



**CITY OF LOWELL
SPECIAL COUNCIL MEETING AGENDA
TUESDAY, JUNE 21, 2022, 6:00 P.M.**

- 1. CALL TO ORDER – Mayor Sandy Railey**
- 2. ADOPTION OF AGENDA FOR THIS MEETING**
- 3. PUBLIC COMMENTS**
- 4. UNFINISHED BUSINESS**
 - A. Public Hearing for System Development Fee (SDF) Update per SDF study completed by Willdan Financial Services **(p. 1-37)**
- 5. ADJOURN**

May 6, 2022

Scott Attaway, City Manager
City of Lowell
101 W First Street
Lowell, NC 28098

DRAFT - 1

Subject: Water and Wastewater System Development Fee Study

Dear Mr. Attaway ,

WILLDAN FINANCIAL SERVICES ("Willdan") is pleased to submit to the City of Lowell, 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 a number of different terms including impact fees, capacity fees, system expansion fees, availability fees, connection fees, capacity reservation charges, facility fees, capital connection charges or other such terminology. In general, an SDF is a one-time charge implemented to recover (in whole or part) the costs associated with capital investments made by a utility system to make service available to future users of the system. Such capital costs generally include the construction of facilities as well as engineering, surveys, land, financing, legal and administrative costs. It has become common practice for water and wastewater utility systems to implement SDF (or other similar charges) 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 in 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 if they meet a Rational Nexus Test. In accordance with common court rulings, the rational nexus test requires that certain conditions be met 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 attributable to the improvements made with the proceeds.
2. Proceeds from the required SDF payments are dedicated solely to the capital improvement projects (i.e., proceeds are not placed in a general fund to be spent on ongoing expenses and maintenance, which characterizes a tax, but are set aside in a restricted reserve fund).
3. The revenue generated by the required payment should not exceed the cost of capital improvements to the system.
4. The required payments are imposed uniformly and equitably on all new customers based on their anticipated usage (i.e., a relationship between the fees paid and the benefits received).

In general, most courts have found that it is reasonable for utility systems to take steps to ensure that there are adequate funds for capital projects, and to set aside collected fees in a special account for that purpose. Additionally, new customers are treated alike in that all must pay a fee based on anticipated usage and/or potential demand. Finally, courts have reasoned that it is rational for a utility system to prepare to pay for future capital projects and, while imposing a capacity-related fee may not be the only way to raise such funds, it is a reasonable and legitimate method of accruing funds.

Court Proceedings – North Carolina

In 1990, a precedent was set in the State of North Carolina in a decision by the United States Court of Appeals, Fourth District for the case of Shell Island Investment v. City of Wrightsville Beach North Carolina (900 F.2d 255), regarding the right of the City 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 City 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 – City of Carthage Case

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

House Bill 436

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

- *Buy-in Method.* Based on the value of the existing system’s capacity. Under this method, new development “buys” a proportionate share of capacity at the cost (value) of the existing facilities.

- *Incremental/Marginal Cost Method.* Based on the value or cost to expand the existing system's capacity. This method assigns to new development the incremental cost of future system expansion needed to serve new development.
- *Combined Cost Method.* Based on blended value of both the existing and expanded system capacity. This method uses a combination of the buy-in and incremental/marginal cost methods.

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

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

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



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

1. A system development fee shall not exceed that calculated based on the system development fee analysis.
2. Credits must be applied regardless of methodology used. A more detailed discussion on the applicable credits is 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 beyond a development's proportionate share of connecting facilities required to be oversized for the use of others outside the development.

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

ADOPTION AND PERIODIC REVIEW OF SDF ANALYSIS

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

1. For not less than 45 days prior to consideration for adoption of the SDF analysis, the governmental unit shall post the analysis on its website and solicit and furnish a means to submit written comments which shall be considered by the preparer for 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 to new customers requiring water and/or wastewater utility service. The current fees are \$500 and \$1,200 per residential dwelling unit for water and wastewater, respectively. For new, nonresidential/commercial customers, the fee is based on the size of the water meter. Based on discussions with City staff, it is understood that the current fees and fee structure were developed and adopted in accordance with the Chapter 162A requirements. The existing SDFs are provided in **Table 1**.

TABLE 1
EXISTING SYSTEM DEVELOPMENT FEES

Description	Water	Wastewater	Combined Fee
<u>Meter Size:</u>			
5/8 x 3/4 Inch	\$ 500	\$ 1,200	\$ 1,700
1.0 Inch	\$ 830	\$ 2,000	\$ 2,830
1.5 Inch	\$ 1,660	\$ 4,000	\$ 5,660
2.0 Inch	\$ 2,660	\$ 6,400	\$ 9,060
3.0 Inch	\$ 5,320	\$ 12,800	\$ 18,120
4.0 Inch	\$ 8,310	\$ 20,000	\$ 28,310
6.0 Inch	\$ 16,620	\$ 40,000	\$ 56,620
8.0 Inch	\$ 26,590	\$ 64,000	\$ 90,590
10.0 Inch	\$ 38,220	\$ 92,000	\$ 130,220
12.0 Inch	\$ 51,510	\$ 124,000	\$ 175,510

CONNECTION FEES

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

EXISTING & PROJECTED CAPITAL FACILITIES

Existing Facilities – Buy-In Method

In considering the recovery of existing asset costs under the buy-in method, the general concept is that new customers “buy” a proportionate share of system capacity at the value of the existing facilities. It is important to note that while this methodology is labeled as *buy-in*, payment of an



SDF does not transfer any ownership of the assets to the customer. Rather, such payment provides access to capacity at a status equal to that of existing customers of the system.

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

In performing the RCNLD analysis, the 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 diverse types of utility construction, including water systems. The published indices are used by regulatory bodies, operating entities, utility systems, service companies, valuation experts and insurance companies. The Handy-Whitman Index values are widely used to trend earlier valuations and original cost records to estimate replacement cost at prices prevailing at a certain date or to the present. While other construction cost indices are available, the Handy-Whitman Index is used in this analysis because it is specifically tailored to the utility industry.

