



# DEPARTMENT OF PUBLIC UTILITIES

## Capital Improvement Plan

### Fiscal Year 2016-2017

6/06/2016

#### **EXECUTIVE SUMMARY**

The capital improvement plan attached herewith is a working tool developed by the Utility staff to give guidance toward the County's water and sewer infrastructure development and capital needs program. It consists of an assessment of the current water and wastewater systems and projects these capital needs over a five-year period. This plan is offered to the Board to seek their guidance and input as they look toward Harnett County's future. This plan should be a helpful fiscal planning tool that allows us to forecast capital demands on revenues and borrowing power to help avoid overextending ourselves financially during the next five years and beyond. HCDPU recommends that the review and approval of this capital improvement plan be accomplished annually as part of the budget process. General approval of this document by resolution does not commit the Board to specific approval of any one project or expenditure, nor does it appropriate money for any project. This would still be accomplished through separate capital project ordinances. The approval by resolution from the Board simply approves the capital improvement plan as a plan for the forecast period.

#### **DESCRIPTION OF COUNTY**

**Demographics.** The County, formed in 1855, has a projected population of 126,666 as of 2014. The median household income for Harnett County is estimated to be \$44,417 as of 2014 and the poverty rate in 2014 is estimated to be 18.2%.



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**Land Area Configurations.** Harnett County is located in the south central portion of North Carolina. It lies partially in the Coastal Plain and partially in the Piedmont section. The eastern two-thirds of the County exhibit topographic features common to the Coastal Plain region of North Carolina. It is an area of level to gently rolling terrain with elevations ranging from 100 to 300 feet above sea level. The major underlying geological formation includes sedimentary rocks consisting mostly of unconsolidated sands and clays. Topographical features of the western part of the County resemble the Piedmont region of North Carolina. It is an area of steeper hills with elevations as high as 450 feet above sea level. The major underlying geological formation includes crystalline rocks, such as granite and slate.

**Description of Existing Facilities.** The Harnett County Department of Public Utilities provides water and/or wastewater services to approximately 90,000 Harnett County residents. Harnett County also provides public water to customers in Counties contiguous to ours. These Counties include Cumberland, Johnston, Moore, Lee, and Wake. The Harnett County Regional Water Treatment Plant supplies water to the Harnett County municipalities of Lillington, Angier, Erwin, and Coats. It supplies water to the Towns of Fuquay-Varina and Holly Springs in Wake County and also the Towns of Spring Lake and Linden in Cumberland County. It also jointly supplies water to Fort Bragg through a partnership with the Public Works Commission of Fayetteville. The Harnett County Regional Water Treatment Plant utilizes the Cape Fear River as the source for the system's drinking water and currently has a treatment capacity of twenty-four million gallons a day. Harnett County's water system is made up of nine County water and sewer districts. Each of these districts exists as a separate legal entity



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pursuant to Chapter 162A of the North Carolina General Statutes. The County maintains and operates the districts for a fee equal to the districts' debt service amount. This amount is paid from general revenues received from water and/or wastewater sales from the various districts. The County established a "Harnett County Public Utilities Fund" in 1998 that consolidated accounting for the operation of these districts. This allowed the department to budget revenues and expenditures in a consolidated manner rather than nine individual district budgets. The Harnett County Department of Public Utilities provides wastewater treatment to the Towns of Angier, Coats and Lillington in Harnett County. HCDPU also provides wastewater treatment to the Town of Fuquay-Varina in Wake County and Fort Bragg in Cumberland County. The Harnett County Department of Public Utilities was established in 1982 with approximately 600 water customers and 8 employees. We have grown in the thirty years since to approximately 38,000 water customers, 12,000 sewer customers and 100 employees. The Harnett County Public Utilities system consists of approximately 1900 miles of water mains, 350 miles of sewer collection mains and totals over 308 million dollars in assets. In addition to the 24 million gallon per day regional water plant mentioned above, other assets include 2 wastewater treatment plants with a combined treatment capacity of 20.6 million gallons per day, 20 elevated water storage tanks with 8.9 million gallons of capacity, 18.2 million gallons of ground storage capacity, a 60 million gallon reservoir, 24 water booster stations with pumping capacity of 133 million gallons per day and 98 sewer lift stations. Approximately 95% of County residents now have access to public water. As is apparent from the above history, this department has experienced tremendous growth and accomplishment through the valiant efforts and foresight of past and present Harnett County Commissioners and staff. Their dedication to a countywide water and strategically located sanitary sewer system is the reason for this department's success.



