August 22, 2023

DRAFT - 1

Bill Carroll, MPA
Public Works Director
City of Belmont
1401 E Catawba St
Belmont, NC 28012

Subject: Water and Wastewater System Development Fee Study

Dear Mr. Carroll,

WILLDAN FINANCIAL SERVICES ("Willdan") is pleased to submit to the City of Belmont, North Carolina (the "City") 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 several 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 SDF (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 an 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 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 is 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 they 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 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.

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

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

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

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

in calculating the system development fee. (2017-138, s. 1; 2018-34, s. 1(a); 2021-76, s. 2.)

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

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

As such, this Report is intended to assess 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 City currently imposes SDFs on new customers requiring water and/or wastewater utility service. The current fees are $767 and $1,080 per Equivalent Residential Unit ("ERU" or "EU"), for water and wastewater, respectively. The fees are based on the Wastewater Design Flow Rates established by the State of North Carolina in accordance with the type of customer and their average daily flow rates. The City defines an EU as a three-bedroom residential dwelling unit.

Based on discussions with City staff, it is understood that the current fees and fee structure were developed and adopted in accordance with Chapter 162A.

EXISTING TAP FEES

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

EXISTING & PROJECTED CAPITAL FACILITIES

Existing Facilities – Buy-In Method

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

While there are asset valuation methods, 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 City 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 distinct types of utility construction, including water systems. Since much of the construction material and equipment is similar, the index is commonly applied to wastewater systems as well. 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 1**.

TABLE 1
RCNLD OF EXISTING UTILITY ASSETS

Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
Total Utility Assets:				
Machinery And Equipment	$ 12,671,963	$ 29,566,802	$ (25,804,336)	$ 3,762,466
Public Works Facilities	6,747,112	9,092,171	(753,758)	8,338,413
Building Improvements	12,564,761	41,171,175	(33,199,351)	7,971,824
Fill Station	258,342	689,329	(420,944)	268,385
Lines	49,459,400	117,868,540	(59,277,525)	58,591,015
Wells	3,000	18,660	(18,660)	0
Tanks	1,326,986	21,552,419	(18,711,254)	2,841,165
Land	105,563	105,563	0	105,563
Right Of Ways	28,912	28,912	0	28,912
Land Improvements	605,050	605,051	(183,584)	421,467
Vehicles	2,360,361	2,360,362	(1,719,099)	641,263
Equipment Improvements	92,512	159,535	(159,535)	0
Total	$ 86,223,962	$ 223,218,519	$ (140,248,046)	$ 82,970,473

As provision for SDF analyses, the existing assets are categorized based on the major components of **Treatment** and **Transmission**. The treatment category includes any treatment plant facilities (water and/or wastewater) and accompanying supply and storage facilities (water only), as well as wastewater effluent disposal facilities. The transmission/collection category consists of major water mains, water pumping facilities, sewer lift stations and collection lines. Since the localized distribution and collection facilities are 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 is set as a condition of inclusion

of the asset items in the SDF calculation. Based on discussions with City staff, for the purposes of this analysis, the cost is set at $100,000.

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 (e.g., equipment, vehicles, etc.) 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:			
Machinery And Equipment	$ 0	$ 0	$ 0
Public Works Facilities	0	0	0
Building Improvements	2,303,653	4,983,165	7,286,818
Fill Station	0	253,757	253,757
Lines	20,988,596	36,028,877	57,017,473
Wells	0	0	0
Tanks	2,841,165	0	2,841,165
Land	0	0	0
Right Of Ways	0	0	0
Land Improvements	0	271,298	271,298
Vehicles	0	0	0
Equipment Improvements	0	0	0
Total	$ 26,133,414	$ 41,537,097	$ 67,670,511
Allocation of Recoverable Assets:			
Treatment Facilities	$ 2,303,653	$ 5,508,220	$ 7,811,873
Transmission Facilities	23,829,761	36,028,877	59,858,638
Total	$ 26,133,414	$ 41,537,097	$ 67,670,511

Capital Improvements Program – Incremental Cost Method

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

For example, projects that are funded from grants or developer contributions are excluded from the SDF calculation since these are costs that are not incurred by the utility.

