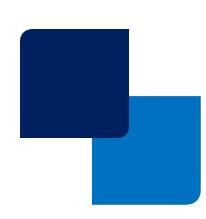# TOWN OF WEAVERVILLE, NORTH CAROLINA

WATER SYSTEM DEVELOPMENT FEE STUDY – MAY 2023

May 13, 2023

Selena Coffey, Town Manager
Town of Weaverville
30 South Main Street
P.O. Box 338
Weaverville, NC 28787

Subject: **Water System Development Fee Study**

Dear Ms. Coffey,

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

GENERAL

System Development Fees ("SDF" or "SDFs") and other comparable charges are often referred to by various 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 include the construction of facilities as well as engineering, surveys, land, financing, legal and administrative costs. It has become customary practice for water and utility systems to implement SDFs (or other similar charges) 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.

CRITERIA FOR SYSTEM DEVELOPMENT FEES

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. 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 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 put to purpose (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

Courts throughout the United States have found that capacity-related fees associated with new customer connections to utility systems are legal provided they meet a Rational Nexus Test. In accordance with common court rulings, the rational nexus test requires that certain conditions be met to incorporate 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 by reason 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.

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 <u>Shell Island Investment v. Town of Wrightsville Beach North Carolina</u> (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 distinct 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.

- o *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.
- o *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.
- o *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 potential 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 utility service. The current fee is $2,232 per residential dwelling. 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	**Fees**
Meter Size:	
5/8 x 3/4 Inch	$ 2,232
1.0 Inch	$ 5,580
1.5 Inch	$ 11,160
2.0 Inch	$ 17,856
3.0 Inch	$ 35,712
4.0 Inch	$ 55,800
6.0 Inch	$ 111,600

EXISTING TAP CHARGES

The Town currently imposes tap charges to new customers connecting to the water system. However, it is important to note that such connection-related charges are different than the SDFs developed and proposed herein. The distinguishing characteristic is that the connection charges 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 utility service available to the public. The SDFs calculated herein are intended to be in addition to the tap charges. As such, it is proposed that the existing tap charges continue to be imposed. It should be noted that, for the purpose of this Report, the existing tap charges are assumed to recover the costs associated with these items. A review of these charges in relation to actual costs incurred is beyond the scope of this Report.

BUY-IN METHOD

Existing Facilities

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 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 diverse 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**.

TABLE 2 RCNLD OF EXISTING UTILITY ASSETS				
Description	**Original Cost**	**Replacement Cost New**	**Accumulated Depreciation**	**RCNLD**
Total Utility Assets:				
Building	$ 5,474,942	$ 14,430,651	$ (7,260,774)	$ 7,169,877
Vehicles	205,846	205,846	(94,434)	111,412
Equipment	1,609,023	1,755,138	(1,290,096)	465,042
Distribution Systems	10,806,976	30,659,020	(16,222,139)	14,436,881
Land	184,965	184,965	0	184,965
Total	$ 18,281,752	$ 47,235,620	$ (24,867,443)	$ 22,368,177

For the purpose of the SDF analyses developed herein, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes any treatment plant facilities supply and storage facilities. The transmission/collection category consists of major water mains and water pumping facilities. Since the localized distribution and collection facilities are oftentimes 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 capital asset cost allocations included in the analysis are summarized in **Table 3**.

TABLE 3 SUMMARY OF EXISTING RECOVERABLE FACILITIES	
Description	**Recoverable RCNLD**
Total Recoverable Assets:	
Building	$ 6,726,693
Vehicles	0
Equipment	0
Distribution Systems	13,396,122
Land	184,965
Total	$ 20,307,780
Allocation of Recoverable Assets:	
Treatment Facilities	$ 6,911,658
Transmission Facilities	13,396,122
Total	$ 20,307,780

Calculation Credit

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). To reduce the potential for new customers to pay twice for capital facilities (i.e., paying an SDF and then paying for debt service on expansion projects 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 based on information provided by staff related to the capital projects that were

funded from proceeds of each individual debt instrument. A summary of the existing recoverable capital facilities as adjusted for the applicable credits is provided in **Table 4**.

TABLE 4 SUMMARY OF NET RECOVERABLE FACILITIES	
Description	**Net Recoverable**
Existing Facilities:	
Treatment Facilities	$ 6,911,658
Transmission Facilities	13,396,122
Subtotal	$ 20,307,780
Less Credits:	
Treatment Facilities	$ (1,255,367)
Transmission Facilities	(2,433,633)
Subtotal	$ (3,689,000)
Net Capital Costs:	
Treatment Facilities	$ 5,656,291
Transmission Facilities	10,962,489
Net Recoverable Costs	$ 16,618,780

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. 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 treatment capacities as well as estimating the capacities of the major transmission facilities. Due to the regulatory and design requirements for water treatment plants, the capacity of treatment facilities is typically 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 currently owns and operates the Lawrence T. Sprinkle Jr. water treatment plant, which has a treatment capacity of 1.50 MGD (million gallons per day). 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 1.50 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 1.00 MGD. An additional adjustment is made 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 0.90 MGD (see **Exhibit 2**).

