March 28, 2023

DRAFT - 1

Steve Ward, Director
Harnett Regional Water
PO Box 1119
700 McKinney Parkway
Lillington, NC 27546

Subject: Water and Wastewater System Development Fee Study - 2023

Dear Mr. Ward,

WILLDAN FINANCIAL SERVICES ("Willdan") is pleased to submit to Harnett Regional Water ("HRW") 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.

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 wastewater 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. 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

In 2017, the General Assembly of North Carolina 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 five to twenty-year capital improvement plan (incremental method). The combined method includes both existing assets and future capital projects required to serve growth. Based on the direction of staff, the analysis developed herein for calculation of the SDFs utilizes the buy-in method.

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 address the legal requirements set forth above to develop fees in accordance with Chapter 162A.

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

HRW currently imposes SDFs on new customers requiring water and/or wastewater utility service. The current fees are $2,000 and $2,500 per residential dwelling unit, for water and wastewater, respectively. For new, nonresidential/commercial customers, the fee is based on the SDF per residential dwelling unit and calculated on an equivalency basis. It is understood that the current fees and fee structure are in accordance with the Chapter 162A requirements. Since it has been almost 5 years from the time the existing fees were adopted, to remain in compliance with Chapter 162A, it is time for the fees to be updated.

EXISTING TAP FEES

HRW currently imposes tap 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 tap fees are established for the purpose of recovering the costs associated with performing the customer service act of physically making a new system connection (i.e., meter, 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 services available to the public. The proposed fees designed herein are intended to be in addition to the existing tap fees. As such, it is proposed that the existing tap fees continue to be imposed. It should be noted that, for the purpose of the Report, the existing tap 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 CAPITAL 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 by means of 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, HRW 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 many general construction cost

indexes are published, 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 1**.

TABLE 1
RCNLD OF EXISTING UTILITY ASSETS

Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
Total Utility Assets:				
Land	$ 1,125,507	$ 1,125,507	$ 0	$ 1,125,507
Plant, Distribution, And Collection Systems	466,121,896	1,004,585,708	(374,252,893)	630,332,815
Buildings And Building Improvements	14,801,751	23,862,369	(5,125,758)	18,736,611
Furniture, Fixtures, And Equipment	4,133,678	6,834,014	(6,755,826)	78,188
Vehicles	3,553,086	3,553,085	(3,381,749)	171,336
Total	$ 489,735,918	$ 1,039,960,683	$ (389,516,226)	$ 650,444,457

For SDF analyses, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes the treatment plant facilities (water and 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 2**.

TABLE 2
ALLOCATION OF EXISTING RECOVERABLE FACILITIES

Description	RCNLD Included for Recovery		
	Water	Wastewater	Total
Total Recoverable Assets:			
Land	$ 452,764	$ 452,764	$ 905,528
Plant, Distribution, And Collection Systems	312,114,769	222,426,043	534,540,812
Buildings And Building Improvements	0	18,643,889	18,643,889
Furniture, Fixtures, And Equipment	0	0	0
Vehicles	0	0	0
Total	$ 312,567,533	$ 241,522,696	$ 554,090,229
Allocation of Recoverable Assets:			
Treatment Facilities	$ 223,366,052	$ 117,282,287	$ 340,648,339
Transmission Facilities	89,201,481	124,240,409	213,441,890
Total	$ 312,567,533	$ 241,522,696	$ 554,090,229

DEBT SERVICE CREDIT

It is common practice for utilities to fund major capital improvements and expansion projects with debt (i.e., bond issues). Typically, 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 mitigate 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. A summary of the recoverable capital facilities as adjusted for the applicable credit is provided in **Table 3**.

TABLE 3
SUMMARY OF NET RECOVERABLE FACILITIES

Description	Recoverable Facilities		
	Water	Wastewater	Total
Existing Facilities:			
Treatment Facilities	$ 223,366,052	$ 117,282,287	$ 340,648,339
Transmission Facilities	89,201,481	124,240,409	213,441,890
Subtotal	$ 312,567,533	$ 241,522,696	$ 554,090,229
Less Debt Principal Balance:			
Treatment Facilities	$ (8,097,408)	$ (12,152,438)	$ (20,249,846)
Transmission Facilities	(3,233,978)	(12,873,176)	(16,107,154)
Subtotal	$ (11,331,386)	$ (25,025,614)	$ (36,357,000)
Combined Recoverable Costs:			
Treatment Facilities	$ 215,268,644	$ 105,129,849	$ 320,398,493
Transmission Facilities	85,967,503	111,367,233	197,334,736
Total	$ 301,236,147	$ 216,497,082	$ 517,733,229

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 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 utility staff and included in master planning documents, as well as assumptions based on common industry standards.