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### **WATER SYSTEM**

**Treatment Facility.** The County's existing 24 mgd (million gallons per day) facility is currently being upgraded to a capacity of 42 mgd. Construction is scheduled to be complete in early FY 2016-17 at an estimated cost of \$11,927,773. The project will add four new filters (the concrete structure is already in place), an upgraded sludge disposal system, new backwash/chemical storage and modify the raw water and reservoir low-lift pump stations. In conjunction with the construction of the Water Treatment Plant 42 MGD Upgrade project, the County entered into a water supply capacity agreement with Moore County in 2013 in which Moore purchased 3 million gallons of daily water capacity in the Harnett Regional Water Treatment Plant. Moore purchased the capacity for \$5,450,000, the majority of which will be paid during construction of the upgrade.

**Water Supply Plan.** The State of North Carolina requires that all water systems submit an approved water supply plan annually. This plan is currently being updated by the Utility Department staff. The purpose of this plan is to provide evidence to the State that the water system is providing adequate planning for the supply of water through a designated planning period. In addition to their approval, Harnett County will need to carefully assess the utilization of capacity from Jordan Lake. Securing these authorizations now is vital to the economic viability of Harnett County. Water supply planning is also continuing in the area of hydraulic modeling as the engineering firm of Hazen & Sawyer is engaged in providing an updated



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water hydraulic model of our distribution system. This will be critical importance in planning and directing future water resources to accommodate new growth.

**Water Conservation Measures.** Harnett County amended its Water Shortage & Conservation Ordinance in the spring of 2008. The ordinance was amended in response to the drought conditions in our area over the last several years. The ordinance now more clearly defines the stages of water conservation and what triggers their enactment. It also established a normal irrigation schedule and increased the department's enforcement authority during emergencies. Our water supply is a critical resource that must be protected at all costs.

**Water Distribution System.** A new 20 inch water transmission line was completed in FY 2015-16 which is serving the Fort Bragg Housing area of Linden Oaks and the Southwest area of Harnett County. This is called the Southwest NTA/Cameron Hills Transmission Project and the transmission line initiates from the newly constructed 5 million gallon ground storage tank built in association with the Fort Bragg Water Transmission Project that was completed in FY 2010-11. The cost of this project was approximately \$4,523,000 and was funded jointly by the U.S. Army and Harnett County. This completion should greatly enhance our ability to supply the entire Southwest area of the region and provide additional supply to Moore County. Another water distribution project under design which should begin construction in FY 2016-17 and is



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scheduled for completion in that same year is the West Central Transmission Project. This project consists of the construction of a 16 inch water transmission main from Lillington to Seminole via US Hwy 421. An accompanying water booster station will also be constructed as part of the project. This project is estimated to cost approximately \$5 million dollars and will be funded from HCDPU capital reserves.

**Regional Interconnects.** As you are aware, Harnett County's water system is interconnected to several area public water systems that we do not provide water to including: the City of Dunn, the Town of Benson, the City of Raleigh, the Town of Apex, the City of Fayetteville (PWC), the City of Durham, and finally the Town of Cary. These connections are of a vital importance in the event of emergency water shortage conditions. The ability to provide and receive additional water from these various sources makes all of these systems more dependent upon each other and truly interconnected in a regional manner. As our water system continues to grow, there will be additional interconnections with our various neighbors. These relationships will need to be continually nurtured to ensure an adequate water supply for everyone in our region in the future.