Water Transmission

Unlike the treatment facilities, the capacity information for major transmission facilities is difficult to determine and quantify. Such transmission capacity estimates are often 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 can provide water flow at least equal to 2.00 times the existing treatment capacity, resulting in 3.00 MGD. Like the adjustment for treatment, a 10.0% loss adjustment is made to the transmission facilities resulting in an adjusted capacity of 2.70 MGD (see **Exhibit 2**).

SDF Per ERU

The methodology utilized for developing the water SDFs relies upon the RCNLD of major existing system facilities as well as the existing system capacities to calculate an estimated cost per unit (gallon) of capacity. Based on this methodology, the water facility costs are $10.34 per gallon of water capacity (combined treatment and transmission).

In developing the SDFs, the unit cost per gallon of capacity is 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. Based on common industry standards for the development and application of capacity-related charges, a typical residential water connection is widely 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. 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.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity results in the calculated SDF of $2,750 for a typical single-family residential connection (i.e., per ERU), as rounded down. The development of the buy-in method SDF is detailed in **Exhibits 2**. A

summary of the existing and calculated SDF for a new residential connection (i.e., 1 ERU) is provided in **Table 5**.

TABLE 5 COMPARISON OF SDFs PER ERU			
Description	**System Development Fee Per ERU**		
	Existing	**Calculated**	**Difference**
System Development Fees:			
Water	$ 2,232	$ 2,750	$ 518

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 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. The calculated water SDFs for the various water meter sizes are developed in **Exhibit 3** and summarized in **Table 6**.

TABLE 6
CALCULATED SYSTEM DEVELOPMENT FEES

Description	Meter Factor [1]	Fees By Meter Size
Meter Size:		
5/8 x 3/4 Inch	1.00	$ 2,750
1.0 Inch	2.50	$ 6,875
1.5 Inch	5.00	$ 13,750
2.0 Inch	8.00	$ 22,000
3.0 Inch	16.00	$ 44,000
4.0 Inch	25.00	$ 68,750
6.0 Inch	50.00	$ 137,500

(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.

INCREMENTAL/MARGINAL COST METHOD

Capital Improvements Program

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 listing the individual projects and anticipated construction costs for fiscal years 2024 through 2033 (i.e., a 10-year CIP). The CIP is provided in **Exhibit 4**. As with 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 5**. 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 7**.

	TABLE 7		
SUMMARY OF THE CIP & RECOVERABLE CAPITAL COSTS			
Description	**Total CIP**	**Excluded Capital**	**Recoverable Capital**
Water:			
Treatment Facilities	$ 22,200,000	$ 0	$ 22,200,000
Transmission Facilities	7,714,000	(887,000)	6,827,000
Other Facilities	0	0	0
Total	$ 29,914,000	$ (887,000)	$ 29,027,000

Calculation Credit

Like the credit applied to the existing facilities under the buy-in method, the incremental cost analysis developed herein applies a credit to the planned future facilities provided in the CIP. 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 8**.

	TABLE 8
SUMMARY OF NET RECOVERABLE FACILITIES	
Description	**Net Recoverable**
Capital Improvement Program:	
Treatment Facilities	$ 22,200,000
Transmission Facilities	6,827,000
Subtotal	$ 29,027,000
Less Credits:	
Treatment Facilities	$ (5,550,000)
Transmission Facilities	(1,706,750)
Subtotal	$ (7,256,750)
Net Capital Costs:	
Treatment Facilities	$ 16,650,000
Transmission Facilities	5,120,250
Net Recoverable Costs	$ 21,770,250

Water Treatment

The CIP includes an expansion project that will provide additional treatment capacity of 1.50 MGD. As with the buy-in method, it is necessary to convert the rated maximum daily flow capacity to an estimated average daily flow capacity. Applying the assumed max-day factor of 1.50-times to the new expanded capacity results in an average daily flow capacity of 1.00 MGD. As previously addressed, 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 0.900 MGD in new capacity associated with the CIP (see **Exhibit 6**).

Water Transmission – Incremental Cost Method

As previously addressed, it is assumed that the expanded transmission facilities can provide water flow at least equal to 2.00 times the additional treatment capacity, resulting in 3.00 MGD. Like the adjustment for treatment, a 10.0% loss adjustment is made to the transmission facilities resulting in an adjusted capacity of 2.70 MGD (see **Exhibit 6**).