The SDFs developed herein utilize the incremental cost method and therefore include future capital improvement projects and their applicable additions to system capacity. The City provided a CIP listing of proposed projects and their costs by year for fiscal years 2024 through 2028 plus a group of projects and costs for the subsequent 5-year period beyond FY 2028. The CIP is provided in **Exhibit 2**. Like the rationale for excluding certain existing assets from recovery through SDFs, the CIP project costs included for capital recovery in the analysis consist of only those projects associated with system-wide upgrades or expansions. As such, projects related to general maintenance (i.e., renewal and replacement of existing facilities) or localized facilities that benefit only certain customers are excluded from recovery through the SDFs. The CIP and resulting identification of assumed growth-related projects (i.e., project costs recoverable from SDFs) are provided in **Exhibit 3**. The Exhibit also provides a summary allocation of the recoverable costs between the treatment and transmission components. The projected growth-related projects and capital costs included in the analysis are summarized in **Table 3**.

TABLE 3
SUMMARY OF THE CIP & RECOVERABLE CAPITAL COSTS

Description	Total CIP	Excluded Capital	Recoverable Capital
Water:			
Treatment Facilities	$20,743,280	$ 5,002,925	$ 15,740,355
Transmission Facilities	22,591,337	9,567,575	13,023,762
Other Facilities	0	0	0
Total	$43,334,617	$ 14,570,500	$ 28,764,117
Wastewater:			
Treatment Facilities	$ -	$ -	$ -
Transmission Facilities	22,542,301	5,924,466	16,617,835
Other Facilities	0	0	0
Total	$22,542,301	$ 5,924,466	$ 16,617,835
Combined:			
Treatment Facilities	$20,743,280	$ 5,002,925	$ 15,740,355
Transmission Facilities	45,133,638	15,492,041	29,641,597
Other Facilities	0	0	0
Total	$65,876,918	$ 20,494,966	$ 45,381,952

Total Facilities – Combined Method

The analysis developed herein for calculation of the SDFs proposes the combined method. As the name implies, the combined method includes the cost/value of both the existing facilities currently providing service, as well as the planned facilities required to perpetuate or expand service. This

method assumes that the utility has capacity within the existing system sufficient to serve near-term growth but will require additional capacity to meet future growth needs. Using this method, new customers pay an SDF that reflects the value of both existing and planned capacity. The combined system costs included for recovery are summarized in **Table 4**.

TABLE 4
SUMMARY OF COMBINED RECOVERABLE FACILITIES

Description	Recoverable Facilities		
	Water	Wastewater	Total
Existing Facilities:			
Treatment Facilities	$ 2,303,653	$ 5,508,220	$ 7,811,873
Transmission Facilities	23,829,761	36,028,877	59,858,638
Subtotal	$ 26,133,414	$ 41,537,097	$ 67,670,511
Capital Improvement Program:			
Treatment Facilities	$ 15,740,355	$ -	$ 15,740,355
Transmission Facilities	13,023,762	16,617,835	29,641,597
Subtotal	$ 28,764,117	$ 16,617,835	$ 45,381,952
Combined Recoverable Costs:			
Treatment Facilities	$ 18,044,008	$ 5,508,220	$ 23,552,228
Transmission Facilities	36,853,523	52,646,712	89,500,235
Total	$ 54,897,531	$ 58,154,932	$113,052,463

SDF CALCULATION CREDITS

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.

In addition to the credit on the existing facilities, the analysis developed herein applies a credit to the planned future facilities provided in the CIP (incremental cost method). The credit for the future facilities is equal to 25% of the recoverable CIP, which meets the requirements of Chapter 162A. A summary of the combined recoverable capital facilities as adjusted for the applicable credits is provided in **Table 5**.

TABLE 5
SUMMARY OF NET RECOVERABLE FACILITIES

Description	Net Recoverable Facilities		
	Water	Wastewater	Total
Combined Recoverable Costs:			
Treatment Facilities	$ 18,044,008	$ 5,508,220	$ 23,552,228
Transmission Facilities	36,853,523	52,646,712	89,500,235
Subtotal	$ 54,897,531	$ 58,154,932	$ 113,052,463
Less Combined Credits:			
Treatment Facilities	$ (4,103,193)	$ (292,847)	$ (4,396,040)
Transmission Facilities	(4,995,942)	(6,070,110)	(11,066,052)
Subtotal	$ (9,099,135)	$ (6,362,957)	$ (15,462,092)
Net Capital Costs:			
Treatment Facilities	$ 13,940,815	$ 5,215,373	$ 19,156,188
Transmission Facilities	$ 31,857,581	$ 46,576,602	$ 78,434,183
Net Recoverable Costs	$ 45,798,396	$ 51,791,975	$ 97,590,371

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 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 City, as well as assumptions based on common industry standards.