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

TABLE 2
RCNLD OF EXISTING UTILITY ASSETS

Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
Total Utility Assets:				
Autos And Trucks	\$ 5,167	\$ 5,167	\$ (5,167)	\$ 0
WTP	16,683	16,683	(16,683)	0
Office Equipment	86,588	86,589	(85,772)	817
Equipment	394,332	394,335	(280,955)	113,380
Land	15,000	15,000	0	15,000
WWTP	3,993,623	17,835,698	(15,818,602)	2,017,096
Sewer System	1,208,666	3,483,274	(2,646,556)	836,718
Water System	2,376,333	9,374,331	(7,472,340)	1,901,991
Total	\$ 8,096,392	\$ 31,211,077	\$ (26,326,075)	\$ 4,885,002

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



TABLE 3
ALLOCATION OF EXISTING RECOVERABLE FACILITIES

Description	RCNLD Included for Recovery		
	Water	Wastewater	Total
<u>Total Recoverable Assets:</u>			
Autos And Trucks	\$ 0	\$ 0	\$ 0
WTP	0	0	0
Office Equipment	0	0	0
Equipment	0	0	0
Land	0	0	0
WWTP	0	1,103,662	1,103,662
Sewer System	0	615,579	615,579
Water System	856,503	0	856,503
Total	\$ 856,503	\$ 1,719,241	\$ 2,575,744
<u>Allocation of Recoverable Assets:</u>			
Treatment Facilities	\$ 0	\$ 1,103,662	\$ 1,103,662
Transmission Facilities	856,503	615,579	1,472,082
Total	\$ 856,503	\$ 1,719,241	\$ 2,575,744

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 has adopted a CIP that provides a listing of individual projects and anticipated construction costs for fiscal years 2023 through 2032 (i.e. an 10-year CIP). The CIP is provided in **Exhibit 2**. Corresponding to the rationale for excluding certain existing assets from recovery through SDFs, the CIP project costs included for capital recovery in the analysis consist of only those projects associated with system-wide upgrades or expansions. As such, projects related to general maintenance (i.e. renewal and replacement of existing facilities) or localized facilities that benefit only certain customers are excluded from recovery through the SDFs. The CIP and resulting identification of assumed

growth-related projects (i.e. project costs recoverable from SDFs) are provided in **Exhibit 3**. The exhibit also provides a summary allocation of the recoverable costs between the treatment and transmission components. The projected growth-related projects and capital costs included in the analysis are summarized in **Table 4**.

TABLE 4 SUMMARY OF THE CIP & RECOVERABLE CAPITAL COSTS			
Description	Total CIP	Excluded Capital	Recoverable Capital
Water:			
Treatment Facilities	\$ 0	\$ 0	\$ 0
Transmission Facilities	1,439,291	(272,877)	1,166,414
Other Facilities	0	0	0
Total	\$ 1,439,291	\$ (272,877)	\$ 1,166,414
Wastewater:			
Treatment Facilities	\$ 1,740,800	\$ (2,050)	\$ 1,738,750
Transmission Facilities	5,978,478	(5,871,428)	107,050
Other Facilities	0	0	0
Total	\$ 7,719,278	\$ (5,873,478)	\$ 1,845,800
Combined:			
Treatment Facilities	\$ 1,740,800	\$ (2,050)	\$ 1,738,750
Transmission Facilities	7,417,769	(6,144,305)	1,273,464
Other Facilities	0	0	0
Total	\$ 9,158,569	\$ (6,146,355)	\$ 3,012,214

Total Facilities – Combined Method

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

TABLE 5
SUMMARY OF COMBINED RECOVERABLE FACILITIES

Description	Recoverable Facilities		
	Water	Wastewater	Total
Existing Facilities:			
Treatment Facilities	\$ 0	\$ 1,103,662	\$ 1,103,662
Transmission Facilities	856,503	615,579	1,472,082
Subtotal	\$ 856,503	\$ 1,719,241	\$ 2,575,744
Capital Improvement Program:			
Treatment Facilities	\$ 0	\$ 1,738,750	\$ 1,738,750
Transmission Facilities	1,166,414	107,050	1,273,464
Subtotal	\$ 1,166,414	\$ 1,845,800	\$ 3,012,214
Combined Recoverable Costs:			
Treatment Facilities	\$ 0	\$ 2,842,412	\$ 2,842,412
Transmission Facilities	2,022,917	722,629	2,745,546
Total	\$ 2,022,917	\$ 3,565,041	\$ 5,587,958

**SDF CALCULATION
CREDITS**

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

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

TABLE 6
SUMMARY OF NET RECOVERABLE FACILITIES

Description	Net Recoverable Facilities		
	Water	Wastewater	Total
Combined Recoverable Costs:			
Treatment Facilities	\$ 0	\$ 2,842,412	\$ 2,842,412
Transmission Facilities	2,022,917	722,629	2,745,546
Subtotal	\$ 2,022,917	\$ 3,565,041	\$ 5,587,958
Less Combined Credits:			
Treatment Facilities	\$ 0	\$ (434,688)	\$ (434,688)
Transmission Facilities	(832,168)	(26,763)	(858,930)
Subtotal	\$ (832,168)	\$ (461,450)	\$ (1,293,618)
Net Capital Costs:			
Treatment Facilities	\$ 0	\$ 2,407,725	\$ 2,407,725
Transmission Facilities	1,190,750	695,867	1,886,616
Net Recoverable Costs	\$ 1,190,750	\$ 3,103,591	\$ 4,294,341

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

Water Treatment

The City does not currently own any water treatment facilities. Rather, it is a wholesale water purchaser from the City of Gastonia. In accordance with the Interlocal Water and Sewer Service

Utility Agreement dated June 22, 2004, Gastonia provides the City a maximum daily water capacity of 1.10 MGD (million gallons per day).

While the flow capacity is provided in terms of the maximum daily flow amount, the development and application of SDFs are based on average flow requirements. As such, it is necessary to convert the maximum daily flow (MDF) capacity to an estimated average daily flow (ADF) capacity. Pursuant to general industry standards and discussions with staff, it is assumed herein that the rated MDF is approximately 1.5 times the available capacity on an ADF basis. Applying this factor to the rated capacity for the water supply sources results in an average daily flow capacity of 0.733 MGD. An additional adjustment is made based for the assumed amount of unaccounted-for water (i.e., system flushing and backwashing, testing, line loss, etc.). The unaccounted-for water reduces the amount of capacity available to existing and future customers. Based on discussions with City staff, the analysis performed herein assumes an average loss factor of 20.0% to adjust for the unaccounted-for water flows. This final adjustment results in an average daily treatment plant capacity of 0.586 MGD (see **Exhibit 4**).