SDF Per ERU

The methodology utilized for developing the water SDFs relies upon the planned costs for new major system facilities provided in the CIP, as well as the added system capacities to calculate an estimated cost per gallon of capacity. Based on this methodology, it is estimated that the water facility costs are $20.40 per gallon of water capacity (combined treatment and transmission).

As previously addressed, it is assumed that 1 ERU requires a standard level of service of 267 gpd of water system capacity. Applying the average day LOS amounts to the estimated unit costs per gallon of capacity results in the calculated SDF of $5,430 per ERU, as rounded down. The development of the incremental cost method SDF is detailed in **Exhibits 6**. A summary of the existing and calculated SDF for a new residential connection is provided in **Table 9**.

TABLE 9 COMPARISON OF SDFs PER ERU			
Description	**System Development Fee Per ERU**		
	Existing	**Calculated**	**Difference**
System Development Fees:			
Water	$ 2,232	$ 5,430	$ 3,198

Application of SDFs

As with the buy-in method, the SDFs for the incremental cost method will utilize the AWWA demand criteria and apply the fee by meter size. The calculated water SDFs for the various water meter sizes are developed in **Exhibit 7** and summarized in **Table 10**.

TABLE 10 CALCULATED SYSTEM DEVELOPMENT FEES		
Description	**Meter Factor** [1]	**Fees By Meter Size**
Meter Size:		
5/8 x 3/4 Inch	1.00	$ 5,430
1.0 Inch	2.50	$ 13,575
1.5 Inch	5.00	$ 27,150
2.0 Inch	8.00	$ 43,440
3.0 Inch	16.00	$ 86,880
4.0 Inch	25.00	$ 135,750
6.0 Inch	50.00	$ 271,500

(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.

COMBINED METHOD

Combined Recoverable Costs

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. Additionally, the applicable credits are combined and applied to both the existing and planned facilities. The combined system costs included for recovery are summarized in **Table 11**.

TABLE 11
SUMMARY OF NET RECOVERABLE FACILITIES

Description	Net Recoverable
Combined Recoverable Costs:	
Treatment Facilities	$ 29,111,658
Transmission Facilities	20,223,122
Subtotal	$ 49,334,780
Less Combined Credits:	
Treatment Facilities	$ (6,805,367)
Transmission Facilities	(4,140,383)
Subtotal	$ (10,945,750)
Net Capital Costs:	
Treatment Facilities	$ 22,306,291
Transmission Facilities	16,082,739
Net Recoverable Costs	$ 38,389,030

SDF Per ERU

The combined existing and expanded system capacities are applied to the combined recoverable costs to calculate the cost per gallon of capacity. Based on this methodology, it is estimated that the water facility costs are $15.37 per gallon of water capacity (combined treatment and transmission). Essentially, the combined method results in a weighted average cost of capacity.

Applying the average day LOS amounts of 267 GPD to the cost per gallon of capacity results in the calculated SDF of $4,090 per ERU, as rounded down. The development of the SDFs is detailed in **Exhibit 8**. A summary of the existing and calculated SDF for a new residential connection is provided in **Table 12**.

TABLE 12
COMPARISON OF SDFs PER ERU

Description	System Development Fee Per ERU		
	Existing	Calculated	Difference
System Development Fees:			
Water	$ 2,232	$ 4,090	$ 1,858

TOWN OF WEAVERVILLE, NC
SYSTEM DEVELOPMENT FEE STUDY

The Town of
Weaverville
NORTH CAROLINA

PAGE 17

Application of SDFs

As with the other two methods, the SDFs for the combined method will utilize the AWWA demand criteria and apply the fee by meter size. The calculated water SDFs for the various water meter sizes under the combined method are developed in **Exhibit 9** and summarized in **Table 13**.

TABLE 13 **CALCULATED SYSTEM DEVELOPMENT FEES**		
Description	**Meter Factor** [1]	**Fees By Meter Size**
Meter Size:		
5/8 x 3/4 Inch	1.00	$ 4,090
1.0 Inch	2.50	$ 10,225
1.5 Inch	5.00	$ 20,450
2.0 Inch	8.00	$ 32,720
3.0 Inch	16.00	$ 65,440
4.0 Inch	25.00	$ 102,250
6.0 Inch	50.00	$ 204,500

(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 times the capacity requirement for the 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. The unit costs are summarized in Exhibits 3, 7 and 9 for the buy-in, incremental cost and combined methods, respectively.

