

March 22, 2022

Adam Mitchell, Town Manager  
Town of Fuquay-Varina  
134 N. Main Street  
Fuquay-Varina, NC 27526

**Subject: Water and Wastewater System Development Fee Study**

Dear Mr. Mitchell,

WILLDAN FINANCIAL SERVICES (“Willdan”) is pleased to submit to the Town of Fuquay-Varina, North Carolina (the "Town") the Water and Wastewater System Development Fee Study report (the "Report") for your consideration. We have completed the analyses for the review and development of water and wastewater system development fees and have summarized the results herein.

	<b>GENERAL</b>
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System Development Fees (“SDF” or “SDFs”) and other comparable charges are often referred to by a number of different terms including impact fees, capacity fees, system expansion fees, availability fees, connection fees, capacity reservation charges, facility fees, capital connection charges or other such terminology. In general, an SDF is a one-time charge implemented to recover (in whole or part) the costs associated with capital investments made by a utility system to make service available to future users of the system. Such capital costs generally include the construction of facilities as well as engineering, surveys, land, financing, legal and administrative costs. It has become common practice for water and wastewater utility systems to implement SDF (or other similar charges) in order to establish a supplemental source of funding for future capital projects. This practice helps to mitigate the need for existing customers to pay for system expansions entirely through increased user rates.

	<b>CRITERIA FOR SYSTEM DEVELOPMENT FEES</b>
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The purpose of a SDF is to assign, to the extent practical, growth-related capital costs to those customers responsible for such additional costs. To the extent that new population growth imposes identifiable additional capital costs to municipal services, equity and prudent financial practice necessitate the assignment of such costs to those customers or system users responsible for the additional costs rather than the existing user base. Generally, this practice has been labeled as “growth paying for growth” without placing the full cost burden on existing users.

It is important to note that an SDF is different than an assessment or tax. A special assessment is predicated upon an estimated increment in value to the property assessed by virtue of the improvement being constructed in the vicinity of the property. Further, the assessment must be directly and reasonably related to the benefit of which the property receives. SDFs are not directly related to the value of the improvement to the property but rather to the usage of the facilities required by the property. Until the property is put to use (i.e., developed), there is no burden placed upon the servicing facilities and the land use may be entirely unrelated to the value of the assessment basis of the underlying land. With respect to a comparison to taxes, SDFs are distinguishable primarily in the direct relationship between the amount charged and the measurable quantity of public facilities required. In the case of taxation, there is no requirement that the payment be in proportion to the quantity of public services consumed, and funds received by a municipality from taxes can be expended for any legitimate public purpose.

## LEGAL CONSIDERATIONS

### *Court Proceedings - General*

Generally, courts throughout the United States have found that capacity-related fees associated with new customer connections to utility systems are legal as long as they meet a Rational Nexus Test. In accordance with common court rulings, the rational nexus test requires that certain conditions be met in order to have a valid capacity-related fee. Typically, the court decisions have found that such fees are valid if the following standards are met:

1. The required payment should primarily benefit those who must pay it because they receive a special benefit or service as a result of improvements made with the proceeds;
2. Proceeds from the required SDF payments are dedicated solely to the capital improvement projects (i.e. proceeds are not placed in a general fund to be spent on ongoing expenses and maintenance, which characterizes a tax, but are set aside in a restricted reserve fund);
3. The revenue generated by the required payment should not exceed the cost of capital improvements to the system; and
4. The required payments are imposed uniformly and equitably on all new customers based on their anticipated usage (i.e. a relationship between the fees paid and the benefits received).

In general, most courts have found that it is reasonable for utility systems to take steps to ensure that there are adequate funds for capital projects, and to set aside collected fees in a special account for that purpose. Additionally, new customers are treated alike in that all must pay a fee based on anticipated usage and/or potential demand. Finally, courts have reasoned that it is rational for a utility system to prepare to pay for future capital projects and, while imposing a capacity-related

fee may not be the only way to raise such funds, it is a reasonable and legitimate method of accruing funds.

### *Court Proceedings – North Carolina*

In 1990, a precedent was set in the State of North Carolina in a decision by the United States Court of Appeals, Fourth District for the case of Shell Island Investment v. Town of Wrightsville Beach North Carolina (900 F.2d 255), regarding the right of the Town of Wrightsville Beach to impose utility system impact fees to fund the expansion of the water and sewer facilities. The Court of Appeals upheld the decision of the United States District Court for the Eastern District of North Carolina that the Town of Wrightsville Beach had “authority to impose impact and tap fees under the Public Enterprise statute and that no specific enabling legislation is necessary.”

Pursuant to the ruling of the District Court and the Court of Appeals, it was concluded that “despite the absence of any express authorization in the Public Enterprise Statute for municipalities to establish or increase utility fees in order to offset future capital improvements to their sewer and water infrastructures, general authority to do so is implicit in relevant state law, limited only by the requirement that any discrimination among users be not based on arbitrary or unreasonable classifications.”

### *Court Proceedings – Town of Carthage Case*

On April 8, 2016, in the case of Quality Built Homes, Inc. v. Town of Carthage, (766 S.E. 2d 897) the North Carolina Court of Appeals held that the Town of Carthage possessed authority to charge “impact fees” for water and sewer services. However, On August 16, 2016, the North Carolina Supreme Court reversed the North Carolina Court of Appeals’ decision and held that the Town did not possess authority to charge impact fees for water and sewer services. Although there were many different factors influencing this decision, the result generated a significant amount of confusion and concern for governmental utility systems within the State.

### *House Bill 436*

The General Assembly of North Carolina recently enacted House Bill 436, which included a general statute under Section 1, Chapter 162A, Article 8 for the development of “System Development Fees” (herein referred to as “Chapter 162A”) that impacts all governmental entities in North Carolina who currently assess fees for the recovery of capital costs associated with new development and system growth. As defined in Chapter 162A, a system development fee is a charge or assessment for service imposed with respect to new development to fund costs of capital improvements necessitated by and attributable to such new development, to recoup costs of existing facilities which serve such new development, or a combination of those costs. Based on requirements of Chapter 162A, the calculation of the SDFs, must employ generally accepted accounting, engineering, and planning methodologies. Defined methodologies include the buy-in method, incremental or marginal cost method, and combined cost method. A brief description of each of these methods as defined in American Water Works Association Manual M1 is provided below.

- *Buy-in Method.* Based on the value of the existing system’s capacity. Under this method, new development “buys” a proportionate share of capacity at the cost (value) of the existing facilities.
- *Incremental/Marginal Cost Method.* Based on the value or cost to expand the existing system’s capacity. This method assigns to new development the incremental cost of future system expansion needed to serve new development.
- *Combined Cost Method.* Based on blended value of both the existing and expanded system capacity. This method uses a combination of the buy-in and incremental/marginal cost methods.

Chapter 162A allows a governmental unit to utilize any of the three methods described above depending on the availability of information from the governmental unit, i.e., a detailed listing of asset data (buy-in method) or a ten to twenty-year capital improvement plan (incremental method). The combined method includes both existing assets and future capital projects required to serve growth.

Chapter 162A states that an SDF shall be calculated based on a written analysis, which may constitute or be included in a capital plan, that:

1. Is prepared by a financial professional or a licensed professional engineer qualified by experience and training or education to employ generally accepted accounting, engineering, and planning methodologies to calculate system development fees for public water and sewer systems.
2. Documents in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
3. Employs generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost methods for each service, setting forth appropriate analysis as to the consideration and selection of a method appropriate to the circumstances and adapted as necessary to satisfy all requirements of this Article.
4. Documents and demonstrates the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and interim calculations underlying each identifiable component of the system development fee and the aggregate thereof.
5. Identifies all assumptions and limiting conditions affecting the analysis and demonstrates that they do not materially undermine the reliability of conclusions reached.
6. Calculates a final system development fee per service unit of new development and includes an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
7. Covers a planning horizon of not less than 5 years nor more than 20 years.
8. Is adopted by resolution or ordinance of the local governmental unit in accordance with G.S. 162A-209.
9. Uses the gallons per day per service unit that the local governmental unit applies to its water or sewer system engineering or planning purposes for water or sewer, as appropriate, in calculating the system development fee. (2017-138, s. 1; 2018-34, s. 1(a); 2021-76, s. 2.)

Further, Chapter 162A includes certain other minimum requirements as follows:

1. A system development fee shall not exceed that calculated based on the system development fee analysis.
2. Credits must be included no matter which methodology is used. A more detailed discussion on the applicable credits will be included in later sections of this Report.
3. A construction or contribution credit shall be given with respect to new development such that the governmental unit will credit the value of costs in excess of a development's proportionate share of connecting facilities required to be oversized for the use of others outside the development.

As such, this Report is intended to SDFs that meet the legal requirements set forth above to develop fees in accordance with Chapter 162A. The development of the proposed/calculated SDFs and applicable analysis assumptions are described throughout the remainder of the Report.

### **ADOPTION AND PERIODIC REVIEW OF SDF ANALYSIS**

Upon completion of the SDF analysis, Chapter 162A sets forth certain criteria regarding the adoption and periodic review of SDFs. These include the following:

1. For not less than 45 days prior to consideration for adoption of the SDF analysis, the governmental unit shall post the analysis on its website and solicit and furnish a means to submit written comments which shall be considered by the preparer for possible modifications or revisions to the analysis.
2. Following expiration of the 45 days posting period, the governing body shall conduct a public hearing prior to considering adopting the analysis with any modifications.
3. The governmental unit shall publish the SDFs in its annual budget, rate plan or ordinance. Further, the SDF analysis shall be updated at least every five years.

### **EXISTING SYSTEM DEVELOPMENT FEES**

The Town currently imposes SDFs to new customers requiring water and/or wastewater utility service. The current fees are \$2,000 and \$3,250 per residential dwelling unit for water and wastewater, respectively. For new, nonresidential/commercial customers, the fee is based on the size of the water meter. Based on discussions with Town staff, it is understood that the current fees and fee structure were developed and adopted in accordance with the Chapter 162A requirements. The existing SDFs are provided in **Table 1**.