Water Transmission

Unlike the treatment facilities, the capacity information for major transmission facilities is exceedingly difficult to determine and quantify. Such transmission capacity estimates are typically not even developed in engineering documents such as master plans or Consulting Engineer's Reports. Based on discussions with staff, it is assumed that the existing transmission facilities are capable of providing water flow at least equal to 1.50 times the existing treatment capacity, resulting in 1.10 MGD (0.733×1.50). Similar to the adjustment for treatment, a 20.0% loss adjustment is made to the transmission facilities resulting in a combined adjusted capacity of 0.880 MGD (see **Exhibit 4**).

Wastewater Treatment

Due to the regulatory and design requirements for wastewater treatment plants, the capacity of treatment facilities is generally well documented. The wastewater treatment facilities are designed and permitted in accordance with published hydraulic standards adopted by Section 15A NCAC 02T .0114 of the North Carolina Administrative Code regulations. The City owns and operates the wastewater treatment plant with a permitted capacity of 0.600 MGD. In addition, the City has 0.120 MGD of capacity treatment available with the City of Gastonia. As such, the City has 0.720 MGD of combined wastewater treatment capacity.

Unlike the application for water, due to the nature of the operations, the wastewater treatment capacity is permitted at average daily flow levels. As such, it is not necessary to convert the capacity. However, as with the unaccounted-for flows in the water system, the wastewater system is impacted by inflow and infiltration (I&I) into the wastewater collection facilities. In essence, the impact of I&I reduces the level of capacity that is available for use by existing and future system customers. Pursuant to discussions with staff, the combined wastewater treatment capacity is adjusted for an assumed I&I impact of 25.0%, resulting in an adjusted average daily treatment capacity of 0.540 MGD (see **Exhibit 5**).

Wastewater Transmission

Similar to the discussion provided above for the determination of water transmission capacity, it is difficult to identify the capacity of the wastewater transmission facilities. Although an exact capacity number is difficult to determine, for the purpose of this analysis it is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least equal to 1.50 times the permitted plant flow, or 1.080 MGD (0.720×1.50). Like the adjustment for treatment, a 25.0% I&I adjustment is made the transmission facilities resulting in a combined adjusted capacity of 0.810 MGD (see **Exhibit 5**).

DEVELOPMENT OF SDFs

The methodology utilized herein for developing the water and wastewater SDFs relies upon the cost of major system facilities as well as the existing and expanded system capacities to calculate an estimated cost per unit (gallon) of capacity. Based on this methodology, it is estimated that the water facility costs are \$1.35 per gallon of water capacity (combined treatment and transmission). Additionally, it is estimated that the wastewater facility costs are \$5.32 per gallon of wastewater capacity.

In developing the SDFs, the unit costs per gallon of capacity are applied to a common Level of Service (LOS) standard to establish the applicable fee per Equivalent Residential Unit (ERU). For purposes of applying the LOS, an ERU is representative of a single-family residential dwelling unit receiving water service from a 5/8 x 3/4-inch metered connection and discharging normal domestic-strength wastewater through a comparably sized sewer connection. Based on common industry standards for the development and application of capacity-related charges, a typical residential water connection is generally assumed to require average service availability in the range of 350 to 450 gallons per day (gpd) of system capacity. The State of North Carolina (the "State") has established flow standards for purposes of planning and engineering design. In accordance with daily water flow capacity design standards defined in the North Carolina Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gpd. Applying the NCAC flow standard, it is assumed that 1 ERU requires a standard level of service of 400 gpd of water system capacity.

Similar to the water system, the SDFs for wastewater are to be applied on an ERU basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State and defined by the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. This analysis assumes an average of 3.0 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 results in the proposed/calculated water and wastewater SDFs of \$540 and \$1,910, respectively, (as

rounded down) for a typical single-family residential connection (i.e., per ERU). The development of the water and wastewater SDFs is detailed in **Exhibits 4 and 5**, respectively. A summary of the existing and proposed/calculated SDFs for a new residential connection is provided in **Table 7**.

TABLE 7
COMPARISON OF SDFs PER ERU

Description	System Development Fee Per ERU		
	Existing	Calculated	Difference
System Development Fees:			
Water	\$ 500	\$ 540	\$ 40
Wastewater	1,200	1,910	710
Total	\$ 1,700	\$ 2,450	\$ 750

APPLICATION OF SDFs

For developing SDFs, the average daily flow number is established as one ERU. An ERU provides a standard unit of measure such that fees for connections with larger than average demand requirements can be calculated on an equivalency basis. As previously addressed, one ERU is equal to the average flow capacity for a single-family dwelling unit with a standard 5/8 x 3/4-inch water meter. New connections with larger water meters have the potential of placing more demand on the system (i.e., require more capacity) and are assessed ERU factors accordingly. The proposed methodology for incrementing the SDFs for larger connection sizes is based on standardized demand criteria established by the American Water Works Association (AWWA) pursuant to the size of the water meter. Utilizing the AWWA demand criteria, the applicable ERU factors for larger water meters are based on the incremental increase in potential demand as compared to the standard meter size. Since wastewater flow is generally a direct function of water flow, applying the water and wastewater SDFs based upon the size of the water meter is equitable, administratively efficient and consistent with common industry standards. The proposed/calculated water and wastewater SDFs for the various water meter sizes are developed in **Exhibit 6** and summarized in **Table 8**.