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 would typically show the capacity-related fees for a new residential water 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. However, given the current timing requirements of Chapter 162A, and the fact that numerous utility systems in the State are in the process of performing updated fee studies comparable to the one addressed in this Report, including a neighboring utility comparison at this time will provide somewhat meaningless information. If the Town would like to get a better idea of how its SDFs compare to other systems, it is suggested that such a comparison be performed after July 1, 2023.

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 maintain 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 has become common practice 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 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.

	RECOMMENDATIONS

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, 2023 or other such date as determined appropriate by the Town Council.

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 collaborating with you on future projects and continuing a successful professional relationship.

Respectfully Yours,

WILLDAN FINANCIAL SERVICES.

Daryll B. Parker
Principal Consultant

EXHIBITS 1 - 9

SUPPORTING OUTPUT FOR THE
WATER SDF STUDY

**WATER SDF STUDY FOR THE
TOWN OF WEAVERVILLE, NORTH CAROLINA**

Prepared by Willdan Financial Services

Exhibit 1
System Development Fee Analysis
Existing Capital Costs Recoverable From SDFs
Water System

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	UTILITY ASSETS				
	Total Assets by Category:				
1	Building	$ 5,474,942	$ 14,430,651	(7,260,774)	$ 7,169,877
2	Vehicles	205,846	205,846	(94,434)	111,412
3	Equipment	1,609,023	1,755,138	(1,290,096)	465,042
4	Distribution Systems	10,806,976	30,659,020	(16,222,139)	14,436,881
5	Land	184,965	184,965	0	184,965
6	Total	$ 18,281,752	$ 47,235,620	$ (24,867,443)	$ 22,368,177
	Adjusted For Assumed Cost Limit ($):				
7	Building	$ 5,062,035	$ 13,590,662	$ (6,863,969)	$ 6,726,693
8	Vehicles	0	0	0	0
9	Equipment	143,283	209,192	(51,066)	158,126
10	Distribution Systems	9,838,289	27,327,660	(13,931,538)	13,396,122
11	Land	184,965	184,965	0	184,965
12	Total	$ 15,228,572	$ 41,312,479	$ (20,846,573)	$ 20,465,906
	Recoverable Allocation - Water (%):				
13	Building				**100%**
14	Vehicles				**0%**
15	Equipment				**0%**
16	Distribution Systems				**100%**
17	Land				**100%**
	System Allocation - Water ($):				
18	Building				$ 6,726,693
19	Vehicles				0
20	Equipment				0
21	Distribution Systems				13,396,122
22	Land				184,965
23	Total				$ 20,307,780
24	**Grand Total Recoverable Assets**				**$ 20,307,780**

Exhibit 1
System Development Fee Analysis
Existing Capital Costs Recoverable From SDFs
Water System

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
	COMPONENT ALLOCATION				
	Total Recoverable Water Facilities:				
25	Treatment Facilities			34.03%	$ 6,911,658
26	Transmission Facilities			65.97%	13,396,122
27	**Total**			100.00%	$ 20,307,780
	COMPARISON TO TOTAL				
28	**Total Utility Assets**				$ 22,368,177
29	**Combined Recoverable Assets**				$ 20,307,780
	Difference (Assets Excluded From Recovery):				
30	Excluded From Recovery ($)				$ 2,060,397
31	Excluded From Recovery (%)				9.21%
	DEBT SERVICE CREDIT				
32	**Outstanding Debt Principal**				$ 3,689,000
	Component Allocation - Water:				
33	Treatment Facilities			34.03%	$ 1,255,367
34	Transmission Facilities			65.97%	2,433,633
35	Total			100.00%	$ 3,689,000

Line	Description	Total
	Recoverable Capital Facilities	
	Existing Facilities:	
1	Treatment Facilities	$ 6,911,658
2	Transmission Facilities	13,396,122
3	**Subtotal**	$ 20,307,780 (1)
	Less Debt Service Principal:	
4	Treatment Facilities	$ (1,255,367)
5	Transmission Facilities	(2,433,633)
6	**Subtotal**	$ (3,689,000) (2)
	Net Recoverable Existing Facilities:	
7	Treatment Facilities	$ 5,656,291
8	Transmission Facilities	10,962,489
9	**Total**	**$ 16,618,780**
	Available System Capacity (MGD)	
	Treatment Capacity (MGD):	(3)
10	Lawrence T.Sprinkle Jr. Water Treatment Plant	1.500
11	Total Treatment Capacity	**1.500**
	Average Day Capacity Adjustment:	
12	Treatment Capacity Based on Max/Avg Day Factor	1.50	1.000
13	Unaccounted-For Water Capacity Adjustment	10.0%	(4)
14	Estimated Treatment Capacity	**0.900**
	Estimated Transmission System Capacity:	
15	Existing Treatment Capacity	1.500
16	Transmission-to-Treatment Capacity Factor	2.00	
17	Assumed Existing Transmission Capacity	**3.000** (5)
18	Unaccounted-For Water Capacity Adjustment	10.0%	(5)
19	Estimated Transmission Capacity	**2.700**