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### WASTEWATER SYSTEM

**Wastewater Treatment.** The County currently owns two active wastewater treatment plants, the North Harnett Regional Wastewater Treatment Plant and the South Harnett Regional Wastewater Plant. The South Harnett plant began operation in June 2009 has a capacity of 15 mgd. It serves all of the southern area of the County and Fort Bragg. The North Harnett Wastewater Treatment Plant is scheduled to be expanded from its current discharge capacity of 5.6 MGD to 7.5 MGD. This will be relatively inexpensive as far as wastewater treatment plant upgrades go as most of the infrastructure required for the upgrade is already present in the existing plant. The project is estimated to cost \$2,390,000 and should begin in FY 2017-18. Another treatment filter and sludge modifications will need to be constructed but the majority of the upgrade will be regulatory in nature. The South Central Wastewater Collection project was just completed in FY 2013-14. The total cost of this project was approximately \$21,149,388. It consisted of four phases of gravity sewer construction in the South Central area of the County. All of these four phased sewer collection projects were funded through the USDA Rural Development Agency. General obligation bonds of \$13,211,000 and a grant of \$4,732,481 make up the majority of the funding. Roughly one-half of the \$13,211,000 bond issuance consists of a one-time \$6,349,600 capacity payment to HCDPU from USDA Rural Development to pay for current and future capacity in the South Harnett Regional Wastewater Treatment Plant. This payment will help off-set the planned project cost as well as repay the department for funds already expended in the original construction of the plant in 2009.



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**Regional Wastewater Facilities.** Harnett County has commissioned four different engineers since 1968 to look at comprehensive approaches to the long-range planning of Harnett County's water and wastewater needs. The most recent of these is the Wastewater Master Plan for the Southwestern and South Central Districts of the County. This study was authored by Hazen and Sawyer and was completed in December of 2011. Hazen and Sawyer has also been commissioned to develop wastewater master plans for the Buies Creek/Coats and Erwin areas. All have agreed that a regional approach utilizing a consolidation of systems is the best plan practical for protection of public health and economic development. There will continue to be County development of services which will extend from existing facilities; and, due to the escalating cost of expansion and operating expenses, it is likely that other regions within the County will be attempting to regionalize systems within the next ten years. In addition to this, regulatory restraints will force regionalization to happen in order to eliminate as many discharges into our water basin as possible. Areas outside the County, which are tributary to our drainage basins and wastewater treatment facilities, (i.e. southern Wake County and northern Cumberland County as recent examples) also provide realistic opportunities for regionalization. These relationships should be nurtured to provide the greatest scale of economy in building additional wastewater collection lines to serve Harnett County citizens.





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### FINANCIAL PLANNING

**Revenue Projections.** Revenue projections for the next 5 years are difficult if not impossible to correctly predict. They are tied to a myriad of factors including residential and commercial growth in the County, local and regional economic conditions, and the ability of our Department to meet all future water and sewer needs throughout the County and region. Before we can attempt to predict future revenues, we need to look at current revenue trends for the last several fiscal years.

#### HCDPU Operating Revenues

| <u>Financial Period</u> | <u>Operating Revenues</u> |
|-------------------------|---------------------------|
| FY 05-06                | \$15,840,467              |
| FY 06-07                | \$21,841,558              |
| FY 07-08                | \$25,732,122              |
| FY 08-09                | \$26,969,184              |
| FY 09-10                | \$24,860,413              |
| FY 10-11                | \$28,042,836              |
| FY 11-12                | \$30,130,929              |
| FY 12-13                | \$30,732,953              |
| FY 13-14                | \$34,624,099              |
| FY 14-15                | \$32,162,037              |