TABLE 8
PROPOSED 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	\$ 540	\$ 1,910	\$ 2,450
1.0 Inch	2.50	\$ 1,350	\$ 4,775	\$ 6,125
1.5 Inch	5.00	\$ 2,700	\$ 9,550	\$ 12,250
2.0 Inch	8.00	\$ 4,320	\$ 15,280	\$ 19,600
3.0 Inch	16.00	\$ 8,640	\$ 30,560	\$ 39,200
4.0 Inch	25.00	\$ 13,500	\$ 47,750	\$ 61,250
6.0 Inch	50.00	\$ 27,000	\$ 95,500	\$ 122,500
8.0 Inch	80.00	\$ 43,200	\$ 152,800	\$ 196,000
10.0 Inch	115.00	\$ 62,100	\$ 219,650	\$ 281,750
12.0 Inch	225.00	\$ 121,500	\$ 429,750	\$ 551,250
(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 Utility Department. For such situations, it is important for the utility to have the flexibility to utilize an ERU methodology for individual accounts based on specific capacity requirements. This alternative methodology is to apply the calculated unit costs per gallon of capacity as provided in **Exhibit 6** times the capacity requirement for the 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.

COMPARISON WITH NEIGHBORING UTILITIES

To provide the City with additional insight regarding the development and application of the SDFs, a comparison is often included to show the level of such fees as imposed by several other utility systems in North Carolina. The comparison shows the SDFs for a new residential water and wastewater connection that receives service (from the subject utility or other local provider) through a standard residential-sized water meter (representative of 1 ERU) calculated under the existing and proposed fees of the City, and those of the other utility systems. The fees utilized for

the other utility systems are based on fee schedules in effect as of May 2022 and are exclusive of taxes, surcharges for outside City service, or other customer related service fees applied to new system connections (i.e. tap fees, application fees, inspection fees, etc.). The comparison with other utility systems is summarized in **Exhibit 6**.

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

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

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

GENERAL ASSUMPTIONS AND CONSIDERATIONS

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

CONCLUSIONS

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

1. The application of capital recovery fees for new system connections is becoming more common for public utility systems in North Carolina. As growth continues to impact the region, and as state and federal funding programs are reduced or eliminated, it is prudent management practice to adopt mechanisms to recover capital costs incurred by the utility for making service available to future customers.
2. Through Chapter 162A, the North Carolina legislature has found that it is prudent to require new customers to bear a portion of the costs of current capacity and future expansions their presence will demand. It should be noted that Willdan is not attempting to issue a legal opinion regarding Chapter 162A or any court proceedings leading to the enactment of Chapter 162A. The summary discussion of the bill and any prior court rulings is intended for informational purposes only. Any questions regarding the legal consideration provided herein should be directed to the 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 adopted by the City.

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

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 July 1, 2022, or other such date as determined appropriate by the City Council; and
3. Readdress the SDF study within the next 5 years, or at such times as future capital budgets are developed and additional capital costs are incurred that may result in material adjustments to the SDF as adopted.

We appreciate the opportunity to be of service to the 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

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EXHIBITS 1 - 7

SUPPORTING OUTPUT FOR THE WATER & WASTEWATER SDF STUDY



Lowell
North Carolina

LIVE · LOVE · LOWELL

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

Prepared by Willdan Financial Services



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

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
UTILITY ASSETS					
Total Assets by Category:					
1	Autos And Trucks	\$ 5,167	\$ 5,167	\$ (5,167)	\$ 0
2	WTP	16,683	16,683	(16,683)	0
3	Office Equipment	86,588	86,589	(85,772)	817
4	Equipment	394,332	394,335	(280,955)	113,380
5	Land	15,000	15,000	0	15,000
6	WWTP	3,993,623	17,835,698	(15,818,602)	2,017,096
7	Sewer System	1,208,666	3,483,274	(2,646,556)	836,718
8	Water System	2,376,333	9,374,331	(7,472,340)	1,901,991
9	Total	\$ 8,096,392	\$ 31,211,077	\$ (26,326,075)	\$ 4,885,002
Adjusted For Assumed Cost Limit (\$):					
10	Autos And Trucks	\$ 0	\$ 0	\$ 0	\$ 0
11	WTP	0	0	0	0
12	Office Equipment	0	0	0	0
13	Equipment	0	0	0	0
14	Land	0	0	0	0
15	WWTP	2,911,816	14,202,719	(13,099,057)	1,103,662
16	Sewer System	1,208,666	3,483,274	(2,646,556)	615,579
17	Water System	2,376,333	9,374,331	(7,472,340)	856,503
18	Total	\$ 6,496,815	\$ 27,060,324	\$ (23,217,953)	\$ 2,575,744
Recoverable Allocation - Water (%):					
19	Autos And Trucks				0%
20	WTP				100%
21	Office Equipment				0%
22	Equipment				0%
23	Land				50%
24	WWTP				0%
25	Sewer System				0%
26	Water System				100%
Recoverable Allocation - Wastewater (%):					
27	Autos And Trucks				0%
28	WTP				0%
29	Office Equipment				0%
30	Equipment				0%
31	Land				50%
32	WWTP				100%
33	Sewer System				100%
34	Water System				0%

EXHIBIT 1
SYSTEM DEVELOPMENT FEE ANALYSIS
EXISTING CAPITAL COSTS RECOVERABLE FROM SDF'S
WATER & WASTEWATER SYSTEMS

Line	Description	Original Cost	Replacement Cost New	Accumulated Depreciation	RCNLD
System Allocation - Water (\$):					
35	Autos And Trucks			\$	0
36	WTP				0
37	Office Equipment				0
38	Equipment				0
39	Land				0
40	WWTP				0
41	Sewer System				0
42	Water System				856,503
43	Total			\$	856,503
System Allocation - Wastewater (\$):					
44	Autos And Trucks			\$	0
45	WTP				0
46	Office Equipment				0
47	Equipment				0
48	Land				0
49	WWTP				1,103,662
50	Sewer System				615,579
51	Water System				0
52	Total			\$	1,719,241
53	Grand Total Recoverable Assets			\$	2,575,744
COMPONENT ALLOCATION					
Total Recoverable Water Facilities:					
54	Treatment Facilities			\$	0
55	Transmission Facilities				856,503
56	Subtotal			\$	856,503
Total Recoverable Wastewater Facilities:					
57	Treatment Facilities			\$	1,103,662
58	Transmission Facilities				615,579
59	Subtotal			\$	1,719,241
Combined Recoverable Facilities:					
60	Treatment Facilities			\$	1,103,662
61	Transmission Facilities				1,472,082
62	Total			\$	2,575,744