Water Treatment

HRW owns and operates the Harnett Regional Water Treatment Plant with a total design capacity of 42.00 MGD (million gallons per day). While the permitted 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 treatment plant and other water supply sources results in an average daily flow capacity of 28.00 MGD. An additional adjustment is made based on 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. Based on information provided by staff, the analysis performed herein assumes an average unaccounted-for water factor of 14.0% to adjust for the unaccounted-for water flows at the treatment plant. This final adjustment results in an estimated average daily treatment plant capacity of 24.080 MGD.

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 transmission facilities can provide average water flow at least equal to 2.00 times the average day treatment capacity, resulting in 56.000 MGD. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water. This final adjustment results in an estimated average daily treatment plant capacity of 48.160 MGD.

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. HRW owns and operates the North Harnett and South Harnett Wastewater Treatment Plants with permitted capacities of 7.50 and 15.00 MGD, respectively, totaling 22.50 MGD of existing 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, wastewater systems are impacted by inflow and infiltration (I&I) into the wastewater collection facilities. 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 wastewater treatment capacity is adjusted for an assumed I&I impact of 20.0%, resulting in an adjusted average daily treatment capacity of 18.000 MGD.

Wastewater Transmission

Like 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 the permitted plant capacities, or 22.500 MGD. As with the adjustment made to the wastewater

treatment capacity, the transmission capacity is adjusted for an assumed I&I impact of 20.0%, resulting in an adjusted average daily treatment capacity of 18.000 MGD.

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 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 $10.73 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs are $12.03 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 gallons per day (gpd). Based on HRW's existing planning methodology, it is assumed that 1 ERU requires a standard level of service of 360 gpd of water system capacity.

Similar to the water system, the SDFs 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 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. This analysis assumes an average of 3 bedrooms per new home constructed. Applying the State's flow standard to the average number of bedrooms, it is assumed that 1 ERU requires a standard level of service of 360 gpd of wastewater system capacity.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity and adjusting for the applicable debt service credits results in the proposed water and wastewater SDFs of $3,850 and $4,320, respectively, for a typical single-family residential connection (i.e., per ERU). The development of the proposed water and wastewater SDFs is detailed in **Exhibits 2** and **3**, respectively. A summary of the existing and proposed SDFs for a typical new residential connection 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	$ 2,000	$ 3,850	$ 1,850
Wastewater	2,500	4,320	1,820
Total	$ 4,500	$ 8,170	$ 3,670

APPLICATION OF SDFs

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. One ERU is equal to the average anticipated flow for a single-family dwelling. New connections with greater water requirements have the potential of placing more demand on the system (i.e., require more capacity) and are assessed ERU factors accordingly. Under HRW's current methodology, ERU factors for new non-residential connections are determined by comparing the average daily usage/flow requirement to the daily LOS requirements per ERU as previously addressed.

TABLE 6
PROPOSED/CALCULATED SYSTEM DEVELOPMENT FEES

Description	System Development Fee Per ERU		
	Water	Wastewater	Total
Proposed/Calculated	$ 3,850	$ 4,320	$ 8,170

It is not suggested that HRW change its current methodology for calculating the SDFs applied to non-residential customers. However, this Report gives consideration to a potentially more administratively efficient fee structure. It is common practice in the utility industry to charge capacity-related fees based upon the size of the water meter. The concept is that the meter size is directly correlated to the potential demand a customer can place on the system. With a meter-based fee structure, one ERU is equal to the average anticipated flow 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 fees for larger connection sizes is based on standardized demand criteria established by the American Water Works Association

(AWWA) and the Water Environment Federation (WEF) pursuant to the size of the water meter. Utilizing the AWWA/WEF 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. If HRW chooses to go this direction, the meter-based fees displayed below utilize the AWWA/WEF meter equivalency methodology. 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 industry standards. The applicable meter-based fees are summarized in **Table 7**.