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You can see from these figures that revenues increased by \$16,321,570 in the last nine fiscal years. This represents a 103% increase in operating revenues in that time span. The majority of this increase is due to the growth of water and wastewater infrastructure throughout the County. It is important to notice that for the first time in over 10 years, HCDPU revenue decreased slightly in FY 15. Residential water and sewer rates have been raised very little since the downturn in the economy in 2008-2009. The last such increase was 4 years ago and it was relatively minor in scope. Rates must be adjusted to cover the ever increasing cost of service to include debt repayment and meet capital reserve targets to cover emergencies and capital project funding. The overall financial strategy of the Department is to continue to maximize revenues consistent with an even pace of residential and commercial/industrial growth within the County. Expenditures will be kept in line consistent with adequately maintaining treatment and distribution systems while emphasizing regulatory compliance in all areas. HCDPU is at a historical crossroads in the sense that 95% of all County residents have access to water. Additional access to water has been the primary source of a growing revenue base in the past. However, since most areas within the County now have access to water, future revenue growth will be directly correlated to the Department's goal to provide access to sewer to densely populated unincorporated areas of the County and the Department's ever increasingly important role as a regional water and wastewater treatment provider to surrounding municipalities, counties and most importantly Fort Bragg.



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#### **RIVER BASIN STEWARDSHIP**

Harnett County is an active member of the Cape Fear River Assembly. This Body has organized to protect water quality and monitor the activity within the Basin, which could have a negative impact on our current and future drinking water supply. The Basin has now been organized into three sections, the Lower, the Middle, and the Upper Basin. Harnett County belongs to the Middle Basin. The Assembly is taking a proactive approach to the long-range interest of the basin through the establishment of a comprehensive monitoring program. The Assembly just received a major grant from the State of North Carolina to study the entire basin. In addition to this, each of the three subsections are now forming monitoring coalitions. Each water system will be asked to participate financially in this program as well as to contract out specific monitoring tests which will provide each system, the Assembly, and the State with vital data for activity impact and assessment. This information will play an important role in our ability to withdraw and discharge into the basin.

#### **Capital Project Budget Summary**

This capital project budget summary combines all the proposed capital projects discussed earlier in this report. It provides a snapshot of anticipated capital needs over the next five years. The expenditures section shows each projects total budget. The revenue section shows the expected funding sources for each year.



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#### EXPENDITURES

|                                 | Total Cost   | Total Cost  | Total Cost  | Total Cost  | Total Cost  | Totals       |
|---------------------------------|--------------|-------------|-------------|-------------|-------------|--------------|
| Project Name                    | FY 2016-17   | FY 2017-18  | FY 2018-19  | FY 2019-20  | FY 2020-21  |              |
| WTP 42 MGD Upgrade              | \$11,927,773 |             |             |             |             | \$11,927,773 |
| West Central Transmission       | \$4,983,435  |             |             |             |             | \$4,983,435  |
| NHWWTP Upgrade                  |              | \$2,390,000 |             |             |             | \$2,390,000  |
| Automated Meter Upgrade Phase 1 |              | \$2,750,000 |             |             |             | \$2,750,000  |
| BCC FM and PS Upgrade           |              |             | \$1,350,000 |             |             | \$1,350,000  |
| Automated Meter Upgrade Phase 2 |              |             | \$2,750,000 |             |             | \$2,750,000  |
| SW WW PS & FM                   |              |             |             | \$6,894,000 |             | \$6,894,000  |
| WHIP Transmission Project       |              |             |             |             | \$811,180   | \$811,180    |
| Southwest Regional GST          |              |             |             |             | \$3,004,180 | \$3,004,180  |
| <b>Totals</b>                   | \$16,911,208 | \$5,140,000 | \$4,100,000 | \$6,894,000 | \$3,815,360 | \$36,860,568 |