Water Treatment

The City of Belmont Water Treatment Plant has a treatment capacity of 10.00 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. In accordance with 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 treatment facilities results in an average daily flow capacity of 6.667 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 discussions with staff, the analysis performed herein assumes an average loss factor of 15.0% to adjust for the unaccounted-for water flows. This final adjustment results in an assumed average daily treatment plant capacity of 5.667 MGD (see **Exhibit 4**).

Water Transmission

Unlike treatment facilities, the capacity information for major transmission facilities is extremely difficult to determine and quantify. Such transmission capacity estimates are typically not even developed in engineering documents such as master plans or Consulting Engineer's Reports. Based on discussions with staff, it is assumed that the existing transmission facilities can provide water flow at least equal to 1.50 times the existing max-day treatment capacity, resulting in 15.00 MGD. Like the adjustment for treatment, a 15.0% loss adjustment is made to the transmission facilities resulting in an adjusted capacity of 12.750 MGD (see **Exhibit 4**).

Wastewater Treatment

Due to the regulatory and design requirements for wastewater treatment plants, the capacity of treatment facilities is frequently well documented. The wastewater treatment facilities are designed and permitted in accordance with published hydraulic standards adopted by Section 15A NCAC 02T .0114 of the North Carolina Administrative Code regulations. The City's Wastewater Treatment Plant has a permitted treatment capacity of 5.00 MGD.

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 4.00 MGD (see **Exhibit 5**).

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 challenging 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 1.50 times the existing treatment capacity, or 7.50 MGD. Like the adjustment for treatment, a 20.0% I&I adjustment is made to the transmission facilities resulting in an adjusted capacity of 6.00 MGD (see **Exhibit 5**).

DEVELOPMENT OF SDFs

The methodology utilized herein for developing the water and wastewater SDFs relies upon the cost of major system facilities as well as the existing and expanded system capacities to calculate an estimated cost per unit (gallon) of capacity. Based on this methodology, it is estimated that the water facility costs $4.96 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs $9.06 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 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 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. Based on the utility's existing planning methodology, it is assumed that 1 ERU/EU requires a standard level of service of 360 gpd of water system capacity.

Like the water system, the SDFs for wastewater are to be applied on an ERU basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State and defined by the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. However, the City has received a reduction letter from the State allowing it to use 80 gpd per bedroom for planning and design purposes for the wastewater system. Based on discussions with staff, the analysis developed herein assumes that the standard for the City is three bedrooms. The resulting standard LOS is 240 gpd of wastewater system capacity per ERU/EU.

Applying the average day LOS amounts to the estimated unit costs per gallon of capacity results in the proposed/calculated water and wastewater SDFs of $1,780 and $2,170, respectively, as rounded down, for a typical single-family residential connection (i.e., per ERU/EU). The development of the water and wastewater SDFs is detailed in **Exhibits 4** and **5**, respectively. A summary of the existing and proposed/calculated SDFs for a new residential connection is provided in **Table 6**.

TABLE 6
COMPARISON OF SDFs PER ERU/EU

Description	System Development Fee Per ERU/EU		
	Existing	Calculated	Difference
System Development Fees:			
Water	$ 767	$ 1,780	$ 1,013
Wastewater	1,080	2,170	1,090
Total	$ 1,847	$ 3,950	$ 2,103

APPLICATION OF SDFs

As previously addressed, the City imposes SDFs on new customers based on the type of customer and their average daily flow rates. This methodology is based on and consistent with Design Flow Rates established by the State of North Carolina. The flow rates currently applied by the City are used herein to establish equivalency factors for each type of customer. The proposed/calculated water and wastewater SDFs for the various customers are provided in **Exhibit 7** and summarized in **Table 7**.