TABLE 7
METER-BASED SYSTEM DEVELOPMENT FEES

Description	Meter Factor (1)	Proposed/Calculated Fees By Meter Size		
		Water	Wastewater	Total
Meter Size:				
5/8 x 3/4 Inch	1.00	$ 3,850	$ 4,320	$ 8,170
1.0 Inch	2.50	$ 9,625	$ 10,800	$ 20,425
1.5 Inch	5.00	$ 19,250	$ 21,600	$ 40,850
2.0 Inch	8.00	$ 30,800	$ 34,560	$ 65,360
3.0 Inch	16.00	$ 61,600	$ 69,120	$ 130,720
4.0 Inch	25.00	$ 96,250	$ 108,000	$ 204,250
6.0 Inch	50.00	$ 192,500	$ 216,000	$ 408,500
8.0 Inch	80.00	$ 308,000	$ 345,600	$ 653,600

(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 HRW'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 2** and **3** 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, HRW will require certified engineering documentation defining the capacity utilization needs for the new customer.

COMPARISON WITH NEIGHBORING UTILITIES

To provide HRW 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 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 HRW, 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 fee studies comparable to the one addressed in this Report, including a neighboring utility comparison at this time will provide somewhat meaningless information. If HRW 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 HRW 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 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 considerations provided herein should be directed to HRW'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 proposed herein are developed in accordance with the requirements of Chapter 162A and utilize methodologies that are consistent with industry standards.

5. The water and wastewater LOS standards proposed herein for establishing an ERU basis are based on flow standards utilized by HRW for system planning and design purposes and are consistent with common industry standards.

6. HRW currently imposes tap 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 HRW:

1. Adopt the proposed SDFs and application methodology as developed in this Report;

2. Enact the proposed SDFs to become effective on July 1, 2023 or other such date as determined appropriate by the Board of Commissioners of Harnett County; 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 HRW in this matter. In addition, we would like to thank you and the other members of HRW 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

EXHIBITS 1-4

SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY

WATER & WASTEWATER SDF STUDY FOR HARNETT REGIONAL WATER

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
	WATER SYSTEM ASSETS				
	Water Assets by Category:				
1	Land	$ 642,107	$ 642,107	$ 0	$ 642,107
2	Plant, distribution, and collection sys.	255,105,923	636,332,517	(255,228,384)	381,104,133
3	Buildings and building improvements	88,616	240,608	(195,954)	44,654
4	Furniture, fixtures, and equipment	2,019,684	3,329,106	(3,290,012)	39,094
5	Vehicles	1,740,812	1,740,811	(1,655,143)	85,668
6	Total	$ 259,597,142	$ 642,285,149	$(260,369,493)	$ 381,915,656
	Adjusted For Assumed Cost Limit ($):				
7	Land	$ 452,764	$ 452,764	$ 0	$ 452,764
8	Plant, distribution, and collection sys.	193,048,913	494,776,152	(182,661,383)	312,114,769
9	Buildings and building improvements	0	0	0	0
10	Furniture, fixtures, and equipment	444,849	568,385	(568,385)	0
11	Vehicles	258,099	258,100	(255,847)	2,253
12	Total	$ 194,204,625	$ 496,055,401	$(183,485,615)	$ 312,569,786
	WASTEWATER SYSTEM ASSETS				
	Wastewater Assets by Category:				
13	Land	$ 483,400	$ 483,400	$ 0	$ 483,400
14	Plant, distribution, and collection sys.	211,015,973	368,253,191	(119,024,509)	249,228,682
15	Buildings and building improvements	14,713,135	23,621,761	(4,929,804)	18,691,957
16	Furniture, fixtures, and equipment	2,113,994	3,504,908	(3,465,814)	39,094
17	Vehicles	1,812,274	1,812,274	(1,726,606)	85,668
18	Total	$ 230,138,776	$ 397,675,534	$(129,146,733)	$ 268,528,801
	Adjusted For Assumed Cost Limit ($):				
19	Land	$ 452,764	$ 452,764	$ 0	$ 452,764
20	Plant, distribution, and collection sys.	184,565,333	307,103,548	(84,677,505)	222,426,043
21	Buildings and building improvements	14,595,384	23,332,657	(4,688,768)	18,643,889
22	Furniture, fixtures, and equipment	444,849	568,385	(568,385)	0
23	Vehicles	258,099	258,100	(255,847)	2,253
24	Total	$ 200,316,429	$ 331,715,454	$ (90,190,505)	$ 241,524,949