Line	Description		Total	
	Estimated Cost Per Gallon of Capacity			
	Estimated Cost Per Gallon of Capacity:			
20	Treatment ($/Gallon)	$	6.28	
21	Transmission ($/Gallon)		4.06	
22	**Total Cost Per Gallon of Capacity**	**$**	**10.34**	
23	Daily NCAC Residential Flow Requirement		400	[6]
24	Max/Avg Day Adjustment Factor	1.50		
25	Assumed Standard Level of Service Per ERU (GPD of Capacity)		267	[6]
	Calculation of Fee Per ERU			
	Calculation of SDF Per ERU:			
26	Treatment Facilities	$	1,676	
27	Transmission Facilities		1,084	
28	Combined Cost	**$**	**2,760**	
	Adjusted Fee - Treatment:			
29	Calculated Fee Per ERU	$	1,676	
30	Less Rounding Adjustment		(6)	
31	Adjusted Fee	$	1,670	
	Credit Adjusted Fee - Transmission:			
32	Calculated Fee Per ERU	$	1,084	
33	Less Rounding Adjustment		(4)	
34	Adjusted Fee	$	1,080	
	Proposed SDF Per ERU (Rounded):			
35	Treatment Facilities	$	1,670	
36	Transmission Facilities		1,080	
37	**Combined Cost**	**$**	**2,750**	

Line	Description	Total

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) Based on rated maximum daily plant capacity information as provided by staff.

(4) The estimated average daily flow capacity assumes an MDF-to-ADF ratio of 1.5-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%.

(5) It is assumed that the existing transmission facilities are capable of providing average water flow at least 2.0-times the existing 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%.

(6) 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.

Line	Description	Meter-Based ERU Factor	Existing Fees	Calculated Fees [1]	Difference
	EXISTING SDFs				
	Meter Size:				
1	5/8 x 3/4 Inch	1.00	$ 2,232	$ 2,750	$ 518
2	1.0 Inch	2.50	$ 5,580	$ 6,875	$ 1,295
3	1.5 Inch	5.00	$ 11,160	$ 13,750	$ 2,590
4	2.0 Inch	8.00	$ 17,856	$ 22,000	$ 4,144
5	3.0 Inch	16.00	$ 35,712	$ 44,000	$ 8,288
6	4.0 Inch	25.00	$ 55,800	$ 68,750	$ 12,950
7	6.0 Inch	50.00	$ 111,600	$ 137,500	$ 25,900
	OPTIONAL ACTUAL FLOW BASIS [2]				
	Charge Per Gallon of Capacity (GPD):				
8	Treatment Facilities			$ 6.28	
9	Transmission Facilities			4.06	
10	Cost Per GPD			$ 10.34	

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.

Line	Description	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	WATER PROJECTS											
1	Replace 2" and 3" with 6" DIP water lines (Stoney Knob Area)	$ 862,000	$ 862,000	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
2	Replace 2" line with 6" DIP (Pine & Roberts St.)	302,000	0	0	302,000	0	0	0	0	0	0	0
3	Installation of 8" DIP (Eller Cove Area)	1,879,000	0	100,000	100,000	1,679,000	0	0	0	0	0	0
4	Replace 1.5" line with 6" DIP (Reeves St.)	192,000	0	192,000	0	0	0	0	0	0	0	0
5	2" water line replacements	550,000	0	150,000	0	200,000	200,000	0	0	0	0	0
6	Relace 4" line and hydrant with 6" DIP (Florida to Central Ave)	120,000	0	0	0	0	120,000	0	0	0	0	0
7	Replace 4" line with 6" DIP (Moore to Alabama, Ridgewood to N. College)	784,000	0	0	0	0	0	784,000	0	0	0	0
8	Replace 2" lines and reconnect services 6" DIP (Church of God area)	337,000	0	0	0	0	337,000	0	0	0	0	0
9	Replace 1" with 2" lines and reconnect services (Aiken Rd.)	287,000	0	0	0	0	0	0	287,000	0	0	0
10	Replace 2" with 6" line (N Main to Waddell St.)	442,000	0	0	0	0	0	0	442,000	0	0	0
11	Replace 4" with 6" line (N Main St.), and Webster St. 1" to 2" (Sunset St.)	510,000	0	0	0	0	0	0	0	510,000	0	0
12	Replace 2" with 6" line (N Main to house #26)	428,000	0	0	0	0	0	0	0	0	428,000	0
13	Replace 2" with 6" line (Merrimon Ave.)	501,000	0	0	0	0	0	0	0	0	0	501,000
14	Generators, chlorine system, SCADA controls	2,000,000	2,000,000	0	0	0	0	0	0	0	0	0
15	WTP Expansion from 1.5 MGD to 3.0 MGD	20,000,000	3,000,000	5,000,000	10,000,000	2,000,000	0	0	0	0	0	0
16	Interconnection with Woodfin	200,000	200,000	0	0	0	0	0	0	0	0	0
17	Reconfigure 1.0 MG Hill storage tank (Dubose)	95,000	0	0	0	95,000	0	0	0	0	0	0
18	Upgrade valve and acuator on 1.0 MG tank (Hamburg)	75,000	0	75,000	0	0	0	0	0	0	0	0
19	Upgrade valve and acuator on 1.0 MG tank (Ridge)	75,000	0	0	75,000	0	0	0	0	0	0	0
20	Upgrade valve and acuator on 1.0 MG tank (Dubose)	75,000	0	0	0	75,000	0	0	0	0	0	0
21	Upgrade basins and mixing chambers Post WTP Expansion	200,000	0	0	0	0	200,000	0	0	0	0	0
22	**Total Water CIP**	$29,914,000	$ 6,062,000	$ 5,517,000	$10,477,000	$ 4,049,000	$ 857,000	$ 784,000	$ 729,000	$ 510,000	$ 428,000	$ 501,000