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					
63	Total Utility Assets				\$ 4,885,002
64	Combined Recoverable Assets				\$ 2,575,744
	Difference (Assets Excluded From Recovery):				
65	Excluded From Recovery (\$)				\$ 2,309,258
66	Excluded From Recovery (%)				47.27%
DEBT SERVICE CREDIT					
67	Outstanding Debt Principal				\$ 540,564
	Allocation Percentage:				
68	Water				100.00%
69	Wastewater				0.00%
	Allocated Debt Service Credit:				
70	Water				\$ 540,564
71	Wastewater				0
72	Total				<u>\$ 540,564</u>
	Component Allocation - Water:				
73	Treatment Facilities				\$ 0
74	Transmission Facilities				540,564
75	Total				<u>\$ 540,564</u>
	Component Allocation - Wastewater:				
76	Treatment Facilities				\$ 0
77	Transmission Facilities				0
78	Total				<u>\$ 0</u>

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

Line	Description	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
WATER PROJECTS													
1	Redundant Lines Identification and Repair	\$ 272,877	\$ 21,115	\$ 22,300	\$ 23,538	\$ 24,851	\$ 26,245	\$ 27,702	\$ 29,246	\$ 30,883	\$ 32,593	\$ 34,404	
2	HWY 7 Line Improvements to Alternative Meter Point	1,104,000	0	0	0	1,104,000	0	0	0	0	0	0	0
3	Mapping Study	15,375	15,375	0	0	0	0	0	0	0	0	0	0
4	Water Loss Study	10,770	0	0	10,770	0	0	0	0	0	0	0	0
5	Asset Inventory and Assessment (GRANT MATCH)	9,994	9,994	0	0	0	0	0	0	0	0	0	0
6	Camera System (Cost Share With Stormwater)	26,275	0	26,275	0	0	0	0	0	0	0	0	0
7	Total Water	\$ 1,429,297	\$ 46,484	\$ 48,575	\$ 34,308	\$ 1,128,851	\$ 26,245	\$ 27,702	\$ 29,246	\$ 30,883	\$ 32,593	\$ 34,404	
WASTEWATER PROJECTS													
8	Sewer Flow Metering	\$ 80,775	\$ 0	\$ 0	\$ 80,775	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	0
9	Systemwide Collection System Rehabilitation	3,657,000	0	0	0	0	0	0	0	3,657,000	0	0	0
10	Systemwide Manhole Rehabilitation	1,032,308	0	91,437	96,510	101,897	107,616	113,586	119,919	126,633	133,642	141,068	
11	Lynn Street Pump Station Replacement	772,800	0	0	0	772,800	0	0	0	0	0	0	0
12	Infiltration and Inflow / System Repairs	409,320	31,673	33,450	35,306	37,277	39,369	41,554	43,869	46,326	48,890	51,606	
13	Blowers	237,705	0	0	0	0	0	0	0	237,705	0	0	0
14	Sandblast and Paint Building/Catwalk	79,950	79,950	0	0	0	0	0	0	0	0	0	0
15	Headworks Pump Station Upgrade	792,400	0	0	0	0	792,400	0	0	0	0	0	0
16	Force Main	80,775	0	0	80,775	0	0	0	0	0	0	0	0
17	Solids Handling	376,950	0	0	376,950	0	0	0	0	0	0	0	0
18	Check Valves	5,125	5,125	0	0	0	0	0	0	0	0	0	0
19	Bar Screens	4,314	2,050	0	0	0	2,264	0	0	0	0	0	0
20	Coarse Bar Screen	4,100	4,100	0	0	0	0	0	0	0	0	0	0
21	HVAC	2,154	0	0	2,154	0	0	0	0	0	0	0	0
22	Smart Valves and Regulators	80,775	0	0	80,775	0	0	0	0	0	0	0	0
23	Chlorine Exhaust Fan	1,025	1,025	0	0	0	0	0	0	0	0	0	0
24	Caustic Feed System and Pumps	2,154	0	0	2,154	0	0	0	0	0	0	0	0
25	Water Heater	1,077	0	0	1,077	0	0	0	0	0	0	0	0
26	I&I Sampler	12,300	12,300	0	0	0	0	0	0	0	0	0	0
27	pH Meter	5,255	0	5,255	0	0	0	0	0	0	0	0	0
28	Refrigerator	1,051	0	1,051	0	0	0	0	0	0	0	0	0
29	Clarifier Air Lift	15,765	0	15,765	0	0	0	0	0	0	0	0	0
30	Loading Stand	35,875	35,875	0	0	0	0	0	0	0	0	0	0
31	Pump Motor Rebuilds	2,050	2,050	0	0	0	0	0	0	0	0	0	0
32	Camera System (Cost Share With Stormwater)	26,275	0	26,275	0	0	0	0	0	0	0	0	0
33	Total Wastewater	\$ 7,719,278	\$ 174,148	\$ 173,233	\$ 756,476	\$ 911,974	\$ 941,649	\$ 155,140	\$ 163,788	\$ 4,067,664	\$ 182,532	\$ 192,674	
34	Total Water & Wastewater CIP	\$ 9,148,575	\$ 220,632	\$ 221,808	\$ 790,784	\$ 2,040,825	\$ 967,894	\$ 182,842	\$ 193,034	\$ 4,098,547	\$ 215,125	\$ 227,078	