**TABLE 1  
EXISTING SYSTEM DEVELOPMENT FEES**

Description	Water	Wastewater	Combined Fee
<b>Meter Size:</b>			
5/8 x 3/4 Inch	\$ 2,000	\$ 3,250	\$ 5,250
1.0 Inch	\$ 3,328	\$ 5,416	\$ 8,744
1.5 Inch	\$ 6,655	\$ 10,833	\$ 17,488
2.0 Inch	\$ 10,649	\$ 17,333	\$ 27,982
3.0 Inch	\$ 21,297	\$ 34,665	\$ 55,962
4.0 Inch	\$ 33,277	\$ 54,164	\$ 87,441
6.0 Inch	\$ 66,554	\$ 108,328	\$ 174,882

**EXISTING CONNECTION FEES**

The Town currently imposes connection fees to new customers connecting to the water and wastewater systems. However, it is important to note that such connection-related fees are different than the SDFs developed and proposed herein. The distinguishing characteristic is that the connection fees are established for the purpose of recovering the operating costs associated with performing the customer service act of physically making a new system connection (i.e. materials, labor, equipment, vehicles, etc.) SDFs, on the other hand, are established for the purpose of recovering the major capital costs incurred in making water and wastewater utility service available to the public. The SDFs calculated herein are intended to be in addition to the connection fees. As such, it is proposed that the existing connection fees continue to be imposed. It should be noted that, for the purpose of this Report, the existing connection fees are assumed to recover the costs associated with these items. A review of these fees in relation to actual costs incurred is beyond the scope of this Report.

**EXISTING & PROJECTED CAPITAL FACILITIES**

***Existing Facilities – Buy-In Method***

In considering the recovery of existing asset costs under the buy-in method, the general concept is that new customers “buy” a proportionate share of system capacity at the value of the existing facilities. It is important to note that while this methodology is labeled as *buy-in*, payment of an SDF does not transfer any ownership of the assets to the customer. Rather, such payment provides access to capacity at a status equal to that of existing customers of the system.



While there are different methods that can be used to establish a value to the existing facilities, a common approach is to value the existing assets at a replacement cost amount. According to the replacement cost method, the existing system components are valued at the estimated current cost of replacing the facilities. The analysis developed herein uses an approach referred to as Replacement Cost New Less Depreciation (RCNLD). Applying the RCNLD method, the original costs are escalated to current dollars using construction cost indices, and then the result is adjusted down for the accumulated depreciation, which is also adjusted by the construction cost indices. This approach results in a replacement cost valuation that reflects the remaining depreciable life of the facilities.

In performing the RCNLD analysis, the Town provided a detailed listing of the current water and wastewater system facilities (the “Asset Listing”). The Asset Listing contained the original cost, the date placed in service and the accumulated depreciation for each asset. The replacement cost of each asset is estimated by using construction cost indices information contained in the Handy-Whitman Index of Public Utility Construction Costs for the South Atlantic Region. The Handy-Whitman Index calculates the cost trends for different types of utility construction, including water systems. The published indices are used by regulatory bodies, operating entities, utility systems, service companies, valuation experts and insurance companies. The Handy-Whitman Index values are widely used to trend earlier valuations and original cost records to estimate replacement cost at prices prevailing at a certain date or to the present. While other construction cost indices are available, the Handy-Whitman Index is used in this analysis because it is specifically tailored to the utility industry.

After the replacement cost is calculated for each individual asset item, the adjusted accumulated depreciation is deducted for each asset item. The result is the RCNLD. The asset data and applicable recoverable cost allocations are provided in **Exhibit 1** at the end of this Report. The existing capital facilities and RCNLD calculations are summarized in **Table 2**.

<b>TABLE 2</b>				
<b>RCNLD OF EXISTING UTILITY ASSETS</b>				
<b>Description</b>	<b>Original Cost</b>	<b>Replacement Cost New</b>	<b>Accumulated Depreciation</b>	<b>RCNLD</b>
<b><u>Total Utility Assets:</u></b>				
Buildings	\$ 155,000	\$ 155,000	\$ 0	\$ 155,000
Equipment	1,400,713	1,250,783	(1,042,989)	207,794
Operating Plants	49,741,184	61,344,055	(13,960,681)	47,383,374
Other Improvements	106,495,434	162,280,463	(77,316,439)	84,964,024
Vehicles	1,380,127	1,380,129	(729,946)	650,183
Land	421,341	421,340	0	421,340
<b>Total</b>	<b>\$ 159,593,799</b>	<b>\$ 226,831,770</b>	<b>\$ (93,050,055)</b>	<b>\$ 133,781,715</b>



For the purpose of SDF analyses, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes any treatment plant facilities (water and/or wastewater) and accompanying supply and storage facilities (water only), as well as wastewater effluent disposal facilities. The transmission/collection category consists of major water mains, water pumping facilities, sewer lift stations and collection lines. Since the localized distribution and collection facilities are generally contributed by developers or funded from other sources (i.e., assessments, direct customer payments, etc.), these facilities are not included for recovery through the SDFs. Additionally, a cost limit or threshold has been set at \$100,000 as a condition of inclusion of the asset items in the SDF calculation. The cost limit assumes that any asset item that costs less than the limit amount is not a major facility that provides a system-wide benefit. A final adjustment was made to exclude certain asset items that were identified as projects that only restored existing capacity rather than provided system upgrades or additional system capacity. The existing recoverable water and wastewater capital asset cost allocations included in the analysis are summarized in **Table 3**.

Description	RCNLD Included for Recovery		
	Water	Wastewater	Total
<b><u>Total Recoverable Assets:</u></b>			
Buildings	\$ 0	\$ 0	\$ 0
Equipment	0	0	0
Operating Plants	0	43,171,324	43,171,324
Other Improvements	33,113,464	5,219,835	38,333,299
Vehicles	0	0	0
Land	0	0	0
<b>Total</b>	<b>\$ 33,113,464</b>	<b>\$ 48,391,159</b>	<b>\$ 81,504,623</b>
<b><u>Allocation of Recoverable Assets:</u></b>			
Treatment Facilities	\$ 0	\$ 43,171,324	\$ 43,171,324
Transmission Facilities	33,113,464	5,219,835	38,333,299
<b>Total</b>	<b>\$ 33,113,464</b>	<b>\$ 48,391,159</b>	<b>\$ 81,504,623</b>

***Capital Improvements Program – Incremental Cost Method***

In considering the recovery of future asset costs under the incremental cost method, the general concept is to assign to new development the incremental cost of future system expansion needed to serve the new development. When using this method, Chapter 162A requires a minimum 5-year capital improvements program (“CIP”) that identifies the costs associated with new capacity and the timing of the expenditures. It is also important to consider the planned funding sources for the projects identified in the CIP. For example, projects that are funded from grants or





developer contributions are excluded from the SDF calculation since these are costs that are not incurred by the utility.

The SDFs developed herein utilize the incremental cost method and therefore include future capital improvement projects and their applicable additions to system capacity. The Town has adopted a CIP that provides a listing of individual projects and anticipated construction costs for fiscal years 2022 through 2032 (i.e. an 11-year CIP). The CIP is provided in **Exhibit 2**. Similar to the rationale for excluding certain existing assets from recovery through SDFs, the CIP project costs included for capital recovery in the analysis consist of only those projects associated with system-wide upgrades or expansions. As such, projects related to general maintenance (i.e. renewal and replacement of existing facilities) or localized facilities that benefit only certain customers are excluded from recovery through the SDFs. The CIP and resulting identification of assumed growth-related projects (i.e. project costs recoverable from SDFs) are provided in **Exhibit 3**. The Exhibit also provides a summary allocation of the recoverable costs between the treatment and transmission components. The projected growth-related projects and capital costs included in the analysis are summarized in **Table 4**.

<b>TABLE 4</b>			
<b>SUMMARY OF THE CIP &amp; RECOVERABLE CAPITAL COSTS</b>			
Description	Total CIP	Excluded Capital	Recoverable Capital
<b><u>Water:</u></b>			
Treatment Facilities	\$ 52,587,250	\$ 0	\$ 52,587,250
Transmission Facilities	123,890,251	(7,500,150)	116,390,101
Other Facilities	0	0	0
Total	\$ 176,477,501	\$ (7,500,150)	\$ 168,977,351
<b><u>Wastewater:</u></b>			
Treatment Facilities	\$ 94,625,800	\$ 0	\$ 94,625,800
Transmission Facilities	39,149,736	(1,766,400)	37,383,336
Other Facilities	0	0	0
Total	\$ 133,775,536	\$ (1,766,400)	\$ 132,009,136
<b><u>Combined:</u></b>			
Treatment Facilities	\$ 147,213,050	\$ 0	\$ 147,213,050
Transmission Facilities	163,039,987	(9,266,550)	153,773,437
Other Facilities	0	0	0
Total	\$ 310,253,037	\$ (9,266,550)	\$ 300,986,487



**Total Facilities – Combined Method**

The analysis developed herein for calculation of the SDFs proposes the combined method. As the name implies, the combined method includes the cost/value of both the existing facilities currently providing service, as well as the planned facilities required to perpetuate or expand service. This method assumes that the utility has capacity within the existing system sufficient to serve near-term growth but will require additional capacity to serve future growth needs. Using this method, new customers pay an SDF that reflects the value of both existing and planned capacity. The combined system costs included for recovery are summarized in **Table 5**.

Description	Recoverable Facilities		
	Water	Wastewater	Total
<b>Existing Facilities:</b>			
Treatment Facilities	\$ 0	\$ 43,171,324	\$ 43,171,324
Transmission Facilities	33,113,464	5,219,835	38,333,299
Subtotal	\$ 33,113,464	\$ 48,391,159	\$ 81,504,623
<b>Capital Improvement Program:</b>			
Treatment Facilities	\$ 52,587,250	\$ 94,625,800	\$ 147,213,050
Transmission Facilities	116,390,101	37,383,336	153,773,437
Subtotal	\$ 168,977,351	\$ 132,009,136	\$ 300,986,487
<b>Combined Recoverable Costs:</b>			
Treatment Facilities	\$ 52,587,250	\$ 137,797,124	\$ 190,384,374
Transmission Facilities	149,503,565	42,603,171	192,106,736
Total	\$ 202,090,815	\$ 180,400,295	\$ 382,491,110

	<b>SDF CALCULATION CREDITS</b>
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It is common practice for utilities to fund major capital improvements and expansion projects with debt (i.e. bond issues). Generally, debt service payments associated with bond issues are recovered through the monthly user rates and charges applied to all system customers, as well as from other available revenue sources (including SDFs). In order to reduce the potential for new customers to pay twice for capital facilities (i.e. paying an SDF for facilities that may have been debt funded, and then paying for debt service in their monthly user rates), the SDF analysis developed herein includes a debt service credit to the existing facilities (buy-in method). The credit on the existing facilities is equal to the outstanding principal remaining on all utility related debt. The debt service credit amount for the existing facilities is allocated between water and wastewater based on



information provided by staff related to the capital projects that were funded from proceeds of each individual debt instrument.