Line	Description	Total	Percentage Allocation [1]			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
	WATER PROJECTS							
1	Replace 2" and 3" with 6" DIP water lines (Stoney Knob Area)	$ 862,000	100.00%	0.00%	0.00%	$ 862,000	$ 0	$ 0
2	Replace 2" line with 6" DIP (Pine & Roberts St.)	302,000	100.00%	0.00%	0.00%	302,000	0	0
3	Installation of 8" DIP (Eller Cove Area)	1,879,000	100.00%	0.00%	0.00%	1,879,000	0	0
4	Replace 1.5" line with 6" DIP (Reeves St.)	192,000	100.00%	0.00%	0.00%	192,000	0	0
5	2" water line replacements	550,000	0.00%	100.00%	0.00%	0	550,000	0
6	Relace 4" line and hydrant with 6" DIP (Florida to Central Ave)	120,000	100.00%	0.00%	0.00%	120,000	0	0
7	Replace 4" line with 6" DIP (Moore to Alabama, Ridgewood to N. College)	784,000	100.00%	0.00%	0.00%	784,000	0	0
8	Replace 2" lines and reconnect services 6" DIP (Church of God area)	337,000	0.00%	100.00%	0.00%	0	337,000	0
9	Replace 1" with 2" lines and reconnect services (Aiken Rd.)	287,000	100.00%	0.00%	0.00%	287,000	0	0
10	Replace 2" with 6" line (N Main to Waddell St.)	442,000	100.00%	0.00%	0.00%	442,000	0	0
11	Replace 4" with 6" line (N Main St.), and Webster St. 1" to 2" (Sunset St.)	510,000	100.00%	0.00%	0.00%	510,000	0	0
12	Replace 2" with 6" line (N Main to house #26)	428,000	100.00%	0.00%	0.00%	428,000	0	0
13	Replace 2" with 6" line (Merrimon Ave.)	501,000	100.00%	0.00%	0.00%	501,000	0	0
14	Generators, chlorine system, SCADA controls	2,000,000	100.00%	0.00%	0.00%	2,000,000	0	0
15	WTP Expansion from 1.5 MGD to 3.0 MGD	20,000,000	100.00%	0.00%	0.00%	20,000,000	0	0
16	Interconnection with Woodfin	200,000	100.00%	0.00%	0.00%	200,000	0	0
17	Reconfigure 1.0 MG Hill storage tank (Dubose)	95,000	100.00%	0.00%	0.00%	95,000	0	0
18	Upgrade valve and acuator on 1.0 MG tank (Hamburg)	75,000	100.00%	0.00%	0.00%	75,000	0	0
19	Upgrade valve and acuator on 1.0 MG tank (Ridge)	75,000	100.00%	0.00%	0.00%	75,000	0	0
20	Upgrade valve and acuator on 1.0 MG tank (Dubose)	75,000	100.00%	0.00%	0.00%	75,000	0	0
21	Upgrade basins and mixing chambers Post WTP Expansion	200,000	100.00%	0.00%	0.00%	200,000	0	0
22	**Total**	**$29,914,000**				**$ 29,027,000**	**$ 887,000**	**$ 0**
	ALLOCATION OF CAPITAL PROJECTS							
	Water:							
23	Treatment Projects	$22,200,000				$ 22,200,000	$ 0	$ 0
24	Transmission Projects	7,714,000				6,827,000	887,000	0
25	Other Projects	0				0	0	0
26	**Total**	**$29,914,000**				**$ 29,027,000**	**$ 887,000**	**$ 0**

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.