TABLE 7
PROPOSED/CALCULATED SYSTEM DEVELOPMENT FEES

UNIT DESCRIPTION	Flow/Unit*	EU's	WATER ONLY CPU	SEWER ONLY CPU	WATER & SEWER CPU
Residential					
3 bedroom house/apartment**	360 gpd/dwelling unit	1.000	$ 1,780	$ 2,170	$ 3,950
5 bedroom house	600 gpd/dwelling unit	1.667	$ 2,967	$ 3,617	$ 6,584
4 bedroom house	480 gpd/dwelling unit	1.333	$ 2,373	$ 2,893	$ 5,266
2 bedroom house/apartment	240 gpd/dwelling unit	0.667	$ 1,187	$ 1,447	$ 2,634
1 bedroom apartment	120 gpd/dwelling unit	0.333	$ 593	$ 723	$ 1,316
Barber & Beauty Shops					
Barber Shop	50 gpd/chair	0.139	$ 247	$ 302	$ 549
Beauty Shops	125 gpd/booth	0.347	$ 618	$ 753	$ 1,371
Businesses, Offices & Factories					
Businesses & Offices	25 gpd/employee/shift	0.069	$ 123	$ 150	$ 273
Businesses with food preparation	35 gpd/employee/shift	0.097	$ 173	$ 210	$ 383
Businesses with showers	35 gpd/employee/shift	0.097	$ 173	$ 210	$ 383
Factories excluding industrial waste	25 gpd/employee/shift	0.069	$ 123	$ 150	$ 273
Factories with food preparation	35 gpd/employee/shift	0.097	$ 173	$ 210	$ 383
Factories with showers	35 gpd/employee/shift	0.097	$ 173	$ 210	$ 383
Warehouse	100 gpd/loading bay	0.278	$ 495	$ 603	$ 1,098
Warehouse - self store	1 gpd/storage unit	0.003	$ 5	$ 7	$ 12
Churches					
Churches without kitchens	3 gpd/seat	0.008	$ 14	$ 17	$ 31
Churches with kitchen	5 gpd/seat	0.014	$ 25	$ 30	$ 55
Churches with day care	25 gpd/child & employee	0.069	$ 123	$ 150	$ 273
Fire/Rescue Stations					
Fire stations - volunteer	25 gpd/employee	0.069	$ 123	$ 150	$ 273
Fire stations - full time staff	50 gpd/employee/shift	0.139	$ 247	$ 302	$ 549
Food Facilities					
Banquet halls	30 gpd/seat	0.083	$ 148	$ 180	$ 328
Bars	20 gpd/seat	0.056	$ 100	$ 122	$ 222
Caterers	50 gpd/100 sf	0.139	$ 247	$ 302	$ 549
Restaurants - full service	40 gpd/seat	0.111	$ 198	$ 241	$ 439
Restaurants - drive-in service	50 gpd/car space	0.139	$ 247	$ 302	$ 549
Restaurants - carry out	50 gpd/100 sf	0.139	$ 247	$ 302	$ 549
Institutions - dining hall	5 gpd/meal	0.014	$ 25	$ 30	$ 55
Deli	40 gpd/100 sf	0.111	$ 198	$ 241	$ 439
Bakery	10 gpd/100 sf	0.028	$ 50	$ 61	$ 111
Meat Department, butcher/fish shop	75 gpd/100 sf	0.208	$ 370	$ 451	$ 821
Food stand or kiosk	50 gpd/100 sf	0.139	$ 247	$ 302	$ 549

TABLE 7
PROPOSED/CALCULATED SYSTEM DEVELOPMENT FEES (CONT.)