In addition to the credit on the existing facilities, the analysis developed herein also applies a credit to the planned future facilities provided in the CIP (incremental cost method). The credit for the future facilities is equal to 25% of the recoverable CIP, which meets the requirements of Chapter 162A. A summary of the combined recoverable capital facilities as adjusted for the applicable credits is provided in **Table 6**.

Description	Net Recoverable Facilities		
	Water	Wastewater	Total
<b>Combined Recoverable Costs:</b>			
Treatment Facilities	\$ 52,587,250	\$ 137,797,124	\$ 190,384,374
Transmission Facilities	149,503,565	42,603,171	192,106,736
Subtotal	\$ 202,090,815	\$ 180,400,295	\$ 382,491,110
<b>Less Combined Credits:</b>			
Treatment Facilities	\$ (13,146,813)	\$ (53,341,891)	\$ (66,488,704)
Transmission Facilities	(31,183,824)	(12,935,094)	(44,118,918)
Subtotal	\$ (44,330,637)	\$ (66,276,985)	\$ (110,607,622)
<b>Net Capital Costs:</b>			
Treatment Facilities	\$ 39,440,438	\$ 84,455,233	\$ 123,895,671
Transmission Facilities	118,319,741	29,668,077	147,987,818
Net Recoverable Costs	\$ 157,760,178	\$ 114,123,310	\$ 271,883,488

SYSTEM CAPACITIES

As previously addressed, the purpose of the SDF is to have new customers pay for their proportionate share of system capacity. This concept implies that the fee is based on a unit cost of capacity. In order to apply a fee based on the unit cost of capacity, it is necessary to identify the capacities of the facilities for which cost recovery is assigned. As such, the methodology applied herein relies upon identifying the water and wastewater treatment capacities as well as estimating the capacities of the major transmission facilities. Due to the regulatory and design requirements for water and wastewater treatment plants, the capacity of treatment facilities is generally well documented. However, the volumetric capacity of the major transmission facilities is often more difficult to determine. For this reason, in performing an analysis of this nature, the assumed capacity of the transmission facilities is commonly based on a factor of the associated treatment capacities. In developing the estimated amount of capacity for each respective category, the

analysis relies on information provided by the Town, as well as assumptions based on common industry standards.

### ***Water Treatment***

The Town does not currently own any water treatment facilities. Rather, it is a wholesale water purchaser from Harnett County, Johnston County and the City of Raleigh. The current combined water treatment capacity available to the Town is 5.25 MGD (million gallons per day). Additionally, as part of the CIP, the Town will add 2.00 MGD more from Harnett County and participate in a capacity expansion project with the City of Sanford that will provide the Town an additional 6.00 MGD. As such, upon completion of the applicable projects, the Town will have 13.25 MGD of combined water capacity.

While the flow capacity is provided in terms of the maximum daily flow amount, the development and application of SDFs are based on average flow requirements. As such, it is necessary to convert the maximum daily flow (MDF) capacity to an estimated average daily flow (ADF) capacity. Pursuant to general industry standards and discussions with staff, it is assumed herein that the rated MDF is approximately 1.5 times the available capacity on an ADF basis. Applying this factor to the rated capacity for the water supply sources results in an average daily flow capacity of 8.83 MGD. An additional adjustment is made based for the assumed amount of unaccounted-for water (i.e. system flushing and backwashing, testing, line loss, etc.). The unaccounted-for water reduces the amount of capacity available to existing and future customers. The analysis performed herein assumes an average loss factor of 10.0% to adjust for the unaccounted-for water flows. This final adjustment results in an assumed average daily treatment plant capacity of 7.95 MGD (see **Exhibit 4**).

### ***Water Transmission***

Unlike the treatment facilities, the capacity information for major transmission facilities is very difficult to determine and quantify. Such transmission capacity estimates are typically not even developed in engineering documents such as master plans or Consulting Engineer's Reports. Based on discussions with staff, it is assumed that the existing transmission facilities are capable of providing water flow at least equal to 2.00 times the existing treatment capacity, resulting in 10.50 MGD (5.25 x 2.0). In addition, the CIP includes a new conveyance line as part of the Sanford project that will provide an additional 10.00 MGD of transmission capacity, resulting in a combined transmission capacity of 20.50 MGD. Similar to the adjustment for treatment, a 10.0% loss adjustment is made to the transmission facilities resulting in a combined adjusted capacity of 18.45 MGD (see **Exhibit 4**).

### ***Wastewater Treatment***

Due to the regulatory and design requirements for wastewater treatment plants, the capacity of treatment facilities is generally well documented. The wastewater treatment facilities are designed and permitted in accordance with published hydraulic standards adopted by Section 15A NCAC 02T .0114 of the North Carolina Administrative Code regulations. The Town owns and operates the Terrible Creek wastewater treatment plant with a permitted capacity of 3.00 MGD and the



Brighton Forest wastewater treatment plant with a permitted capacity of 0.117 MGD. In addition, the Town has 2.60 MGD of capacity available in the North Harnett Regional wastewater treatment plant. As part of the CIP, the Terrible Creek plant will be expanded by 3.00 MGD and the North Harnett Regional capacity will increase by 3.40 MGD. As such, upon completion of the applicable projects, the Town will have 12.117 MGD of combined wastewater treatment capacity.

Unlike the application for water, due to the nature of the operations, the wastewater treatment capacity is permitted at average daily flow levels. As such, it is not necessary to convert the capacity. However, as with the unaccounted-for flows in the water system, the wastewater system is impacted by inflow and infiltration (I&I) into the wastewater collection facilities. In essence, the impact of I&I reduces the level of capacity that is available for use by existing and future system customers. Pursuant to discussions with staff, the combined wastewater treatment capacity is adjusted for an assumed I&I impact of 25.0%, resulting in an adjusted average daily treatment capacity of 9.088 MGD (see **Exhibit 5**).

### ***Wastewater Transmission***

Similar to the discussion provided above for the determination of water transmission capacity, it is difficult to identify the capacity of the wastewater transmission facilities. Although an exact capacity number is difficult to determine, for the purpose of this analysis it is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least equal to 2.00 times the permitted plant flow, or 24.234 MGD (12.117 x 2.0). Similar to the adjustment for treatment, a 25.0% I&I adjustment is made the transmission facilities resulting in a combined adjusted capacity of 18.176 MGD (see **Exhibit 5**).

## **DEVELOPMENT OF SDFs**

The methodology utilized herein for developing the water and wastewater SDFs relies upon the cost of major system facilities as well as the existing and expanded system capacities to calculate an estimated cost per unit (gallon) of capacity. Based on this methodology, it is estimated that the water facility costs are \$11.37 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs are \$10.92 per gallon of wastewater capacity.

In developing the SDFs, the unit costs per gallon of capacity are applied to a common Level of Service (LOS) standard to establish the applicable fee per Equivalent Residential Unit (ERU). For purposes of applying the LOS, an ERU is representative of a single-family residential dwelling unit receiving water service from a 5/8 x 3/4-inch metered connection and discharging normal domestic-strength wastewater through a comparably sized sewer connection. Based on common industry standards for the development and application of capacity-related charges, a typical residential water connection is generally assumed to require average service availability in the range of 350 to 450 gallons per day (gpd) of system capacity. The State of North Carolina (the "State") has established flow standards for purposes of planning and engineering design. In accordance with daily water flow capacity design standards defined in the North Carolina



Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gpd.

The Administrative Codes do not indicate whether the 400 gpd amount is maximum day or average day. As such, to be conservative, the analysis developed herein assumes it is a maximum day amount. Similar to the adjustment previously addressed for water treatment capacity, a 1.50 max/avg factor adjustment is applied, resulting in an adjusted LOS of 267 gpd per ERU.

Similar to the water system, the SDFs for wastewater are to be applied on an ERU basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State and defined by the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. However, the Town recently received a reduction letter from the State allowing it to use 75 gpd per bedroom for planning and design purposes for the wastewater system. Based on discussions with staff, the analysis developed herein assumes that the standard for the Town is 4 bedrooms. The resulting standard LOS is 300 gpd of wastewater system capacity per ERU.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity results in the proposed/calculated water and wastewater SDFs of \$3,030 and \$3,260, respectively, for a typical single-family residential connection (i.e. per ERU). The development of the water and wastewater SDFs is detailed in **Exhibits 4 and 5**, respectively. A summary of the existing and proposed/calculated SDFs for a new residential connection is provided in **Table 7**.

Description	System Development Fee Per ERU		
	Existing	Calculated	Difference
<b>System Development Fees:</b>			
Water	\$ 2,000	\$ 3,030	\$ 1,030
Wastewater	3,250	3,260	10
<b>Total</b>	\$ 5,250	\$ 6,290	\$ 1,040

APPLICATION OF SDFs

For developing SDFs, the average daily flow number is established as one ERU. An ERU provides a standard unit of measure such that fees for connections with larger than average demand requirements can be calculated on an equivalency basis. As previously addressed, one ERU is equal to the average flow capacity for a single-family dwelling unit with a standard 5/8 x 3/4-inch



water meter. New connections with larger water meters have the potential of placing more demand on the system (i.e. require more capacity) and are assessed ERU factors accordingly. The proposed methodology for incrementing the SDFs for larger connection sizes is based on standardized demand criteria established by the American Water Works Association (AWWA) pursuant to the size of the water meter. Utilizing the AWWA demand criteria, the applicable ERU factors for larger water meters are based on the incremental increase in potential demand as compared to the standard meter size. Since wastewater flow is generally a direct function of water flow, applying the water and wastewater SDFs based upon the size of the water meter is equitable, administratively efficient and consistent with common industry standards. The proposed/calculated water and wastewater SDFs for the various water meter sizes are developed in **Exhibit 6** and summarized in **Table 8**.