Line	Description		Total
	Recoverable Capital Facilities		
	Capital Improvement Program:		
1	Treatment Facilities		$ 22,200,000
2	Transmission Facilities		6,827,000
3	**Subtotal**		$ 29,027,000
	Less 25% CIP Adjustment:		
4	Treatment Facilities	25%	$ (5,550,000)
5	Transmission Facilities	25%	(1,706,750)
6	**Subtotal**		$ (7,256,750) [1]
	Net Recoverable CIP:		
7	Treatment Facilities		$ 16,650,000
8	Transmission Facilities		5,120,250
9	**Total**		**$ 21,770,250**
	Available System Capacity (MGD)		
	Treatment Capacity (MGD):		[2]
10	Water Treatment Plant Expansion		1.500
11	Total Treatment Capacity		**1.500**
	Average Day Capacity Adjustment:		
12	Treatment Capacity Based on Max/Avg Day Factor	1.50	1.000
13	Unaccounted-For Water Capacity Adjustment	10.0%	[3]
14	Estimated Treatment Capacity		**0.900**
	Estimated Transmission System Capacity:		
15	Existing Treatment Capacity		1.500
16	Transmission-to-Treatment Capacity Factor	2.00	
17	Assumed Existing Transmission Capacity		**3.000** [4]
18	Unaccounted-For Water Capacity Adjustment	10.0%	[4]
19	Estimated Transmission Capacity		**2.700**

Line	Description		Total	
	Estimated Cost Per Gallon of Capacity			
	Estimated Cost Per Gallon of Capacity:			
20	Treatment ($/Gallon)	$	18.50	
21	Transmission ($/Gallon)		1.90	
22	**Total Cost Per Gallon of Capacity**	**$**	**20.40**	
23	Daily NCAC Residential Flow Requirement		400	(5)
24	Max/Avg Day Adjustment Factor	1.50		
25	Assumed Standard Level of Service Per ERU (GPD of Capacity)		267	(5)
	Calculation of Fee Per ERU			
	Calculation of SDF Per ERU:			
26	Treatment Facilities	$	4,939	
27	Transmission Facilities		507	
28	**Combined Cost**	**$**	**5,446**	
	Adjusted Fee - Treatment:			
29	Calculated Fee Per ERU	$	4,939	
30	Less Rounding Adjustment		(9)	
31	Adjusted Fee	$	4,930	
	Credit Adjusted Fee - Transmission:			
32	Calculated Fee Per ERU	$	507	
33	Less Rounding Adjustment		(7)	
34	Adjusted Fee	$	500	
	Proposed SDF Per ERU (Rounded):			
35	Treatment Facilities	$	4,930	
36	Transmission Facilities		500	
37	**Combined Cost**	**$**	**5,430**	

Line	Description	Total

Notes:

(1) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum requirements.

(2) Additional plant capacity as provided by staff.

(3) The estimated average daily flow capacity assumes an MDF-to-ADF ratio of 1.5-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%.

(4) It is assumed that the new transmission facilities are capable of providing average water flow at least 2.0-times the planned 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%.

(5) 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.

Line	Description	Meter-Based ERU Factor	Existing Fees	Calculated Fees [1]	Difference
	EXISTING SDFs				
	Meter Size:				
1	5/8 x 3/4 Inch	1.00	$ 2,232	$ 5,430	$ 3,198
2	1.0 Inch	2.50	$ 5,580	$ 13,575	$ 7,995
3	1.5 Inch	5.00	$ 11,160	$ 27,150	$ 15,990
4	2.0 Inch	8.00	$ 17,856	$ 43,440	$ 25,584
5	3.0 Inch	16.00	$ 35,712	$ 86,880	$ 51,168
6	4.0 Inch	25.00	$ 55,800	$ 135,750	$ 79,950
7	6.0 Inch	50.00	$ 111,600	$ 271,500	$ 159,900
	OPTIONAL ACTUAL FLOW BASIS [2]				
	Charge Per Gallon of Capacity (GPD):				
8	Treatment Facilities			$ 18.50	
9	Transmission Facilities			1.90	
10	Cost Per GPD			$ 20.40	

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.