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
	TOTAL SYSTEM ASSETS				
	Total Assets by Category:				
25	Land	$ 1,125,507	$ 1,125,507	$ 0	$ 1,125,507
26	Plant, distribution, and collection sys.	466,121,896	1,004,585,708	(374,252,893)	630,332,815
27	Buildings and building improvements	14,801,751	23,862,369	(5,125,758)	18,736,611
28	Furniture, fixtures, and equipment	4,133,678	6,834,014	(6,755,826)	78,188
29	Vehicles	3,553,086	3,553,085	(3,381,749)	171,336
30	Total	$ 489,735,918	$ 1,039,960,683	$(389,516,226)	$ 650,444,457
	Adjusted For Assumed Cost Limit ($):				
31	Land	$ 905,528	$ 905,528	$ 0	$ 905,528
32	Plant, distribution, and collection sys.	377,614,246	801,879,700	(267,338,888)	534,540,812
33	Buildings and building improvements	14,595,384	23,332,657	(4,688,768)	18,643,889
34	Furniture, fixtures, and equipment	889,698	1,136,770	(1,136,770)	0
35	Vehicles	516,198	516,200	(511,694)	4,506
36	Total	$ 394,521,054	$ 827,770,855	$(273,676,120)	$ 554,094,735
	Recoverable Allocation - Water (%):				
37	Land				**100%**
38	Plant, distribution, and collection sys.				**100%**
39	Buildings and building improvements				**100%**
40	Furniture, fixtures, and equipment				**0%**
41	Vehicles				**0%**
	Recoverable Allocation - Wastewater (%):				
42	Land				**100%**
43	Plant, distribution, and collection sys.				**100%**
44	Buildings and building improvements				**100%**
45	Furniture, fixtures, and equipment				**0%**
46	Vehicles				**0%**

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
	System Allocation - Water ($):				
47	Land				$ 452,764
48	Plant, distribution, and collection sys.				312,114,769
49	Buildings and building improvements				0
50	Furniture, fixtures, and equipment				0
51	Vehicles				0
52	Total				$ 312,567,533
	System Allocation - Wastewater ($):				
53	Land				$ 452,764
54	Plant, distribution, and collection sys.				222,426,043
55	Buildings and building improvements				18,643,889
56	Furniture, fixtures, and equipment				0
57	Vehicles				0
58	Total				$ 241,522,696
59	**Grand Total Recoverable Assets**				**$ 554,090,229**
	COMPONENT ALLOCATION				
	Total Recoverable Water Facilities:				
60	Treatment Facilities			71.46%	$ 223,366,052
61	Transmission Facilities			28.54%	89,201,481
62	**Subtotal**			100.00%	$ 312,567,533
	Total Recoverable Wastewater Facilities:				
63	Treatment Facilities			48.56%	$ 117,282,287
64	Transmission Facilities			51.44%	124,240,409
65	**Subtotal**			100.00%	$ 241,522,696
	Combined Recoverable Facilities:				
66	Treatment Facilities			61.48%	$ 340,648,339
67	Transmission Facilities			38.52%	213,441,890
68	**Total**			100.00%	$ 554,090,229

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
	COMPARISON TO TOTAL				
69	**Total Utility Assets**				$ 650,444,457
70	**Combined Recoverable Assets**				$ 554,090,229
	Difference (Assets Excluded From Recovery):				
71	Excluded From Recovery ($)				$ 96,354,228
72	Excluded From Recovery (%)				14.81%
	DEBT SERVICE CREDIT				
73	**Outstanding Debt Principal**				$ 36,357,000
	Allocation Percentage:				
74	Water				31.17%
75	Wastewater				68.83%
	Allocated Debt Service Credit:				
76	Water				$ 11,331,386
77	Wastewater				25,025,614
78	Total				$ 36,357,000
	Component Allocation - Water:				
79	Treatment Facilities			71.46%	$ 8,097,408
80	Transmission Facilities			28.54%	3,233,978
81	Total			100.00%	$ 11,331,386
	Component Allocation - Wastewater:				
82	Treatment Facilities			48.56%	$ 12,152,438
83	Transmission Facilities			51.44%	12,873,176
84	Total			100.00%	$ 25,025,614