Description	Meter Factor <sup>(1)</sup>	Proposed Fees By Meter Size		
		Water	Wastewater	Total
<b>Meter Size:</b>				
5/8 x 3/4 Inch	1.00	\$ 3,030	\$ 3,260	\$ 6,290
1.0 Inch	2.50	\$ 7,575	\$ 8,150	\$ 15,725
1.5 Inch	5.00	\$ 15,150	\$ 16,300	\$ 31,450
2.0 Inch	8.00	\$ 24,240	\$ 26,080	\$ 50,320
3.0 Inch	16.00	\$ 48,480	\$ 52,160	\$ 100,640
4.0 Inch	25.00	\$ 75,750	\$ 81,500	\$ 157,250
6.0 Inch	50.00	\$ 151,500	\$ 163,000	\$ 314,500

(1) Meter-size equivalency factors established by the AWWA and identified in AWWA Standards C700, M1 and M22. Such factors are commonly applied consistently for both water and wastewater fee calculations.

In situations where the application of the meter-based fees will result in the collection of fees significantly different than the potential demand requirement of a new customer requesting service, a special calculation methodology may be applied at the discretion of the Town’s Utility Department. For such situations, it is important for the utility to have the flexibility to utilize an ERU methodology for individual accounts based on specific capacity requirements. This alternative methodology is to apply the calculated unit costs per gallon of capacity as provided in **Exhibit 6** times the capacity requirement for the particular customer. This type of situation will be uncommon and will typically only involve larger commercial and industrial connections. It is anticipated that, in such situations, the Town will require certified engineering documentation defining the capacity utilization needs for the new customer.

As another example of utilizing a flexible methodology, the Town sometimes has new master-metered multi-family connections whereby multiple residential dwelling units receive service through a single, common connection. Such connections generally consist of apartment complexes, patio homes, condominiums, duplexes, triplexes, townhouses, etc. Since the usage

characteristics for individual dwelling units within multi-family structures are generally consistent with those of individually metered single-family households, it is common industry practice for such connections to be represented on a per-unit basis regardless of the size of the master-metered connection. As such, consistent with the Town's existing policies, the SDFs for new multi-family connections will be applied based on the number of permitted dwelling units at a factor of 1.00 ERUs per dwelling unit. The resulting number of equivalent units is then multiplied times the SDF per ERU to calculate the total fees to be collected.

## COMPARISON WITH NEIGHBORING UTILITIES

To provide the Town with additional insight regarding the development and application of the SDFs, a comparison is often included to show the level of such fees as imposed by several other utility systems in North Carolina. The comparison shows the SDFs for a new residential water and wastewater connection that receives service (from the subject utility or other local provider) through a standard residential-sized water meter (representative of 1 ERU) calculated under the existing and proposed fees of the Town, and those of the other utility systems. The fees utilized for the other utility systems are based on fee schedules in effect as of January 2022 and are exclusive of taxes, surcharges for outside City service, or other customer related service fees applied to new system connections (i.e. tap fees, application fees, inspection fees, etc.). The comparison with other utility systems is summarized in **Exhibit 6**.

It should be noted that, when making comparisons for new wastewater service fees, several factors influence the level of the fees and charges. Such factors may include the following:

1. The level of treatment and effluent disposal methods required for wastewater service;
2. Capacity utilization, age of facilities, anticipated capital improvements program and capital financing methods (i.e. funding from grants, bond indebtedness, developer contributions, capital reserves, etc.); and
3. The extent of capital recovery from the applied fees (i.e. all or a portion of the capital costs).

For utilities included in the comparison, no analysis has been performed with consideration to the aforementioned factors as they relate to the wastewater capacity fees proposed herein.



## GENERAL ASSUMPTIONS AND CONSIDERATIONS

In the preparation of this Report, certain information has been used and relied upon that was provided to Willdan by other entities. Such information includes, but is not limited to, audited financial statements, annual operating budgets, capital information, asset listings, cost data, system capacities, fee schedules for other utilities, and other information provided during the study. While the sources and applicable information are believed to be reliable, no independent verification of the information has been made and no assurances are offered with respect to the accuracy of the applicable information. To the extent that information used to develop the assumptions applied in the Report differs from actual results, the analyses developed herein could be impacted accordingly.

## CONCLUSIONS

This study has found a need for the Town to adopt a mechanism for recovering the capital costs associated with system growth and expansion. Based on the reviews, analyses and assumptions provided herein, it is concluded that:

1. The application of capital recovery fees for new system connections is becoming more common for public utility systems in North Carolina. As growth continues to impact the region, and as state and federal funding programs are reduced or eliminated, it is prudent management practice to adopt mechanisms to recover capital costs incurred by the utility for making service available to future customers.
2. Through Chapter 162A, the North Carolina legislature has found that it is prudent to require new customers to bear a portion of the costs of current capacity and future expansions their presence will demand. It should be noted that Willdan is not attempting to issue a legal opinion regarding Chapter 162A or any court proceedings leading to the enactment of Chapter 162A. The summary discussion of the bill and any prior court rulings is intended for informational purposes only. Any questions regarding the legal consideration provided herein should be directed to the Town's legal counsel.
3. The SDFs developed herein are equitable and provide for reasonable recovery of the capital costs associated with providing service to new customers.
4. The SDFs developed herein are calculated in accordance with the requirements of Chapter 162A and utilize methodologies that are consistent with industry standards.
5. The calculated SDFs are based on a listing of existing system assets as provided by the Town, as well as the multi-year capital improvement plan adopted by the Town.

6. The water and wastewater LOS standards proposed herein for establishing an ERU basis are based on flow standards approved by the State of North Carolina and utilized by the Town for system planning and design purposes, and are consistent with common industry standards.
7. The Town currently imposes connection fees and other related operational charges for new customer connections. Since these other charges are intended to recover operating costs for providing incident-specific services, the SDFs developed herein will have no effect on the level or application methodology for these other connection-related fees.
8. The Town's monthly user rates and charges for water and wastewater utility service include a surcharge for customers located outside the incorporated limits of the Town. However, no such surcharge is proposed for purposes of applying the SDFs. The rationale for this proposal is that, while operating costs may increase for providing service outside of the Town limits, the capital costs per gallon of capacity for constructing major system facilities do not typically differ based on the location of the customer.

	<b>RECOMMENDATIONS</b>
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Based on the reviews, analyses and assumptions discussed herein, as well as the resulting conclusions provided above, it is respectfully recommended that the Town:

1. Adopt the calculated SDFs and application methodology as developed in this Report, or other such SDF amounts as determined appropriate by the Town but not to exceed the fee amounts calculated herein;
2. Enact the new SDFs to become effective on July 1, 2022 or other such date as determined appropriate by the Town Council; and
3. Readdress the SDF study within the next 5 years, or at such times as future capital budgets are developed and additional capital costs are incurred that may result in material adjustments to the SDF as adopted.

We appreciate the opportunity to be of service to the Town in this matter. In addition, we would like to thank you and the other members of the Town staff for the valuable assistance and cooperation provided during the preparation of the Report. We look forward to working with you on future projects and continuing a successful professional relationship.

Respectfully Yours,

WILLDAN FINANCIAL SERVICES.



Daryll B. Parker  
Principal Consultant

# EXHIBITS 1 - 7

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## SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY



**WATER & WASTEWATER SDF STUDY FOR THE  
TOWN OF FUQUAY-VARINA, NORTH CAROLINA**

Prepared by Willdan Financial Services



EXHIBIT 1  
SYSTEM DEVELOPMENT FEE ANALYSIS  
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFs  
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
<b>UTILITY ASSETS</b>					
<b>Total Assets by Category:</b>					
1	W/S - Buildings	\$ 155,000	\$ 155,000	\$ 0	\$ 155,000
2	W/S - Equipment	1,400,713	1,250,783	(1,042,989)	207,794
3	W/S - Operating Plants	49,741,184	61,344,055	(13,960,681)	47,383,374
4	W/S - Other Improvements	106,495,434	162,280,463	(77,316,439)	84,964,024
5	W/S - Vehicles	1,380,127	1,380,129	(729,946)	650,183
6	W/S - Land	421,341	421,340	0	421,340
7	Total	<u>\$ 159,593,799</u>	<u>\$ 226,831,770</u>	<u>\$ (93,050,055)</u>	<u>\$ 133,781,715</u>
<b>Adjusted For Assumed Cost Limit (\$):</b>					
8	W/S - Buildings	\$ 155,000	\$ 155,000	\$ 0	\$ 155,000
9	W/S - Equipment	384,304	384,304	(384,304)	0
10	W/S - Operating Plants	44,583,570	55,060,675	(11,889,351)	43,171,324
11	W/S - Other Improvements	41,780,305	72,891,019	(34,557,720)	38,333,299
12	W/S - Vehicles	782,577	782,577	(292,965)	489,612
13	W/S - Land	120,000	120,000	0	120,000
14	Total	<u>\$ 87,805,756</u>	<u>\$ 129,393,575</u>	<u>\$ (47,124,340)</u>	<u>\$ 82,269,235</u>
<b>Recoverable Allocation - Water (%):</b>					
15	W/S - Buildings				<b>0%</b>
16	W/S - Equipment				<b>0%</b>
17	W/S - Operating Plants				<b>0%</b>
18	W/S - Other Improvements				<b>86%</b>
19	W/S - Vehicles				<b>0%</b>
20	W/S - Land				<b>0%</b>
<b>Recoverable Allocation - Wastewater (%):</b>					
21	W/S - Buildings				<b>0%</b>
22	W/S - Equipment				<b>0%</b>
23	W/S - Operating Plants				<b>100%</b>
24	W/S - Other Improvements				<b>14%</b>
25	W/S - Vehicles				<b>0%</b>
26	W/S - Land				<b>0%</b>