Line	Description		Total
	Recoverable Capital Facilities		
	Existing Facilities:		
1	Treatment Facilities		$ 6,911,658
2	Transmission Facilities		13,396,122
3	**Subtotal**		$ 20,307,780 (1)
	Less Debt Service Principal:		
4	Treatment Facilities		$ (1,255,367)
5	Transmission Facilities		(2,433,633)
6	**Subtotal**		$ (3,689,000) (2)
	Net Recoverable Existing Facilities:		
7	Treatment Facilities		$ 5,656,291
8	Transmission Facilities		10,962,489
9	**Total**		$ 16,618,780
	Capital Improvement Program:		
10	Treatment Facilities		$ 22,200,000
11	Transmission Facilities		6,827,000
12	**Subtotal**		$ 29,027,000
	Less 25% CIP Adjustment:		
13	Treatment Facilities	25%	$ (5,550,000)
14	Transmission Facilities	25%	(1,706,750)
15	**Subtotal**		$ (7,256,750) (3)
	Net Recoverable CIP:		
16	Treatment Facilities		$ 16,650,000
17	Transmission Facilities		5,120,250
18	**Total**		$ 21,770,250
	Net Capital Costs:		
19	Treatment Facilities		$ 22,306,291
20	Transmission Facilities		16,082,739
21	**Net Recoverable Costs**		**$ 38,389,030**

Line	Description		Total	
	Available System Capacity (MGD)			
	Treatment Capacity (MGD):			(4)
22	Lawrence T.Sprinkle Jr. Water Treatment Plant		1.500	
23	Additional CIP Capacity		1.500	
24	Total Treatment Capacity		**3.000**	
	Average Day Capacity Adjustment:			
25	Treatment Capacity Based on Max/Avg Day Factor	1.50	2.000	
26	Unaccounted-For Water Capacity Adjustment	10.0%		(5)
27	Estimated Treatment Capacity		**1.800**	
	Estimated Transmission System Capacity:			
28	Existing Treatment Capacity		3.000	
29	Transmission-to-Treatment Capacity Factor	2.00		
30	Assumed Existing Transmission Capacity		**6.000**	(6)
31	Unaccounted-For Water Capacity Adjustment	10.0%		(6)
32	Estimated Transmission Capacity		**5.400**	

Line	Description		Total	
	Estimated Cost Per Gallon of Capacity			
	Estimated Cost Per Gallon of Capacity:			
33	Treatment ($/Gallon)	$	12.39	
34	Transmission ($/Gallon)		2.98	
35	**Total Cost Per Gallon of Capacity**	**$**	**15.37**	
36	Daily NCAC Residential Flow Requirement		400	(7)
37	Max/Avg Day Adjustment Factor	1.50		
38	Assumed Standard Level of Service Per ERU (GPD of Capacity)		267	(7)
	Calculation of Fee Per ERU			
	Calculation of SDF Per ERU:			
39	Treatment Facilities	$	3,308	
40	Transmission Facilities		795	
41	**Combined Cost**	**$**	**4,103**	
	Adjusted Fee - Treatment:			
42	Calculated Fee Per ERU	$	3,308	
43	Less Rounding Adjustment		(8)	
44	**Adjusted Fee**	**$**	**3,300**	
	Credit Adjusted Fee - Transmission:			
45	Calculated Fee Per ERU	$	795	
46	Less Rounding Adjustment		(5)	
47	**Adjusted Fee**	**$**	**790**	
	Proposed SDF Per ERU (Rounded):			
48	Treatment Facilities	$	3,300	
49	Transmission Facilities		790	
50	**Combined Cost**	**$**	**4,090**	

Line	Description	Total

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 1.5-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 15.0%.

(6) It is assumed that the existing transmission facilities are capable of providing average water flow at least 2.0-times 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 9
System Development Fee Analysis
Calculated Fees - Combined Method
Water System

Line	Description	Meter-Based ERU Factor	Existing Fees	Calculated Fees [1]	Difference
	EXISTING SDFs				
	Meter Size:				
1	5/8 x 3/4 Inch	1.00	$ 2,232	$ 4,090	$ 1,858
2	1.0 Inch	2.50	$ 5,580	$ 10,225	$ 4,645
3	1.5 Inch	5.00	$ 11,160	$ 20,450	$ 9,290
4	2.0 Inch	8.00	$ 17,856	$ 32,720	$ 14,864
5	3.0 Inch	16.00	$ 35,712	$ 65,440	$ 29,728
6	4.0 Inch	25.00	$ 55,800	$ 102,250	$ 46,450
7	6.0 Inch	50.00	$ 111,600	$ 204,500	$ 92,900
	OPTIONAL ACTUAL FLOW BASIS [2]				
	Charge Per Gallon of Capacity (GPD):				
8	Treatment Facilities			$ 12.39	
9	Transmission Facilities			2.98	
10	Cost Per GPD			$ 15.37	

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.