UNIT DESCRIPTION	Flow/Unit*	EU's	WATER ONLY CPU	SEWER ONLY CPU	WATER & SEWER CPU
Hotels & Motels					
Motel/Hotel/B&B	120 gpd/room	0.333	$ 593	$ 723	$ 1,316
Motel/Hotel with in room kitchens	175 gpd/room	0.486	$ 865	$ 1,055	$ 1,920
Laundries					
Laundries	500 gpd/machine	1.389	$ 2,472	$ 3,014	$ 5,486
Medical, Dental, & Veterinary					
Medical or dental offices	250 gpd/machine	0.694	$ 1,235	$ 1,506	$ 2,741
Hospitals	300 gpd/bed	0.833	$ 1,483	$ 1,808	$ 3,291
Convalescent facilities	60 gpd/bed	0.167	$ 297	$ 362	$ 659
Convalescent facilities with laundry	120 gpd/bed	0.333	$ 593	$ 723	$ 1,316
Residential care facilities	60 gpd/person	0.167	$ 297	$ 362	$ 659
Veterinary office	250 gpd/practitioner/shift	0.694	$ 1,235	$ 1,506	$ 2,741
Veterinary hospitals	20 gpd/cage, pen, kennel	0.056	$ 100	$ 122	$ 222
Veterinary boarding facilities	20 gpd/cage, pen, kennel	0.056	$ 100	$ 122	$ 222
Public Facilities					
Public access restrooms	325 gpd/plumbing fixture	0.903	$ 1,607	$ 1,960	$ 3,567
Stadiums, auditoriums, & theaters	5 gpd/seat	0.014	$ 25	$ 30	$ 55
Schools & Day Care					
Day care facilities	25 gpd/child & employee	0.069	$ 123	$ 150	$ 273
Schools	10 gpd/student	0.028	$ 50	$ 61	$ 111
Schools with cafeteria	12 gpd/student	0.033	$ 59	$ 72	$ 131
Schools with cafeteria & gym show	15 gpd/student	0.042	$ 75	$ 91	$ 166
Boarding schools	60 gpd/student & employee	0.167	$ 297	$ 362	$ 659
Service Stations					
Service station	250 gpd/plumbing fixture	0.694	$ 1,235	$ 1,506	$ 2,741
Car washes without recycle	1200 gpd/bay	3.333	$ 5,933	$ 7,233	$ 13,166
Sports centers					
Bowling center	50 gpd/lane	0.139	$ 247	$ 302	$ 549
Fitness, karate, & dance centers	50 gpd/100 sf	0.139	$ 247	$ 302	$ 549
Gymnasiums	50 gpd/100 sf	0.139	$ 247	$ 302	$ 549
Stores					
Auto & boat dealerships	125 gpd/100 gpd ave.	0.347	$ 618	$ 753	$ 1,371
Convenience stores	60 gpd/100 sf	0.167	$ 297	$ 362	$ 659
Convenience stores with food prep	250 gpd/plumbing fixture	0.694	$ 1,235	$ 1,506	$ 2,741
Shopping centers & stores	100 gpd/1000 sf	0.278	$ 495	$ 603	$ 1,098
Shopping centers & stores with food	130 gpd/1000 sf	0.361	$ 643	$ 783	$ 1,426
Miscellaneous					
Irrigation (Commercial Uses)	100 gpd/100 gpd ave.	0.278	$ 495	$ 603	$ 1,098
Irrigation (Single Family Lots)	600 gpd/single family lot	0.556	$ 990	$ 1,207	$ 2,197
Unspecified Uses****	100 gpd/100 gpd ave.	0.278	$ 495	$ 603	$ 1,098

* Reference - NC Administration Code T15A: 02H .0114
** Standard for EU (Equivalent Unit)
**** Water usage for unspecified uses shall be estimated by design engineer
*****Businesses & offices will be base on 3 people per 1,000 sf of space

Although the current methodology of applying the fees is reasonable and equitable, it is suggested that the City consider a 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 the City 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 **Exhibit 6** and summarized in **Table 8**.

TABLE 8
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	$ 1,780	$ 2,170	$ 3,950
1.0 Inch	2.50	$ 4,450	$ 5,425	$ 9,875
1.5 Inch	5.00	$ 8,900	$ 10,850	$ 19,750
2.0 Inch	8.00	$ 14,240	$ 17,360	$ 31,600
3.0 Inch	16.00	$ 28,480	$ 34,720	$ 63,200
4.0 Inch	25.00	$ 44,500	$ 54,250	$ 98,750
6.0 Inch	50.00	$ 89,000	$ 108,500	$ 197,500
8.0 Inch	80.00	$ 142,400	$ 173,600	$ 316,000

(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 City's Engineering Department or Public Works Department. For such situations, it is important for the utility to have

the flexibility to utilize an ERU/EU methodology for individual accounts based on specific capacity requirements.

This alternative methodology is to apply the calculated unit costs per gallon of capacity as provided in **Exhibit 6** times the capacity requirement for the 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 City will require certified engineering documentation defining the capacity utilization needs for the new customer.

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 City 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 and maintain 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 City'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 City, as well as the multi-year capital improvement plan.

6. The water and wastewater LOS standards proposed herein for establishing an ERU/EU basis are based on flow standards approved by the State of North Carolina and utilized by the City for system planning and design purposes and are consistent with common industry standards.

7. The City 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 impact on the level or application methodology for these other new 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 City:

1. Adopt the calculated SDFs and application methodology as developed in this Report, or other such SDF amounts as determined appropriate by the City but not to exceed the fee amounts calculated herein.

2. Enact the new SDFs to become effective on November 1, 2023, or other such date as determined appropriate by the City 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 City in this matter. In addition, we would like to thank you and the other members of the City 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 - 7

SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY

WATER & WASTEWATER SDF STUDY FOR THE CITY OF BELMONT, NORTH CAROLINA

Prepared by Willdan Financial Services