EXHIBIT 1  
SYSTEM DEVELOPMENT FEE ANALYSIS  
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFs  
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
<b>System Allocation - Water (\$):</b>					
27	W/S - Buildings			\$	0
28	W/S - Equipment				0
29	W/S - Operating Plants				0
30	W/S - Other Improvements				33,113,464
31	W/S - Vehicles				0
32	W/S - Land				0
33	<b>Total</b>			\$	<u>33,113,464</u>
<b>System Allocation - Wastewater (\$):</b>					
34	W/S - Buildings			\$	0
35	W/S - Equipment				0
36	W/S - Operating Plants				43,171,324
37	W/S - Other Improvements				5,219,835
38	W/S - Vehicles				0
39	W/S - Land				0
40	<b>Total</b>			\$	<u>48,391,159</u>
41	<b>Grand Total Recoverable Assets</b>				<u><u>\$ 81,504,623</u></u>
<b>COMPONENT ALLOCATION</b>					
<b>Total Recoverable Water Facilities:</b>					
42	Treatment Facilities			\$	0
43	Transmission Facilities				33,113,464
44	<b>Subtotal</b>			\$	<u>33,113,464</u>
<b>Total Recoverable Wastewater Facilities:</b>					
45	Treatment Facilities			\$	43,171,324
46	Transmission Facilities				5,219,835
47	<b>Subtotal</b>			\$	<u>48,391,159</u>
<b>Combined Recoverable Facilities:</b>					
48	Treatment Facilities			\$	43,171,324
49	Transmission Facilities				38,333,299
50	<b>Total</b>			\$	<u>81,504,623</u>

EXHIBIT 1  
SYSTEM DEVELOPMENT FEE ANALYSIS  
EXISTING CAPITAL COSTS RECOVERABLE FROM SDFs  
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
<b>COMPARISON TO TOTAL</b>					
51	<b>Total Utility Assets</b>				\$ 133,781,715
52	<b>Combined Recoverable Assets</b>				\$ 81,504,623
	<b>Difference (Assets Excluded From Recovery):</b>				
53	Excluded From Recovery (\$)				\$ 52,277,092
54	Excluded From Recovery (%)				39.08%
<b>DEBT SERVICE CREDIT</b>					
55	<b>Outstanding Debt Principal</b>				\$ 35,361,000
	<b>Allocation Percentage:</b>				
56	Water				5.90%
57	Wastewater				94.10%
	<b>Allocated Debt Service Credit:</b>				
58	Water				\$ 2,086,299
59	Wastewater				33,274,701
60	Total				<u>\$ 35,361,000</u>
	<b>Component Allocation - Water:</b>				
61	Treatment Facilities				\$ 0
62	Transmission Facilities				2,086,299
63	Total				<u>\$ 2,086,299</u>
	<b>Component Allocation - Wastewater:</b>				
64	Treatment Facilities				\$ 29,685,441
65	Transmission Facilities				3,589,260
66	Total				<u>\$ 33,274,701</u>

**EXHIBIT 2**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CURRENT CAPITAL IMPROVEMENT PROGRAM**  
**WATER & WASTEWATER SYSTEMS**

Line	Description	Total	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
<b>WATER PROJECTS</b>													
1	Sanford Water Design (Plant Expansion)	\$ 4,152,000	\$3,075,000	\$ 0	\$ 1,077,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2	Raleigh Water Supply Agreement (BSP Upgrade + New 12" Line)	2,050,000	2,050,000	0	0	0	0	0	0	0	0	0	0
3	Water line Replacements (Fund 60)	6,911,500	1,025,000	525,500	538,500	552,000	566,000	580,000	594,500	609,500	624,500	640,000	656,000
4	AMI Phase 3 (Fund 60)	824,815	257,275	567,540	0	0	0	0	0	0	0	0	0
5	Water Line Oversizing (Fund 60)	588,650	0	52,550	53,850	55,200	56,600	58,000	59,450	60,950	62,450	64,000	65,600
6	Valve Replacement Program	588,650	0	52,550	53,850	55,200	56,600	58,000	59,450	60,950	62,450	64,000	65,600
7	Purchase Harnett County Water District	5,499,750	0	0	807,750	4,692,000	0	0	0	0	0	0	0
8	Johnson Pond Rd Loop at Main St. and 401	685,252	0	685,252	0	0	0	0	0	0	0	0	0
9	Donny Brook Rd - Lake Wheeler to 401	817,678	0	817,678	0	0	0	0	0	0	0	0	0
10	SW Judd Parkway Loop- Academy St. to Infinite Storage	679,997	0	679,997	0	0	0	0	0	0	0	0	0
11	Burt Road from Fleming Road to Starchase lane	805,478	0	0	0	805,478	0	0	0	0	0	0	0
12	Whitted Road Loop	1,380,714	0	0	1,380,714	0	0	0	0	0	0	0	0
13	Holland Rd.- Judd Parkway to PSC to 55	2,571,904	0	0	0	0	2,571,904	0	0	0	0	0	0
14	Kennebec from Willow Spring HS to Tram Rd.	2,188,974	0	2,188,974	0	0	0	0	0	0	0	0	0
15	Dwight Rowland - Kennebec to NC Hwy 42	595,432	0	0	0	0	595,432	0	0	0	0	0	0
16	Wagstaff Rd - Howard to Wetstone Dr.	498,651	0	0	498,651	0	0	0	0	0	0	0	0
17	Johnson Pond Rd Loop - Brighton Forest to Spicewood Dr.	2,582,160	0	0	0	0	0	2,582,160	0	0	0	0	0
18	Clayton Rd. Hwy 55 to Maude Stewart	1,568,112	0	0	1,568,112	0	0	0	0	0	0	0	0
19	NC55 - Abundant Self Storage to Hidden Valley	2,167,152	0	0	0	2,167,152	0	0	0	0	0	0	0
20	Judd Parkway Loop (South)	433,872	0	0	0	433,872	0	0	0	0	0	0	0
21	Judd Parkway Loop (North)	1,763,088	0	0	0	1,763,088	0	0	0	0	0	0	0
22	Judd Parkway Loop (North East)	1,445,136	0	0	0	1,445,136	0	0	0	0	0	0	0
23	Wade Nash Road Extension	1,372,651	0	0	0	0	0	0	0	0	1,372,651	0	0
24	Old Powell Road from Wilbon to Southern Wake Academy (connecting gr	1,561,028	0	0	0	0	1,561,028	0	0	0	0	0	0
25	1.5 mgd tank - location TBD (proximity to PSC)	1,528,200	0	0	0	0	1,528,200	0	0	0	0	0	0
26	Piney Grove Wilbon - Fleming Rd to Phelps West Rd	901,552	0	0	0	0	0	901,552	0	0	0	0	0
27	Kennebec from Maude Stewart to Walter Myatt	451,704	0	0	0	0	0	451,704	0	0	0	0	0
28	Ten Ten Road - Lake Wheeler to Johnson Pond	975,560	0	0	0	0	0	975,560	0	0	0	0	0
29	Buck Roland from Walter Myatt to Kennebec Road	574,896	0	0	0	0	0	574,896	0	0	0	0	0
30	Johnson Pond Loop - Ten Ten Rd to Optimist Farm	1,013,840	0	0	0	0	0	1,013,840	0	0	0	0	0
31	Panther Lake from NC42 to John Adams	2,222,954	0	0	0	0	0	0	2,222,954	0	0	0	0
32	Old Stage Road from Mt Pleasant to John Adams	1,115,282	0	0	0	0	0	0	1,115,282	0	0	0	0
33	Eddie Howard from Walter Myatt to Panther Lake	908,158	0	0	0	0	0	0	908,158	0	0	0	0
34	Bud Lipscomb from Kennebec to Old Stage	2,287,088	0	0	0	0	0	0	0	2,287,088	0	0	0
35	Walter Myatt from NC42 to Kennebec Road	2,570,383	0	0	0	0	0	0	0	2,570,383	0	0	0
36	Mt. Pleasant Church Rd from NC42 to Old Stage Rd	2,727,816	0	0	0	0	0	0	0	0	2,727,816	0	0
37	Angier Road Loop	1,272,731	0	0	0	0	0	0	0	0	1,272,731	0	0
38	Bill Love Road from Mt Pleasant Road to Johnston County Line	1,306,496	0	0	0	0	0	0	0	0	0	1,306,496	0
39	Old Stage Road from Mt Pleasant to Johnston County Line	1,882,240	0	0	0	0	0	0	0	0	0	1,882,240	0
40	James Austin Road from Bud Lipscomb to Old Stage	3,064,176	0	0	0	0	0	0	0	0	0	0	3,064,176
41	Sanford Project - Plant Expansion (Construction)	44,857,050	0	0	44,857,050	0	0	0	0	0	0	0	0
42	Sanford Project - Conveyance (Design + Construction)	63,084,731	0	11,912,691	51,172,040	0	0	0	0	0	0	0	0
37	<b>Total Water</b>	\$176,477,501	\$ 6,407,275	\$17,482,732	\$102,007,517	\$11,969,126	\$ 6,935,764	\$ 7,195,712	\$ 4,959,794	\$ 5,588,871	\$ 6,122,598	\$ 3,956,736	\$ 3,851,376