#### REVENUES

|                         | FY 2016-17   | FY 2017-18  | FY 2018-19  | FY 2019-20  | FY 2020-21  | Totals       |
|-------------------------|--------------|-------------|-------------|-------------|-------------|--------------|
| Grants from all sources |              |             |             |             |             | \$0          |
| Revenue Bonds           |              |             |             |             |             | \$0          |
| State Revolving Loans   |              | \$2,390,000 | \$1,350,000 | \$3,447,000 | \$3,004,180 | \$10,191,180 |
| Moore County            | \$5,450,000  |             |             |             |             | \$5,450,000  |
| Developer Participation |              |             |             | \$3,447,000 |             | \$3,447,000  |
| Reserves                | \$11,461,208 | \$2,750,000 | \$2,750,000 |             | \$811,180   | \$17,772,388 |
| <b>Totals</b>           | \$16,911,208 | \$5,140,000 | \$4,100,000 | \$6,894,000 | \$3,815,360 | \$36,860,568 |



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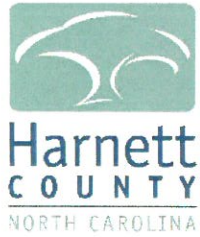
#### Debt Summary

|                        | FY 2016-17 | FY 2017-18  | FY 2018-19  | FY 2019-20  | FY 2020-21  | Totals       |
|------------------------|------------|-------------|-------------|-------------|-------------|--------------|
| <b>Actual New Debt</b> | \$0        | \$2,390,000 | \$1,350,000 | \$3,447,000 | \$3,004,180 | \$10,191,180 |

#### Planned Rate Increases

| <b>Current Rates/Water</b>      | FY 2016-17   | FY 2017-18 | FY 2018-19 | FY 2019-20 | FY 2020-21  |               |
|---------------------------------|--------------|------------|------------|------------|-------------|---------------|
| \$18.50/2,000 min               | no change    | no change  | no change  | no change  | \$20.00     |               |
| \$4.75/1,000 gal above min      | \$5.25/1,000 | no change  | no change  | no change  | \$5.50      |               |
| \$2.25 Bulk Rate                | no change    | no change  | \$2.40     | no change  | no change   |               |
| % increase                      | 4.5%         | no change  | 6.6%       | no change  | 6.5%        | <b>Totals</b> |
| Monthly \$ Increase in Avg Bill | \$1.50       | n/a        | n/a        | n/a        | \$2.25      |               |
| Revenue from increase           | \$1,200,000  | \$0        | \$420,000  | \$0        | \$1,480,000 | \$3,100,000   |

| <b>Current Rates/Sewer</b>      | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 | FY 2020-21 |               |
|---------------------------------|------------|------------|------------|------------|------------|---------------|
| \$15 Flat                       | no change  | no change  | no change  | no change  | \$16.00    |               |
| \$4.75/1,000 gals               | \$5.25     | no change  | no change  | no change  | \$5.50     |               |
| \$1.90 Bulk Rate                | no change  | no change  | no change  | \$2.10     | no change  |               |
| % increase                      | 6.5%       | no change  | no change  | 10.5%      | 5.5%       | <b>Totals</b> |
| Monthly \$ Increase in Avg Bill | \$2.50     | n/a        | n/a        | n/a        | \$2.25     |               |
| Revenue from increase           | \$300,000  | \$0        | \$0        | \$550,000  | \$300,000  | \$1,150,000   |

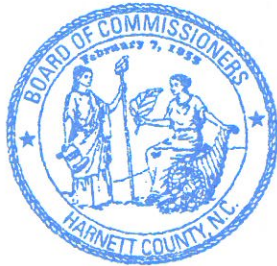


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Duly adopted this the 6<sup>th</sup> day of June 2016, upon motion made by Commissioner Springle, seconded by Commissioner Elmore, and adopted by the following vote:

Ayes: 5      Noes: 0      Absent: 0



Board of Commissioners of the County of Harnett

By: Jim Burgin

Jim Burgin, Chairman of the Board and of the governing body of all Water and Sewer Districts of Harnett County

ATTEST:

Margaret Regina Wheeler  
Margaret Wheeler, Clerk to the Board