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

Line	Description	Total	Percentage Allocation ⁽¹⁾			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
WATER PROJECTS								
1	Redundant Lines Identification and Repair	\$ 272,877	0.00%	100.00%	0.00%	\$ 0	\$ 272,877	\$ 0
2	HWY 7 Line Improvements to Alternative Meter Point	1,104,000	100.00%	0.00%	0.00%	1,104,000	0	0
3	Mapping Study	15,375	100.00%	0.00%	0.00%	15,375	0	0
4	Water Loss Study	10,770	100.00%	0.00%	0.00%	10,770	0	0
5	Asset Inventory and Assessment (GRANT MATCH)	9,994	100.00%	0.00%	0.00%	9,994	0	0
6	Camera System (Cost Share With Stormwater)	26,275	100.00%	0.00%	0.00%	26,275	0	0
7	Subtotal	\$ 1,439,291				\$ 1,166,414	\$ 272,877	\$ 0
WASTEWATER PROJECTS								
8	Sewer Flow Metering	\$ 80,775	100.00%	0.00%	0.00%	\$ 80,775	\$ 0	\$ 0
9	Systemwide Collection System Rehabilitation	3,657,000	0.00%	100.00%	0.00%	0	3,657,000	0
10	Systemwide Manhole Rehabilitation	1,032,308	0.00%	100.00%	0.00%	0	1,032,308	0
11	Lynn Street Pump Station Replacement	772,800	0.00%	100.00%	0.00%	0	772,800	0
12	Infiltration and Inflow / System Repairs	409,320	0.00%	100.00%	0.00%	0	409,320	0
13	Blowers	237,705	100.00%	0.00%	0.00%	237,705	0	0
14	Sandblast and Paint Building/Catwalk	79,950	100.00%	0.00%	0.00%	79,950	0	0
15	Headworks Pump Station Upgrade	792,400	100.00%	0.00%	0.00%	792,400	0	0
16	Force Main	80,775	100.00%	0.00%	0.00%	80,775	0	0
17	Solids Handling	376,950	100.00%	0.00%	0.00%	376,950	0	0
18	Check Valves	5,125	100.00%	0.00%	0.00%	5,125	0	0
19	Bar Screens	4,314	100.00%	0.00%	0.00%	4,314	0	0
20	Coarse Bar Screen	4,100	100.00%	0.00%	0.00%	4,100	0	0
21	HVAC	2,154	100.00%	0.00%	0.00%	2,154	0	0
22	Smart Valves and Regulators	80,775	100.00%	0.00%	0.00%	80,775	0	0
23	Chlorine Exhaust Fan	1,025	100.00%	0.00%	0.00%	1,025	0	0
24	Caustic Feed System and Pumps	2,154	100.00%	0.00%	0.00%	2,154	0	0
25	Water Heater	1,077	100.00%	0.00%	0.00%	1,077	0	0
26	I&I Sampler	12,300	100.00%	0.00%	0.00%	12,300	0	0
27	pH Meter	5,255	100.00%	0.00%	0.00%	5,255	0	0
28	Refrigerator	1,051	100.00%	0.00%	0.00%	1,051	0	0
29	Clarifier Air Lift	15,765	100.00%	0.00%	0.00%	15,765	0	0
30	Loading Stand	35,875	100.00%	0.00%	0.00%	35,875	0	0
31	Pump Motor Rebuilds	2,050	0.00%	100.00%	0.00%	0	2,050	0
32	Camera System (Cost Share With Stormwater)	26,275	100.00%	0.00%	0.00%	26,275	0	0
33	Subtotal	\$ 7,719,278				\$ 1,845,800	\$ 5,873,478	\$ 0
34	Total - All Capital Projects	\$ 9,158,569				\$ 3,012,214	\$ 6,146,355	\$ 0

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

Line	Description	Total	Percentage Allocation ⁽¹⁾			Allocation Amount		
			Expand/Upgrade	R&R	Other	Expand/Upgrade	R&R	Other
ALLOCATION OF CAPITAL PROJECTS								
Water:								
35	Treatment Projects	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	
36	Transmission Projects	1,439,291	1,166,414	272,877	0	0	0	
37	Other Projects	0	0	0	0	0	0	
38	Subtotal	\$ 1,439,291	\$ 1,166,414	\$ 272,877	\$ 0	\$ 0	\$ 0	
Wastewater:								
39	Treatment Projects	\$ 1,740,800	\$ 1,738,750	\$ 2,050	\$ 0	\$ 0	\$ 0	
40	Transmission Projects	5,978,478	107,050	5,871,428	0	0	0	
41	Other Projects	0	0	0	0	0	0	
42	Subtotal	\$ 7,719,278	\$ 1,845,800	\$ 5,873,478	\$ 0	\$ 0	\$ 0	
Combined:								
43	Treatment Projects	\$ 1,740,800	\$ 1,738,750	\$ 2,050	\$ 0	\$ 0	\$ 0	
44	Transmission Projects	7,417,769	1,273,464	6,144,305	0	0	0	
45	Other Projects	0	0	0	0	0	0	
46	Grand Total	\$ 9,158,569	\$ 3,012,214	\$ 6,146,355	\$ 0	\$ 0	\$ 0	

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

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

Line	Description	Total
Recoverable Capital Facilities		
Existing Facilities:		
1	Treatment Facilities	\$ 0
2	Transmission Facilities	856,503
3	Subtotal	\$ 856,503 ⁽¹⁾
Less Debt Service Principal:		
4	Treatment Facilities	\$ 0
5	Transmission Facilities	(540,564)
6	Subtotal	\$ (540,564) ⁽²⁾
Net Recoverable Existing Facilities:		
7	Treatment Facilities	\$ 0
8	Transmission Facilities	315,939
9	Total	\$ 315,939
Capital Improvement Program:		
10	Treatment Facilities	\$ 0
11	Transmission Facilities	1,166,414
12	Subtotal	\$ 1,166,414
Less 25% CIP Adjustment:		
13	Treatment Facilities 25%	\$ 0
14	Transmission Facilities 25%	(291,604)
15	Subtotal	\$ (291,604) ⁽³⁾
Net Recoverable CIP:		
16	Treatment Facilities	\$ 0
17	Transmission Facilities	874,811
18	Total	\$ 874,811
Net Capital Costs:		
19	Treatment Facilities	\$ 0
20	Transmission Facilities	1,190,750
21	Net Recoverable Costs	\$ 1,190,750

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

Line	Description	Total
Available System Capacity (MGD)		
<u>Existing Treatment Capacity:</u>		
22	City of Lowell	0.000
23	City of Gastonia	1.100 ⁽⁴⁾
24	Total Existing Treatment Capacity	1.100
<u>Additional CIP Capacity:</u>		
25	City of Lowell	0.000
26	City of Gastonia	0.000
27	Total Additional CIP Capacity	0.000
<u>Combined Treatment Capacity (MGD):</u>		
28	City of Lowell	0.000
29	City of Gastonia	1.100
30	Total Combined Capacity of Water Treatment Facilities (MGD)	1.100
<u>Average Day Capacity Adjustment:</u>		
31	Treatment Capacity Based on Max/Avg Day Factor	1.50 0.733
32	Unaccounted-For Water Capacity Adjustment	20.0% ⁽⁵⁾
33	Estimated Transmission Capacity	0.586
<u>Estimated Transmission System Capacity:</u>		
34	Existing Treatment Capacity	0.733
35	Transmission-to-Treatment Capacity Factor	1.50
36	Assumed Existing Transmission Capacity	1.100 ⁽⁶⁾
37	Unaccounted-For Water Capacity Adjustment	20.0% ⁽⁶⁾
38	Estimated Transmission Capacity	0.880