EXHIBIT 2  
SYSTEM DEVELOPMENT FEE ANALYSIS  
CURRENT CAPITAL IMPROVEMENT PROGRAM  
WATER & WASTEWATER SYSTEMS

Line	Description	Total	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
<b>WASTEWATER PROJECTS</b>													
38	Middle Creek Pump Station Upgrade	\$ 862,025	\$ 862,025	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
39	Mills Branch Pump Station Upgrade	624,225	624,225	0	0	0	0	0	0	0	0	0	0
40	401 Sewer Parallel	1,281,250	1,281,250	0	0	0	0	0	0	0	0	0	0
41	Sewer Line Oversizing (Fund 60)	588,650	0	52,550	53,850	55,200	56,600	58,000	59,450	60,950	62,450	64,000	65,600
42	Little Black Creek Interceptor	1,692,413	0	0	0	1,692,413	0	0	0	0	0	0	0
43	Sewer Line System Evaluation	1,766,400	0	0	0	1,766,400	0	0	0	0	0	0	0
44	PSC Equipment Shelter	792,400	0	0	0	0	792,400	0	0	0	0	0	0
45	Walter Myatt Pump Station	1,600,314	0	0	0	0	1,600,314	0	0	0	0	0	0
46	Middle Creek Interceptor from 401 to Lake Wheeler Road	2,115,702	0	0	0	0	0	2,115,702	0	0	0	0	0
47	Middle Creek interceptor from Lake Wheeler Road to Brighton Forest WW	1,202,104	0	0	0	0	0	1,202,104	0	0	0	0	0
48	Terrible Creek Pump Station and Force Main	1,721,637	0	0	0	0	0	0	1,721,637	0	0	0	0
49	Terrible Creek Interceptor	3,075,462	0	0	0	0	0	0	3,075,462	0	0	0	0
50	Fanny Brown Road Pump station and Force Main (90 gpm, 4" FM)	858,756	0	0	0	0	0	0	858,756	0	0	0	0
51	Black Creek Regional Pump Station and Force Main	6,842,699	0	0	0	0	0	0	0	6,842,699	0	0	0
52	Black Creek Interceptor	14,918,099	0	0	0	0	0	0	0	0	4,659,039	4,965,663	5,293,397
53	Terrible Creek Wastewater Treatment Expansion (3 mgd to 6 mgd)	44,447,400	0	5,675,400	38,772,000	0	0	0	0	0	0	0	0
54	Northern Harnett County Wastewater Treatment Plant Expansion	49,386,000	0	6,306,000	43,080,000	0	0	0	0	0	0	0	0
55	<b>Total Wastewater</b>	\$133,775,536	\$2,767,500	\$12,033,950	\$ 81,905,850	\$ 3,514,013	\$ 2,449,314	\$ 3,375,806	\$ 5,715,305	\$ 6,903,649	\$ 4,721,489	\$ 5,029,663	\$ 5,358,997
56	<b>Total Water &amp; Wastewater CIP</b>	<b>\$310,253,037</b>	<b>\$9,174,775</b>	<b>\$29,516,682</b>	<b>\$183,913,367</b>	<b>\$15,483,139</b>	<b>\$ 9,385,078</b>	<b>\$10,571,518</b>	<b>\$10,675,099</b>	<b>\$12,492,520</b>	<b>\$10,844,087</b>	<b>\$ 8,986,399</b>	<b>\$ 9,210,373</b>

**EXHIBIT 3**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**ALLOCATION OF CAPITAL IMPROVEMENTS PROGRAM**  
**WATER AND WASTEWATER SYSTEMS**

Line	Description	Total	Percentage Allocation <sup>(1)</sup>			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
<b>WATER PROJECTS</b>								
1	Sanford Water Design (Plant Expansion)	\$ 4,152,000	100.00%	0.00%	0.00%	\$ 4,152,000	\$ 0	\$ 0
2	Raleigh Water Supply Agreement (BSP Upgrade + New 12" Line)	2,050,000	100.00%	0.00%	0.00%	2,050,000	0	0
3	Water line Replacements (Fund 60)	6,911,500	0.00%	100.00%	0.00%	0	6,911,500	0
4	AMI Phase 3 (Fund 60)	824,815	100.00%	0.00%	0.00%	824,815	0	0
5	Water Line Oversizing (Fund 60)	588,650	100.00%	0.00%	0.00%	588,650	0	0
6	Valve Replacement Program	588,650	0.00%	100.00%	0.00%	0	588,650	0
7	Purchase Harnett County Water District	5,499,750	100.00%	0.00%	0.00%	5,499,750	0	0
8	Johnson Pond Rd Loop at Main St. and 401	685,252	100.00%	0.00%	0.00%	685,252	0	0
9	Donny Brook Rd - Lake Wheeler to 401	817,678	100.00%	0.00%	0.00%	817,678	0	0
10	SW Judd Parkway Loop- Academy St. to Infinite Storage	679,997	100.00%	0.00%	0.00%	679,997	0	0
11	Burt Road from Fleming Road to Starchase lane	805,478	100.00%	0.00%	0.00%	805,478	0	0
12	Whitted Road Loop	1,380,714	100.00%	0.00%	0.00%	1,380,714	0	0
13	Holland Rd.- Judd Parkway to PSC to 55	2,571,904	100.00%	0.00%	0.00%	2,571,904	0	0
14	Kennebec from Willow Spring HS to Tram Rd.	2,188,974	100.00%	0.00%	0.00%	2,188,974	0	0
15	Dwight Rowland - Kennebec to NC Hwy 42	595,432	100.00%	0.00%	0.00%	595,432	0	0
16	Wagstaff Rd - Howard to Wetstone Dr.	498,651	100.00%	0.00%	0.00%	498,651	0	0
17	Johnson Pond Rd Loop - Brighton Forest to Spicewood Dr.	2,582,160	100.00%	0.00%	0.00%	2,582,160	0	0
18	Clayton Rd. Hwy 55 to Maude Stewart	1,568,112	100.00%	0.00%	0.00%	1,568,112	0	0
19	NC55 - Abundant Self Storage to Hidden Valley	2,167,152	100.00%	0.00%	0.00%	2,167,152	0	0
20	Judd Parkway Loop (South)	433,872	100.00%	0.00%	0.00%	433,872	0	0
21	Judd Parkway Loop (North)	1,763,088	100.00%	0.00%	0.00%	1,763,088	0	0
22	Judd Parkway Loop (North East)	1,445,136	100.00%	0.00%	0.00%	1,445,136	0	0
23	Wade Nash Road Extension	1,372,651	100.00%	0.00%	0.00%	1,372,651	0	0
24	Old Powell Road from Wilbon to Southern Wake Academy (connecting gaps)	1,561,028	100.00%	0.00%	0.00%	1,561,028	0	0
25	1.5 mgd tank - location TBD (proximity to PSC)	1,528,200	100.00%	0.00%	0.00%	1,528,200	0	0
26	Piney Grove Wilbon - Fleming Rd to Phelps West Rd	901,552	100.00%	0.00%	0.00%	901,552	0	0
27	Kennebec from Maude Stewart to Walter Myatt	451,704	100.00%	0.00%	0.00%	451,704	0	0
28	Ten Ten Road - Lake Wheeler to Johnson Pond	975,560	100.00%	0.00%	0.00%	975,560	0	0
29	Buck Roland from Walter Myatt to Kennebec Road	574,896	100.00%	0.00%	0.00%	574,896	0	0
30	Johnson Pond Loop - Ten Ten Rd to Optimist Farm	1,013,840	100.00%	0.00%	0.00%	1,013,840	0	0
31	Panther Lake from NC42 to John Adams	2,222,954	100.00%	0.00%	0.00%	2,222,954	0	0
32	Old Stage Road from Mt Pleasant to John Adams	1,115,282	100.00%	0.00%	0.00%	1,115,282	0	0
33	Eddie Howard from Walter Myatt to Panther Lake	908,158	100.00%	0.00%	0.00%	908,158	0	0
34	Bud Lipscomb from Kennebec to Old Stage	2,287,088	100.00%	0.00%	0.00%	2,287,088	0	0
35	Walter Myatt from NC42 to Kennebec Road	2,570,383	100.00%	0.00%	0.00%	2,570,383	0	0
36	Mt. Pleasant Church Rd from NC42 to Old Stage Rd	2,727,816	100.00%	0.00%	0.00%	2,727,816	0	0
37	Angier Road Loop	1,272,731	100.00%	0.00%	0.00%	1,272,731	0	0
38	Bill Love Road from Mt Pleasant Road to Johnston County Line	1,306,496	100.00%	0.00%	0.00%	1,306,496	0	0
39	Old Stage Road from Mt Pleasant to Johnston County Line	1,882,240	100.00%	0.00%	0.00%	1,882,240	0	0
40	James Austin Road from Bud Lipscomb to Old Stage	3,064,176	100.00%	0.00%	0.00%	3,064,176	0	0
41	Sanford Project - Plant Expansion (Construction)	44,857,050	100.00%	0.00%	0.00%	44,857,050	0	0
42	Sanford Project - Conveyance (Design + Construction)	63,084,731	100.00%	0.00%	0.00%	63,084,731	0	0
43	Subtotal	\$ 176,477,501				\$ 168,977,351	\$ 7,500,150	\$ 0

**EXHIBIT 3**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**ALLOCATION OF CAPITAL IMPROVEMENTS PROGRAM**  
**WATER AND WASTEWATER SYSTEMS**

Line	Description	Total	Percentage Allocation <sup>(1)</sup>			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
<b>WASTEWATER PROJECTS</b>								
44	Middle Creek Pump Station Upgrade	\$ 862,025	100.00%	0.00%	0.00%	\$ 862,025	\$ 0	\$ 0
45	Mills Branch Pump Station Upgrade	624,225	100.00%	0.00%	0.00%	624,225	0	0
46	401 Sewer Parallel	1,281,250	100.00%	0.00%	0.00%	1,281,250	0	0
47	Sewer Line Oversizing (Fund 60)	588,650	100.00%	0.00%	0.00%	588,650	0	0
48	Little Black Creek Interceptor	1,692,413	100.00%	0.00%	0.00%	1,692,413	0	0
49	Sewer Line System Evaluation	1,766,400	0.00%	0.00%	100.00%	0	0	1,766,400
50	PSC Equipment Shelter	792,400	100.00%	0.00%	0.00%	792,400	0	0
51	Walter Myatt Pump Station	1,600,314	100.00%	0.00%	0.00%	1,600,314	0	0
52	Middle Creek Interceptor from 401 to Lake Wheeler Road	2,115,702	100.00%	0.00%	0.00%	2,115,702	0	0
53	Middle Creek interceptor from Lake Wheeler Road to Brighton Forest WWTI	1,202,104	100.00%	0.00%	0.00%	1,202,104	0	0
54	Terrible Creek Pump Station and Force Main	1,721,637	100.00%	0.00%	0.00%	1,721,637	0	0
55	Terrible Creek Interceptor	3,075,462	100.00%	0.00%	0.00%	3,075,462	0	0
56	Fanny Brown Road Pump station and Force Main (90 gpm, 4" FM)	858,756	100.00%	0.00%	0.00%	858,756	0	0
57	Black Creek Regional Pump Station and Force Main	6,842,699	100.00%	0.00%	0.00%	6,842,699	0	0
58	Black Creek Interceptor	14,918,099	100.00%	0.00%	0.00%	14,918,099	0	0
59	Terrible Creek Wastewater Treatment Expansion (3 mgd to 6 mgd)	44,447,400	100.00%	0.00%	0.00%	44,447,400	0	0
60	Northern Harnett County Wastewater Treatment Plant Expansion	49,386,000	100.00%	0.00%	0.00%	49,386,000	0	0
61	Subtotal	\$ 133,775,536				\$ 132,009,136	\$ 0	\$ 1,766,400
62	<b>Total - All Capital Projects</b>	<b>\$ 310,253,037</b>				<b>\$ 300,986,487</b>	<b>\$ 7,500,150</b>	<b>\$ 1,766,400</b>

