clerk to the Board

**MEDIA:**        Kyle McNeely, The Taylorsville Times

The Alexander County Board of Commissioners held a work session on Monday, April 18, 2005 in the Catawba Valley Community College / Alexander Center Multipurpose Room, Taylorsville, North Carolina.

**CALL TO ORDER**

Chairman Hammer called the work session to order at 6:00 PM.

**WATER DISTRIBUTION STUDY DISCUSSION**

Doug Chapman, McGill Associates Senior Project Engineer, presented the Water Distribution Study, which was able to be completed due to a N.C. Rural Center grant that Alexander County was recently awarded. Mr. Chapman explained that the purpose of the study was to analyze the relationship between the different pressure zones, identify needs and improvements to the overall distribution system, and evaluate the opportunities for water system expansion.

Mr. Chapman presented a Power Point Slide Show Presentation, which included the following information:

**Water Distribution Study**

- Purpose: To study the hydraulic characteristics of the County's water system and evaluate the effects of potential water lines.
- Scope of Work:
  - Prepare hydraulic model of existing system
  - Analyze model results for system deficiencies

- Evaluate effects of potential water extensions
- Recommend system improvements
- Develop opinions of probable cost for projects
- Prioritize system improvements

### **Alexander County Water System**

- Water System Statistics:
  - Water supply from City of Hickory
  - Operation and maintenance provided by City of Hickory
  - 550,000 linear feet of water lines
  - Four (4) water tanks with total capacity of 675,000 gallons
  - Five (5) booster pumping stations
  - Six (6) separate pressure zones

### **Water System Hydraulics**

Mr. Chapman presented a slide with a model of a water tank and a static hydraulic grade line. He explained what effects elevation of the water tank had on water pressure in lines and in homes.

### **Hydraulic Model Parameters**

- Pressure Zones – Hydraulic Grades
- Junctions – Elevation and Demand
- Pipes – Size, Length, and Friction Coefficient
- Pumps – Conditions and Control Factors
- Tanks – Elevation and Dimensions

### **Model Development**

- Acquire data
- Input parameters
- Conduct field testing
- Calibrate model parameters
- Develop scenarios for system improvements
- Develop scenarios for proposed system expansion

### **Alexander County Water System**

Mr. Chapman presented a map of Alexander County which included various pressure zones throughout the water system. He pointed out where each tank and pumping station was located in each zone.

### **Zones 1 and 3 Summary**

- **Zone 1** – Extension of Hickory Water System serving southern and western Bethlehem – Adequate flows and pressures – No proposed improvements.
- **Zone 3** – Serves majority of Bethlehem community and transmits water from Hickory to remainder of the County Water System – Adequate flows and pressure – No proposed improvements.

#### **Zones 4 and 6 Summary**

- **Zone 4** – Serves Ellendale community along N.C. 127, Willie McCloud Road, and N.C. 90 and transmits water to Sugar Loaf and prison areas – Adequate flows and pressures – N.C. 127 Water Line Project to increase service area with nominal system performance increase.
- **Zone 6** – Serves Little River area of Sugar Loaf community with limited service area – Adequate flows and pressure – No proposed improvements.

#### **Zone 2 Summary**

- **Zone 2** – Receives water from Hickory Water System serving N.C. 16 South and the Wittenburg community.
  - 6-inch and 8-inch water lines
  - Limited water storage
  - Marginal fire flows and pressures
  - Proposed Improvements:
    - Project A – Alspaugh Dam / Church Road Water Line Loop
    - Project B – Barrett Mountain Water Tank and Teague Town Water Line

#### **Zone 2 Improvements Model Results**

Mr. Chapman explained the existing system conditions (actual and simulated) in regard to static pressure, residual pressure, and flow for the New Wittenburg Elementary School and the Old Wittenburg Elementary School. He then pointed out the differences that would occur to the pressures and flow after completion of Project A and Project B separately and then together.

#### **Zone 5-A Summary**

- **Zone 5-A** – Operates as an extension of Zone 4 and consists of water lines along U.S. 64 and various roads to the prison area.
  - Marginal fire flows and pressures
  - Proposed Improvements:
    - Project A – Open valve on Liledoun Road
    - Project B – Liledoun Road Parallel Water Line
    - Project C – Jenkins Lane / Moose Road Water Line
    - Project D – Church Road Water Line

#### **Zone 5-A Improvements Model Results**

Mr. Chapman explained the existing system conditions (actual and simulated) in regard to static pressure, residual pressure, and flow for the Macedonia Church Road near N.C. 16 South. He then pointed out the differences that would occur to the pressures and flow after completion of Project A, Project B, Project C, and then Project D separately and then together.