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

Line	Description	Total
Estimated Cost Per Gallon of Capacity		
<u>Estimated Cost Per Gallon of Capacity:</u>		
39	Treatment (\$/Gallon)	\$ 0.00
40	Transmission (\$/Gallon)	1.35
41	Total Cost Per Gallon of Capacity	\$ 1.35
42	Daily NCAC Residential Flow Requirement	400 ⁽⁷⁾
Calculation of Fee Per ERU		
<u>Calculation of SDF Per ERU:</u>		
43	Treatment Facilities	\$ 0
44	Transmission Facilities	540
45	Combined Cost	\$ 540
<u>Adjusted Fee - Treatment:</u>		
46	Calculated Fee Per ERU	\$ 0
47	Less Rounding Adjustment	0
48	Adjusted Fee	\$ 0
<u>Credit Adjusted Fee - Transmission:</u>		
49	Calculated Fee Per ERU	\$ 540
50	Less Rounding Adjustment	0
51	Adjusted Fee	\$ 540
<u>Proposed SDF Per ERU (Rounded):</u>		
52	Treatment Facilities	\$ 0
53	Transmission Facilities	540
54	Combined Cost	\$ 540

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

Line	Description	Total
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Notes:

- (1) See **Exhibit 1** for the development of existing asset costs identified for capital recovery.
- (2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in **Exhibit 1**.
- (3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum requirements.
- (4) Based on the wholesale water purchase agreement with the City of Gastonia.
- (5) The estimated average daily flow capacity assumes an MDF-to-ADF ratio of 1.50 times. An additional adjustment is made for assumed unaccounted-for water flows (e.g. line losses) in the system. For the purpose of this analysis, the line-loss factor is assumed to be 20.0%.
- (6) It is assumed that the existing transmission facilities are capable of providing average water flow at least 1.5-times the existing average day treatment capacity. In addition, similar to the methodology utilized for water treatment, an adjustment is made for unaccounted-for water assuming losses of 20.0%.
- (7) The system development charges are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with daily water flow capacity design standards adopted by the State of North Carolina and defined the North Carolina Administrative Codes (15A NCAC 18C .0409), the level of service requirement for a residential connection is 400 gallons per day (gpd). Applying the NCAC flow standard, it is assumed that 1 ERU requires a standard level of service of 400 gpd of water system capacity.

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

Line	Description	Total
Recoverable Capital Facilities		
Existing Facilities:		
1	Treatment Facilities	\$ 1,103,662
2	Transmission Facilities	615,579
3	Subtotal	\$ 1,719,241 ⁽¹⁾
Less Debt Service Principal:		
4	Treatment Facilities	\$ 0
5	Transmission Facilities	0
6	Subtotal	\$ 0 ⁽²⁾
Net Recoverable Existing Facilities:		
7	Treatment Facilities	\$ 1,103,662
8	Transmission Facilities	615,579
9	Total	\$ 1,719,241
Capital Improvement Program:		
10	Treatment Facilities	\$ 1,738,750
11	Transmission Facilities	107,050
12	Subtotal	\$ 1,845,800
Less 25% CIP Adjustment:		
13	Treatment Facilities 25%	\$ (434,688)
14	Transmission Facilities 25%	(26,763)
15	Subtotal	\$ (461,450) ⁽³⁾
Net Recoverable CIP:		
16	Treatment Facilities	\$ 1,304,063
17	Transmission Facilities	80,288
18	Total	\$ 1,384,350
Net Capital Costs:		
19	Treatment Facilities	\$ 2,407,725
20	Transmission Facilities	695,867
21	Net Recoverable Costs	\$ 3,103,591

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

Line	Description	Total
Available System Capacity (MGD)		
<u>Existing Treatment Capacity:</u>		
22	City of Lowell	0.600
23	City of Gastonia	0.120 ⁽⁴⁾
24	Total Existing Treatment Capacity	0.720
<u>Additional CIP Capacity:</u>		
25	City of Lowell	0.000
26	City of Gastonia	0.000
27	Total Additional CIP Capacity	0.000
<u>Combined Treatment Capacity (MGD):</u>		
28	City of Lowell	0.600
29	City of Gastonia	0.120
30	Total Combined Capacity of Water Treatment Facilities (MGD)	0.720
31		
<u>Treatment Capacity:</u>		
32	Average Day Treatment Capacity (MGD)	0.720
33	I&I Capacity Adjustment	25.0% ⁽⁵⁾
34	Adjusted Average Day Treatment Capacity	0.540
<u>Estimated Transmission System Capacity:</u>		
35	Transmission-to-Treatment Capacity Factor	1.50
36	Assumed Gross Transmission Capacity	1.080 ⁽⁶⁾
37	I&I Capacity Adjustment	25.0%
38	Estimated Transmission Capacity	0.810 ⁽⁵⁾

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

Line	Description	Total
Estimated Cost Per Gallon of Capacity		
<u>Estimated Cost Per Gallon of Capacity:</u>		
39	Treatment (\$/Gallon)	\$ 4.46
40	Transmission (\$/Gallon)	0.86
41	Total Cost Per Gallon of Capacity	\$ 5.32
42	Assumed Standard Level of Service Per ERU (GPD of Capacity)	360 ⁽⁷⁾
Calculation of Fee Per ERU		
<u>Calculation of SDF Per ERU:</u>		
43	Treatment Facilities	\$ 1,606
44	Transmission Facilities	310
45	Combined Cost	\$ 1,916
<u>Adjusted Fee - Treatment:</u>		
46	Calculated Fee Per ERU	\$ 1,606
47	Less Rounding Adjustment	(6)
48	Adjusted Fee	\$ 1,600
<u>Credit Adjusted Fee - Transmission:</u>		
49	Calculated Fee Per ERU	\$ 310
50	Less Rounding Adjustment	0
51	Adjusted Fee	\$ 310
<u>Proposed SDF Per ERU (Rounded):</u>		
52	Treatment Facilities	\$ 1,600
53	Transmission Facilities	310
54	Combined Cost	\$ 1,910