Exhibit 2
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Water System

Line	Description		Total	
	Recoverable Capital Facilities			
	Existing Facilities:			
1	Treatment Facilities		$ 223,366,052	
2	Transmission Facilities		89,201,481	
3	**Subtotal**		$ 312,567,533	(1)
	Less Debt Service Principal:			
4	Treatment Facilities		$ (8,097,408)	
5	Transmission Facilities		(3,233,978)	
6	**Subtotal**		$ (11,331,386)	(2)
	Net Recoverable Existing Facilities:			
7	Treatment Facilities		$ 215,268,644	
8	Transmission Facilities		85,967,503	
9	**Total**		$ 301,236,147	
	Available System Capacity (MGD)			
	Treatment Capacity:			
10	Harnett Regional WTP		42.000	
11	Total Treatment Capacity		**42.000**	
	Average Day Capacity Adjustment:			
12	Treatment Capacity Based on Max/Avg Day Factor	1.50	28.000	
13	Unaccounted-For Water Capacity Adjustment	14.0%		(3)
14	Estimated Treatment Capacity		**24.080**	
	Estimated Transmission System Capacity:			
15	Estimated Treatment Capacity		28.000	
16	Transmission-to-Treatment Capacity Factor	2.00		
17	Assumed Existing Transmission Capacity		**56.000**	(4)
18	Unaccounted-For Water Capacity Adjustment	14.0%		(4)
19	Estimated Transmission Capacity		**48.160**	

Exhibit 2
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Water System

Line	Description		Total	
	Estimated Cost Per Gallon of Capacity			
	Estimated Cost Per Gallon of Capacity:			
20	Treatment ($/Gallon)	$	8.94	
21	Transmission ($/Gallon)		1.79	
22	**Total Cost Per Gallon of Capacity**	**$**	**10.73**	
23	Assumed Standard Level of Service Per ERU (GPD of Capacity)		360	(5)
	Calculation of Fee Per ERU			
	Calculation of SDF Per ERU:			
24	Treatment Facilities	$	3,218	
25	Transmission Facilities		644	
26	Combined Cost	**$**	**3,862**	
	Adjusted Fee - Treatment:			
27	Calculated Fee Per ERU	$	3,218	
28	Less Rounding Adjustment		(8)	
29	Adjusted Fee	$	3,210	
	Credit Adjusted Fee - Transmission:			
30	Calculated Fee Per ERU	$	644	
31	Less Rounding Adjustment		(4)	
32	Adjusted Fee	$	640	
	Proposed SDF Per ERU (Rounded):			
33	Treatment Facilities	$	3,210	
34	Transmission Facilities		640	
35	**Combined Cost**	**$**	**3,850**	

Exhibit 2
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Water System

Line	Description	Total

Notes:

(1) See **Exhibit 1** for the development of existing asset costs identified for capital recovery.

(2) Based upon discussions with 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. The principal balance is allocated between water and wastewater as provided in **Exhibit 1**.

(3) 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. Based on information provided by staff, this analysis assumes losses of 14.0%.

(4) It is assumed that the existing transmission facilities are capable of providing average water flow at least 2.00-times the estimated average treatment capacity. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water. Based on information provided by staff, this analysis assumes losses of 14.0%.

(5) The system development fees 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). Based on the utility's existing planning methodology, it is assumed that 1 ERU requires a standard level of service of 360 gpd of water system capacity.