#### **Zone 5-B Summary**

- **Zone 5-B** – Operates as an extension of Zone 4, and serves water to the Sugar Loaf community.
  - Limited fire flows and pressures
  - Proposed Improvements:
    - Project A – Walker Foundry Road / Old Wilkesboro Road Extension Water Line
    - Project B – Sugar Loaf Southside Water Main
    - Project C – Northeast Water Service – Segment 1

#### **Zone 5-B Improvements Model Results**

Mr. Chapman explained the existing system conditions (actual and simulated) in regard to static pressure, residual pressure, and flow for the Old Wilkesboro Road Extension at Old Wilkesboro Road and Sugar Loaf Elementary School. He then pointed out the differences that would occur to the pressures and flow after completion of Project A, Project B, and Project C separately and then together.

#### **Capital Improvement Plan**

<b>Zone / Improvement</b>	<b>Cost</b>
<b>Zone 2 – N.C. 16 South</b>	
Alsbaugh Dam Road / Church Road Water Line Loop	\$658,200
Teague Town Water Line	\$404,200
Barrett Mountain Water Tank	\$660,000
<b>Zone 4 and 5A – U.S. 64 West and Prison Areas</b>	
N.C. 127 Water Line	\$328,800
Liledoun Road Water Line	\$94,400
Jenkins Lane / Moose Road Water Line	\$115,100
Church Road Water Line	\$428,800
Happy Plains / Carrigan Water Line Upgrade	\$225,000
<b>Zone 5B – Sugar Loaf</b>	
Walker Foundry Road / Old Wilkesboro Road Extension Water Line	\$80,500
Sugar Loaf Southside Water Main	\$516,800
<b>Northeast Water Service – Phase I</b>	
Northeast Water Service – Segment 1	\$1,499,100
Daniels Lumber Road / Jolly Cemetery Road Water Line Loop	\$740,350
Rocky Face Church Road Water Line	\$925,750
York Institute / Rocky Springs / Sulpher Springs Water Line Loop	\$933,300
Vashti Road Water Line	\$1,551,550
<b>Northeast Water Service – Phase 2</b>	

Black Oak Ridge Road / Pleasant Hill Church Road Water Lines	\$2,300,600
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Mr. Chapman discussed the Northeast Water Service Phase 1 and 2, which would extend lines into the Vashti community. He stated that to provide adequate pressure and flows to the area a water storage tank was proposed near Johnny Wike Road along with a booster pumping station near the intersection of Main Street and Three Forks Church Road. The final phase of the project would include the construction of another booster pump station and water storage tank to provide service along the ridge of Pleasant Hill Church Road.

After the presentation, several questions were asked by the Board. Chairman Hammer asked if pipe sizes had been identified throughout the entire county during the development of the Water Distribution Study. Mr. Chapman replied that staff had only investigated the size of lines that were pertinent to distributing water.

Chairman Hammer inquired as to what size line was located on Alspaugh Dam Road. Mr. Chapman replied that the line began as a 6-inch line and then became a 4-inch line. He pointed out that an 8-inch line would be installed along the length of the entire road during the Zone 2 project improvements.

Commissioner Bolick stated that several residents on Sam Hefner Road had very low water pressure. Mr. Chapman explained that area was served by a small pump station with a hydro pneumatic tank, which caused the low pressure. Commissioner Bolick asked if this area could be tied into the West Alexander Middle School system. Mr. Chapman explained that Sam Hefner Road was at a higher elevation than the water tank at West Alexander Middle School, meaning that hydraulics would not allow enough pressure for water to reach Sam Hefner Road from the tank. Rick French, County Manager, noted that the City of Hickory was investigating solutions for this problem.

The Board discussed funding these improvements. Commissioner Robertson discussed possible state and federal grants that could be applied for to fund the projects. He also discussed Farmer's Home Administration loans.

Commissioner Keever felt the Board needed to review the current water districts and discuss the possibility of combining them and establishing any new districts.

Rick French, County Manager, stated that the financing aspect of these improvements as well as funding sources could be discussed more in depth during a budget work session in May or June.

The Board thanked Mr. Chapman for the presentation and for the hard work put into the Water Distribution Study by McGill Associates.

**CLOSED SESSION – N.C.G.S. 143-318.11(a)(5) CONTRACTUAL**



Commissioner Yoder made a motion to enter into Closed Session at 7:45 PM to discuss contractual matters pursuant N.C.G.S. 143-318.11(a)(5). Commissioner Keever seconded the motion. The Board voted unanimously in favor of the motion.

## **ADJOURNMENT**

There being no further business, Commissioner Yoder made a motion to adjourn at 8:53 PM. Commissioner Bolick seconded the motion. The Board voted unanimously in favor of the motion.

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William L. Hammer, Chairman

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Jamie M. Starnes, Clerk to the Board