EXHIBIT 3  
SYSTEM DEVELOPMENT FEE ANALYSIS  
ALLOCATION OF CAPITAL IMPROVEMENTS PROGRAM  
WATER AND WASTEWATER SYSTEMS

Line	Description	Total	Percentage Allocation <sup>(1)</sup>			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
<b>ALLOCATION OF CAPITAL PROJECTS</b>								
<b>Water:</b>								
63	Treatment Projects	\$ 52,587,250	\$ 52,587,250	\$ 0	\$ 0	\$ 52,587,250	\$ 0	\$ 0
64	Transmission Projects	123,890,251	116,390,101	7,500,150	0	116,390,101	7,500,150	0
65	Other Projects	0	0	0	0	0	0	0
66	Subtotal	<u>\$ 176,477,501</u>	<u>\$ 168,977,351</u>	<u>\$ 7,500,150</u>	<u>\$ 0</u>	<u>\$ 168,977,351</u>	<u>\$ 7,500,150</u>	<u>\$ 0</u>
<b>Wastewater:</b>								
67	Treatment Projects	\$ 94,625,800	\$ 94,625,800	\$ 0	\$ 0	\$ 94,625,800	\$ 0	\$ 0
68	Transmission Projects	39,149,736	37,383,336	0	1,766,400	37,383,336	0	1,766,400
69	Other Projects	0	0	0	0	0	0	0
70	Subtotal	<u>\$ 133,775,536</u>	<u>\$ 132,009,136</u>	<u>\$ 0</u>	<u>\$ 1,766,400</u>	<u>\$ 132,009,136</u>	<u>\$ 0</u>	<u>\$ 1,766,400</u>
<b>Combined:</b>								
71	Treatment Projects	\$ 147,213,050	\$ 147,213,050	\$ 0	\$ 0	\$ 147,213,050	\$ 0	\$ 0
72	Transmission Projects	163,039,987	153,773,437	7,500,150	1,766,400	153,773,437	7,500,150	1,766,400
73	Other Projects	0	0	0	0	0	0	0
74	<b>Grand Total</b>	<u><b>\$ 310,253,037</b></u>	<u><b>\$ 300,986,487</b></u>	<u><b>\$ 7,500,150</b></u>	<u><b>\$ 1,766,400</b></u>	<u><b>\$ 300,986,487</b></u>	<u><b>\$ 7,500,150</b></u>	<u><b>\$ 1,766,400</b></u>

**Note:**

The capital costs are allocated in order to determine the costs that are recoverable from a capacity-related fee. The costs allocated as expansion and/or upgrade projects are assumed to be recoverable from such fees. All other capital costs are assumed to either be maintenance-related (R&R) projects or localized projects that do not provide system-wide capacity benefits.

**EXHIBIT 4**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WATER SYSTEM**

Line	Description	Total
<b>Recoverable Capital Facilities</b>		
<b>Existing Facilities:</b>		
1	Treatment Facilities	\$ 0
2	Transmission Facilities	33,113,464
3	<b>Subtotal</b>	<u>\$ 33,113,464</u> <sup>(1)</sup>
<b>Less Debt Service Principal:</b>		
4	Treatment Facilities	\$ 0
5	Transmission Facilities	(2,086,299)
6	<b>Subtotal</b>	<u>\$ (2,086,299)</u> <sup>(2)</sup>
<b>Net Recoverable Existing Facilities:</b>		
7	Treatment Facilities	\$ 0
8	Transmission Facilities	31,027,165
9	<b>Total</b>	<u>\$ 31,027,165</u>
<b>Capital Improvement Program:</b>		
10	Treatment Facilities	\$ 52,587,250
11	Transmission Facilities	116,390,101
12	<b>Subtotal</b>	<u>\$ 168,977,351</u>
<b>Less 25% CIP Adjustment:</b>		
12	Treatment Facilities	25% \$ (13,146,813)
13	Transmission Facilities	25% (29,097,525)
14	<b>Subtotal</b>	<u>\$ (42,244,338)</u> <sup>(3)</sup>
<b>Net Recoverable CIP:</b>		
14	Treatment Facilities	\$ 39,440,438
15	Transmission Facilities	87,292,576
16	<b>Total</b>	<u>\$ 126,733,013</u>
<b>Net Capital Costs:</b>		
16	Treatment Facilities	\$ 39,440,438
17	Transmission Facilities	118,319,741
18	<b>Net Recoverable Costs</b>	<u><b>\$ 157,760,178</b></u>

**EXHIBIT 4**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WATER SYSTEM**

Line	Description			Total
<b>Available System Capacity (MGD)</b>				
<b><u>Existing Treatment Capacity:</u></b> <span style="float: right;">(4)</span>				
19	Harnett County			2.000
20	Johnston County			1.500
21	City of Raleigh			1.750
22	City of Sanford			0.000
23	Total Existing Treatment Capacity			5.250
<b><u>Additional CIP Capacity:</u></b>				
24	Harnett County			2.000
25	Johnston County			0.000
26	City of Raleigh			0.000
27	City of Sanford			6.000
28	Total Additional CIP Capacity			8.000
<b><u>Combined Treatment Capacity (MGD):</u></b>				
29	Harnett County			4.000
30	Johnston County			1.500
31	City of Raleigh			1.750
32	City of Sanford			6.000
33	Total Combined Capacity of Water Treatment Facilities (MGD)			<b>13.250</b>
<b><u>Average Day Capacity Adjustment:</u></b>				
34	Treatment Capacity Based on Max/Avg Day Factor	1.50		8.833
35	Unaccounted-For Water Capacity Adjustment	10.0%		(5)
36	Estimated Transmission Capacity			<b>7.950</b>
<b><u>Estimated Transmission System Capacity:</u></b>				
37	Existing Max Day Treatment Capacity			5.250
38	Transmission-to-Treatment Capacity Factor	2.00		
39	Assumed Existing Transmission Capacity			10.500 (6)
40	New Conveyance Capacity (Sanford Project)			10.000
41	Combined Transmission Capacity			<b>20.500</b>
42	Unaccounted-For Water Capacity Adjustment	10.0%		(6)
43	Estimated Transmission Capacity			<b>18.450</b>

**EXHIBIT 4**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WATER SYSTEM**

Line	Description	Total
<b>Estimated Cost Per Gallon of Capacity</b>		
<b><u>Estimated Cost Per Gallon of Capacity:</u></b>		
44	Treatment (\$/Gallon)	\$ 4.96
45	Transmission (\$/Gallon)	6.41
46	<b>Total Cost Per Gallon of Capacity</b>	<b>\$ 11.37</b>
47	Daily NCAC Residential Flow Requirement	400 <sup>(7)</sup>
48	Max/Avg Day Adjustment Factor	1.50
49	Assumed Standard Level of Service Per ERU (GPD of Capacity)	267 <sup>(7)</sup>
<b>Calculation of Fee Per ERU</b>		
<b><u>Calculation of SDF Per ERU:</u></b>		
50	Treatment Facilities	\$ 1,324
51	Transmission Facilities	1,711
52	Combined Cost	<b>\$ 3,035</b>
<b><u>Adjusted Fee - Treatment:</u></b>		
53	Calculated Fee Per ERU	\$ 1,324
54	Less Rounding Adjustment	(4)
55	Adjusted Fee	<b>\$ 1,320</b>
<b><u>Credit Adjusted Fee - Transmission:</u></b>		
56	Calculated Fee Per ERU	\$ 1,711
57	Less Rounding Adjustment	(1)
58	Adjusted Fee	<b>\$ 1,710</b>
<b><u>Proposed SDF Per ERU (Rounded):</u></b>		
59	Treatment Facilities	\$ 1,320
60	Transmission Facilities	1,710
61	<b>Combined Cost</b>	<b>\$ 3,030</b>

**EXHIBIT 4**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WATER SYSTEM**

Line	Description	Total
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**Notes:**

- (1) See **Exhibit 1** for the development of existing asset costs identified for capital recovery.
- (2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in **Exhibit 1**.
- (3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum requirements.
- (4) Based on rated maximum daily plant capacity information as provided by staff.
- (5) The estimated average daily flow capacity assumes an MDF-to-ADF ratio of 1.50 times. An additional adjustment is made for assumed unaccounted-for water flows (e.g. line losses) in the system. For the purpose of this analysis, the line-loss factor is assumed to be 10.0%.
- (6) It is assumed that the existing transmission facilities are capable of providing average water flow at least 2-times the existing maximum flow amount of 5.50 MGD permitted for the combined water treatment facilities. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water assuming losses of 10.0%.
- (7) The system development charges are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with daily water flow capacity design standards adopted by the State of North Carolina and defined the North Carolina Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gallons per day (gpd). Although the Codes do not specifically indicate whether 400 gpd is max-day or average-day, for the purpose of this analysis, it is assumed to be a max-day flow amount. Applying the assumed Max/Avg Day Adjustment Factor to the NCAC flow standard, it is assumed that 1 ERU requires a standard level of service of 267 gpd of water system capacity.