Exhibit 3
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Wastewater System

Line	Description		Total	
	Recoverable Capital Facilities			
	Existing Facilities:			
1	Treatment Facilities		$ 117,282,287	
2	Transmission Facilities		124,240,409	
3	**Subtotal**		$ 241,522,696	(1)
	Less Debt Service Principal:			
4	Treatment Facilities		$ (12,152,438)	
5	Transmission Facilities		(12,873,176)	
6	**Subtotal**		$ (25,025,614)	(2)
	Net Recoverable Existing Facilities:			
7	Treatment Facilities		$ 105,129,849	
8	Transmission Facilities		111,367,233	
9	**Total**		$ 216,497,082	
	Available System Capacity (MGD)			
	Existing Treatment Capacity:			
10	North Harnett WWTP		7.500	
11	South Harnett WWTP		15.000	
12	Total Existing Treatment Capacity		**22.500**	
	Treatment Capacity:			
13	Average Day Treatment Capacity (MGD)		22.500	
14	I&I Capacity Adjustment	20.0%		(3)
15	Adjusted Average Day Treatment Capacity		**18.000**	
	Estimated Transmission System Capacity:			
16	Transmission-to-Treatment Capacity Factor	1.00		
17	Assumed Gross Transmission Capacity		**22.500**	(4)
18	I&I Capacity Adjustment	20.0%		
19	Estimated Transmission Capacity		**18.000**	(3)

Exhibit 3
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Wastewater System

Line	Description		Total	
	Estimated Cost Per Gallon of Capacity			
	Estimated Cost Per Gallon of Capacity:			
20	Treatment ($/Gallon)	$	5.84	
21	Transmission ($/Gallon)		6.19	
22	**Total Cost Per Gallon of Capacity**	**$**	**12.03**	
23	Assumed Standard Level of Service Per ERU (GPD of Capacity)		360	(5)
	Calculation of Fee Per ERU			
	Calculation of SDF Per ERU:			
24	Treatment Facilities	$	2,102	
25	Transmission Facilities		2,228	
26	Combined Cost	$	4,330	
	Adjusted Fee - Treatment:			
27	Calculated Fee Per ERU	$	2,102	
28	Less Rounding Adjustment		(2)	
29	Adjusted Fee	$	2,100	
	Credit Adjusted Fee - Transmission:			
30	Calculated Fee Per ERU	$	2,228	
31	Less Rounding Adjustment		(8)	
32	Adjusted Fee	$	2,220	
	Proposed SDF Per ERU (Rounded):			
33	Treatment Facilities	$	2,100	
34	Transmission Facilities		2,220	
35	Combined Cost	**$**	**4,320**	

Exhibit 3
System Development Fee Analysis
Calculation of System Development Fee Per ERU
Wastewater System

Line	Description	Total

Notes:

(1) See Exhibit 1 for the development of existing asset costs identified for capital recovery.

(2) Based upon discussions with 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. The principal balance is allocated between water and wastewater as provided in Exhibit 1.

(3) 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.

(4) It is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least 1.50-times the permitted capacity of the treatment plant.

(5) Similar to the water system, the system development fees 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 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, resulting in 360 gallons of capacity per day for a three bedroom residential home.

Exhibit 4
System Development Fee Analysis
Summary of Proposed System Development Fees
Water & Wastewater Systems

Line	Description	ERU Factor	Fees by System		Combined Fee
			Water	Wastewater	
	FEE COMPARISON				
	Meter Size:				
1	Existing	1.00	$ 2,000	$ 2,500	$ 4,500
2	Proposed/Calculated	1.00	$ 3,850	$ 4,320	$ 8,170
3	Difference	1.00	$ 1,850	$ 1,820	$ 3,670
	METER-BASED OPTION (1)				
	Meter Size:				
4	5/8 x 3/4 Inch	1.00	$ 3,850	$ 4,320	$ 8,170
5	1.0 Inch	2.50	$ 9,625	$ 10,800	$ 20,425
6	1.5 Inch	5.00	$ 19,250	$ 21,600	$ 40,850
7	2.0 Inch	8.00	$ 30,800	$ 34,560	$ 65,360
8	3.0 Inch	16.00	$ 61,600	$ 69,120	$ 130,720
9	4.0 Inch	25.00	$ 96,250	$ 108,000	$ 204,250
10	6.0 Inch	50.00	$ 192,500	$ 216,000	$ 408,500
11	8.0 Inch	80.00	$ 308,000	$ 345,600	$ 653,600
	OPTIONAL ACTUAL FLOW BASIS (2)				
	Charge Per Gallon of Capacity (GPD):				
12	Treatment Facilities		$ 8.94	$ 5.84	$ 14.78
13	Transmission Facilities		1.79	6.19	7.98
	Cost Per GPD		$ 10.73	$ 12.03	$ 22.76

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 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 connection. The estimated capacity needs will be based on the amount determined by the utility's engineering staff to be appropriate.