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

Line	Description	Total
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Notes:

- (1) See Exhibit 1 for the development of existing asset costs identified for capital recovery.
- (2) Based upon discussions with Utility staff, most of the facilities included for cost recovery in this analysis were funded with debt. In an effort to account for the facility costs that may be recovered from user rates as part of the normal budgetary process, a debt service credit is applied to the applicable fee calculation. The credit is equal to outstanding principal amount on existing utility-related debt as reported in the most recent audited financial report. The principal balance is allocated between water and wastewater as provided in Exhibit 1.
- (3) This adjustment is made in accordance with House Bill 436, § 162A-207. Minimum requirements.
- (4) Based on the wholesale sewer treatment agreement with the City of Gastonia.
- (5) 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.
- (6) It is assumed that the wastewater trunk lines and pumping facilities are designed to provide capacity at least 1.5-times the permitted capacity of the City's treatment plant plus the Gastonia contract capacity.
- (7) Similar to the water system, the system development charges for wastewater are to be applied on an equivalent residential unit (ERU) basis such that 1 ERU is equal to the estimated capacity requirements for a typical single family residential connection with a 5/8-inch X 3/4-inch water meter. In accordance with wastewater flow design standards adopted by the State of North Carolina and defined the North Carolina Administrative Codes (15A NCAC 02T .0114), the level of service requirement is based on 120 gallons of capacity per day per bedroom for a residential home. However, the Town recently received a reduction letter from the State allowing it to use 120 gpd per bedroom for planning and design purposes for the wastewater system. Based on discussions with staff, the analysis developed herein assumed that 1 ERU is 3 bedrooms. The resulting standard LOS is 360 gpd of wastewater system capacity per ERU.

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

Line	Description	Meter-Based ERU Factor	Fees by System		Combined Fee
			Water	Wastewater	
EXISTING SDFs					
Meter Size:					
1	5/8 x 3/4 Inch	1.00	\$ 500	\$ 1,200	\$ 1,700
2	1.0 Inch	1.66	\$ 830	\$ 2,000	\$ 2,830
3	1.5 Inch	3.32	\$ 1,660	\$ 4,000	\$ 5,660
4	2.0 Inch	5.32	\$ 2,660	\$ 6,400	\$ 9,060
5	3.0 Inch	10.64	\$ 5,320	\$ 12,800	\$ 18,120
6	4.0 Inch	16.62	\$ 8,310	\$ 20,000	\$ 28,310
7	6.0 Inch	33.24	\$ 16,620	\$ 40,000	\$ 56,620
8	8.0 Inch	53.18	\$ 26,590	\$ 64,000	\$ 90,590
9	10.0 Inch	76.44	\$ 38,220	\$ 92,000	\$ 130,220
10	12.0 Inch	103.02	\$ 51,510	\$ 124,000	\$ 175,510
PROPOSED SDFs (1)					
Meter Size:					
11	5/8 x 3/4 Inch	1.00	\$ 540	\$ 1,910	\$ 2,450
12	1.0 Inch	2.50	\$ 1,350	\$ 4,775	\$ 6,125
13	1.5 Inch	5.00	\$ 2,700	\$ 9,550	\$ 12,250
14	2.0 Inch	8.00	\$ 4,320	\$ 15,280	\$ 19,600
15	3.0 Inch	16.00	\$ 8,640	\$ 30,560	\$ 39,200
16	4.0 Inch	25.00	\$ 13,500	\$ 47,750	\$ 61,250
17	6.0 Inch	50.00	\$ 27,000	\$ 95,500	\$ 122,500
18	8.0 Inch	80.00	\$ 43,200	\$ 152,800	\$ 196,000
19	10.0 Inch	115.00	\$ 62,100	\$ 219,650	\$ 281,750
20	12.0 Inch	225.00	\$ 121,500	\$ 429,750	\$ 551,250
OPTIONAL ACTUAL FLOW BASIS (2)					
Charge Per Gallon of Capacity (GPD):					
21	Treatment Facilities		\$ 0.00	\$ 4.46	\$ 4.46
22	Transmission Facilities		1.35	0.86	2.21
23	Cost Per GPD		\$ 1.35	\$ 5.32	\$ 6.67

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.

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

Line	Description	Water	Wastewater	Combined
City of Lowell:				
1	Existing Fee Per ERU	\$ 500	\$ 1,200	\$ 1,700
2	Proposed Fee Per ERU	\$ 540	\$ 1,910	\$ 2,450
Other Utilities:				
3	City of Belmont, NC	\$ 767	\$ 1,080	\$ 1,847
4	Town of McAdenville, NC	\$ 1,250	\$ 1,250	\$ 2,500
5	Town of Ranlo, NC	\$ 1,565	\$ 2,716	\$ 4,281
6	Greensboro, NC	\$ 980	\$ 990	\$ 1,970
7	Winston-Salem, NC	\$ 795	\$ 2,246	\$ 3,041
8	Concord, NC	(1) \$ 1,262	\$ 3,175	\$ 4,437
9	City of Gastonia, NC	\$ 890	\$ 620	\$ 1,510
10	Bessemer City, NC	(3) \$ 3,160	\$ 1,051	\$ 4,211
11	Charlotte, NC (CMU)	\$ 1,136	\$ 3,710	\$ 4,846
12	Kannapolis, NC	(2) \$ 450	\$ 3,007	\$ 3,457
13	ONWASA (NC)	\$ 2,032	\$ 3,700	\$ 5,732
14	Mount Holly, NC	\$ 1,230	\$ 4,665	\$ 5,895
15	Union County, NC	\$ 1,200	\$ 3,090	\$ 4,290
16	Average of Other Utilities	\$ 1,314	\$ 2,625	\$ 3,939

Notes:

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