**EXHIBIT 5**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WASTEWATER SYSTEM**

Line	Description	Total
<b>Recoverable Capital Facilities</b>		
<b>Existing Facilities:</b>		
1	Treatment Facilities	\$ 43,171,324
2	Transmission Facilities	5,219,835
3	<b>Subtotal</b>	\$ 48,391,159 <sup>(1)</sup>
<b>Less Debt Service Principal:</b>		
4	Treatment Facilities	\$ (29,685,441)
5	Transmission Facilities	(3,589,260)
6	<b>Subtotal</b>	\$ (33,274,701) <sup>(2)</sup>
<b>Net Recoverable Existing Facilities:</b>		
7	Treatment Facilities	\$ 13,485,883
8	Transmission Facilities	1,630,575
9	<b>Total</b>	\$ 15,116,458
<b>Capital Improvement Program:</b>		
10	Treatment Facilities	\$ 94,625,800
11	Transmission Facilities	37,383,336
12	<b>Subtotal</b>	\$ 132,009,136
<b>Less 25% CIP Adjustment:</b>		
13	Treatment Facilities	25% \$ (23,656,450)
14	Transmission Facilities	25% (9,345,834)
15	<b>Subtotal</b>	\$ (33,002,284) <sup>(3)</sup>
<b>Net Recoverable CIP:</b>		
16	Treatment Facilities	\$ 70,969,350
17	Transmission Facilities	28,037,502
18	<b>Total</b>	\$ 99,006,852
<b>Net Capital Costs:</b>		
19	Treatment Facilities	\$ 84,455,233
20	Transmission Facilities	29,668,077
21	<b>Net Recoverable Costs</b>	<b>\$ 114,123,310</b>

**EXHIBIT 5**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WASTEWATER SYSTEM**

Line	Description	Total
<b>Available System Capacity (MGD)</b>		
<b><u>Existing Treatment Capacity:</u></b>		
22	Terrible Creek WWTP	3.000
23	Brighton Forest WWTP	0.117
24	North Harnett Regional WWTP	2.600
25	Total Existing Treatment Capacity	5.717
<b><u>Additional CIP Capacity:</u></b>		
24	Terrible Creek WWTP	3.000
25	Brighton Forest WWTP	0.000
26	North Harnett Regional WWTP	3.400
27	Total Additional CIP Capacity	6.400
<b><u>Combined Treatment Capacity (MGD):</u></b>		
28	Terrible Creek WWTP	6.000
29	Brighton Forest WWTP	0.117
30	North Harnett Regional WWTP	6.000
31	Total Combined Capacity of Water Treatment Facilities (MGD)	<b>12.117</b>
32		
<b><u>Treatment Capacity:</u></b>		
33	Average Day Treatment Capacity (MGD)	12.117
34	I&I Capacity Adjustment	25.0% <sup>(4)</sup>
35	Adjusted Average Day Treatment Capacity	<b>9.088</b>
<b><u>Estimated Transmission System Capacity:</u></b>		
36	Transmission-to-Treatment Capacity Factor	2.00
37	Assumed Gross Transmission Capacity	<b>24.234</b> <sup>(5)</sup>
38	I&I Capacity Adjustment	25.0% <sup>(4)</sup>
39	Estimated Transmission Capacity	<b>18.176</b> <sup>(4)</sup>

**EXHIBIT 5**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WASTEWATER SYSTEM**

Line	Description	Total
<b>Estimated Cost Per Gallon of Capacity</b>		
<b><u>Estimated Cost Per Gallon of Capacity:</u></b>		
38	Treatment (\$/Gallon)	\$ 9.29
39	Transmission (\$/Gallon)	1.63
40	<b>Total Cost Per Gallon of Capacity</b>	<b>\$ 10.92</b>
41	Assumed Standard Level of Service Per ERU (GPD of Capacity)	300 <sup>(6)</sup>
<b>Calculation of Fee Per ERU</b>		
<b><u>Calculation of SDF Per ERU:</u></b>		
42	Treatment Facilities	\$ 2,787
43	Transmission Facilities	489
44	Combined Cost	\$ 3,276
<b><u>Adjusted Fee - Treatment:</u></b>		
45	Calculated Fee Per ERU	\$ 2,787
46	Less Rounding Adjustment	(7)
47	Adjusted Fee	\$ 2,780
<b><u>Credit Adjusted Fee - Transmission:</u></b>		
48	Calculated Fee Per ERU	\$ 489
49	Less Rounding Adjustment	(9)
50	Adjusted Fee	\$ 480
<b><u>Proposed SDF Per ERU (Rounded):</u></b>		
51	Treatment Facilities	\$ 2,780
52	Transmission Facilities	480
53	Combined Cost	<b>\$ 3,260</b>

**EXHIBIT 5**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**CALCULATION OF SYSTEM DEVELOPMENT FEE PER ERU**  
**WASTEWATER SYSTEM**

Line	Description	Total
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**Notes:**

- (1) See Exhibit 1 for the development of existing asset costs identified for capital recovery.
- (2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in Exhibit 1.
- (3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum requirements.
- (4) Similar to the line loss adjustment for water, the wastewater system capacity is reduced by the impacts of system inflow and infiltration (I&I). The assumed I&I adjustment is based on discussions with staff.
- (5) It is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least 2-times the permitted plant flow amount of 12.117 MGD.
- (6) Similar to the water system, the system development charges for wastewater are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State of North Carolina and defined in the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. However, the Town recently received a reduction letter from the State allowing it to use 75 gpd per bedroom for planning and design purposes for the wastewater system. Based on discussions with staff, the analysis developed herein assumed that 1 ERU is 4 bedrooms. The resulting standard LOS is 300 gpd of wastewater system capacity per ERU.

**EXHIBIT 6**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**SUMMARY OF PROPOSED SYSTEM DEVELOPMENT FEES**  
**WATER & WASTEWATER SYSTEMS**

Line	Description	Meter-Based ERU Factor	Fees by System		Combined Fee
			Water	Wastewater	
<b>EXISTING SDFs</b>					
<b>Meter Size:</b>					
1	5/8 x 3/4 Inch	1.00	\$ 2,000	\$ 3,250	\$ 5,250
2	1.0 Inch	1.66	\$ 3,328	\$ 5,416	\$ 8,744
3	1.5 Inch	3.33	\$ 6,655	\$ 10,833	\$ 17,488
4	2.0 Inch	5.32	\$ 10,649	\$ 17,333	\$ 27,982
5	3.0 Inch	10.65	\$ 21,297	\$ 34,665	\$ 55,962
6	4.0 Inch	16.64	\$ 33,277	\$ 54,164	\$ 87,441
7	6.0 Inch	33.28	\$ 66,554	\$ 108,328	\$ 174,882
<b>PROPOSED SDFs</b> <sup>(1)</sup>					
<b>Meter Size:</b>					
6	5/8 x 3/4 Inch	1.00	\$ 3,030	\$ 3,260	\$ 6,290
7	1.0 Inch	2.50	\$ 7,575	\$ 8,150	\$ 15,725
8	1.5 Inch	5.00	\$ 15,150	\$ 16,300	\$ 31,450
9	2.0 Inch	8.00	\$ 24,240	\$ 26,080	\$ 50,320
10	3.0 Inch	16.00	\$ 48,480	\$ 52,160	\$ 100,640
11	4.0 Inch	25.00	\$ 75,750	\$ 81,500	\$ 157,250
12	6.0 Inch	50.00	\$ 151,500	\$ 163,000	\$ 314,500
13	8.0 Inch	80.00	\$ 242,400	\$ 260,800	\$ 503,200
<b>OPTIONAL ACTUAL FLOW BASIS</b> <sup>(2)</sup>					
<b>Charge Per Gallon of Capacity (GPD):</b>					
14	Treatment Facilities		\$ 4.96	\$ 9.29	\$ 14.25
15	Transmission Facilities		6.41	1.63	8.04
16	Cost Per GPD		\$ 11.37	\$ 10.92	\$ 22.29

**Notes:**

- (1) The proposed capacity fees are based on the calculated fee per ERU as applied to the respective ERU factor. The proposed ERU factors for the capacity fees are based on meter equivalency factors established by the AWWA.
- (2) In situations where the application of the meter-based fees will result in the collection of fees significantly different than the potential demand requirement, a special fee calculation methodology may be applied based on the unit cost of capacity and the estimated daily capacity needs of the new service connection. The estimated capacity needs will be based on the amount determined by the utility's engineering staff to be appropriate.

**EXHIBIT 7**  
**SYSTEM DEVELOPMENT FEE ANALYSIS**  
**COMPARISON WITH OTHER UTILITY SYSTEMS**  
**WATER & WASTEWATER SYSTEMS**

<b>Line</b>	<b>Description</b>	<b>Water</b>	<b>Wastewater</b>	<b>Combined</b>
<b><u>Town of Fuquay-Varina:</u></b>				
1	Existing Fee Per ERU	\$ 2,000	\$ 3,250	\$ 5,250
2	Proposed Fee Per ERU	\$ 3,030	\$ 3,260	\$ 6,290
<b><u>Other Utilities:</u></b>				
3	Greensboro, NC	\$ 980	\$ 990	\$ 1,970
4	Winston-Salem, NC	\$ 795	\$ 2,246	\$ 3,041
5	Concord, NC	\$ 1,262	\$ 2,040	\$ 3,302
6	City of Gastonia, NC	\$ 2,120	\$ 1,380	\$ 3,500
7	Orange Water & Sewer Authority, NC	\$ 1,142	\$ 2,391	\$ 3,533
8	Greenville, NC	\$ 2,770	\$ 881	\$ 3,651
9	Wake Forest, NC	\$ 1,373	\$ 2,522	\$ 3,895
10	City of Asheville, NC	\$ 1,372	\$ 2,836	\$ 4,208
11	Charlotte, NC (CMU)	\$ 1,000	\$ 3,214	\$ 4,214
12	Town of Cary, NC	\$ 1,946	\$ 2,640	\$ 4,586
13	Kannapolis, NC	\$ 1,450	\$ 3,550	\$ 5,000
14	Brunswick County, NC	\$ 1,152	\$ 4,000	\$ 5,152
15	ONWASA (NC)	\$ 2,032	\$ 3,700	\$ 5,732
16	Mount Holly, NC	\$ 1,230	\$ 4,665	\$ 5,895
17	Union County, NC	\$ 3,200	\$ 4,200	\$ 7,400
18	Brunswick Regional Water & Sewer, NC	\$ 3,200	\$ 5,200	\$ 8,400
19	<b>Average of Other Utilities</b>	<b>\$ 1,689</b>	<b>\$ 2,903</b>	<b>\$ 4,592</b>

**Notes:**

- (1) Developed from fee information made available by the other utilities included. This study has attempted to ensure that fees included for comparison are applicable capital recovery fees consistent with the intent of the proposed fees developed herein. However, due to differences in terminology, fee structure and method of applying fees, such a direct comparison is often difficult to establish.
- (2) The City is a member of WSACC. New connections to the wastewater system pay a Capital Recovery Fee to WSACC for treatment facilities. The current fee is \$2,040 per ERU and is included with the City's fee provided herein.
- (3) Water service is provided by the City and wastewater service is provided by the Metropolitan Sewerage District of Buncombe County.
- (4) Assumes a single-family home 2,401 to 3,100 sq. ft. in size.
- (5) Assumes a 3 bedroom residential home.