

January 28, 2021

Mr. Ralph Staley
Assistant City Manager
City of Statesville
227 S. Center St.
Statesville, NC 28687

RE: Calculation of Water and Sewer System Development Fees for FY 2022

Dear Mr. Staley:

Raftelis Financial Consultants, Inc. (“Raftelis”) has completed an evaluation to develop the maximum cost-justified water and sewer system development fees for fiscal year (“FY”) 2022 for consideration by the City of Statesville (City). This letter documents the results of the analysis, which is based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – “System Development Fees.” As one of the largest and most respected utility financial, rate, management, and operational consulting firms in the U.S., and having prepared system development fee calculations for utilities in North Carolina and across the U.S. since 1993, Raftelis is qualified to perform system development fee calculations for water and sewer utilities in North Carolina.

Background

System development fees are one-time charges assessed to new water and/or wastewater customers, or developers or builders, to recover a proportional share of capital costs incurred to provide service availability and capacity for new customers. North Carolina General Statute 162A Article 8 (“Article 8”) provides for the uniform authority to implement system development fees for public water and sewer systems in North Carolina and was passed by the North Carolina General Assembly and signed into law on July 20, 2017, and subsequently revised by HB 826 and HB 873. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8, and be prepared by a financial professional or licensed professional engineer, qualified by experience and training or education, who, according to the Article, shall:

- Document in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.
- Employ generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost approaches for each service, setting forth appropriate analysis to the consideration and selection of an approach appropriate to the circumstances and adapted as necessary to satisfy all requirements of the Article.

- Document and demonstrate 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.
- Identify all assumptions and limiting conditions affecting the analysis and demonstrate that they do not materially undermine the reliability of conclusions reached.
- Calculate a final system development fee per service unit of new development and include an equivalency or conversion table for use in determining the fees applicable for various categories of demand.
- Consider a planning horizon of not less than 5 years, nor more than 20 years.

This letter report documents the results of the calculation of water and sewer system development fees for FY 2022 in accordance with these requirements.

Article 8 references three methodologies that can be used to calculate system development fees which include the buy-in method, the incremental cost method, and the combined cost method. A description of each of these methods follows:

Capacity Buy-In Method:

Under the Capacity Buy-In Method, a system development fee is calculated based on the proportional cost of each user's share of existing system capacity. This approach is typically used when existing facilities are able to provide adequate capacity to accommodate future growth. The cost of capacity is derived by dividing the estimated value of existing facilities by the current capacity provided by existing facilities. Certain adjustments to the value of existing facilities are made for developer contributed assets, grant funds, and the amount of outstanding debt.

Incremental Cost Method:

Under the Incremental Cost (or Marginal Cost) Method, a system development fee is calculated based on a new customer's proportional share of the incremental future cost of system capacity. This approach is typically used when existing facilities do not have adequate capacity to provide service to new customers, and the cost for new capacity can be tied to an approved capital improvement plan (CIP) that covers at least a 5-year planning period. The cost of capacity is calculated by dividing the total cost of growth-related capital investments by the additional capacity provided from the investments.

Combined Method:

Under the Combined Method, a system development fee is calculated based on the blended value of both the existing and expanded system capacity. As such, it is a combination of the Capacity Buy-In and Incremental Cost methods. This method is typically used when existing facilities provide adequate capacity to accommodate a portion of the capacity needs of new customers, but where significant investment in new facilities to address a portion of the capacity needs of future growth is also anticipated. It may also be used when some capacity is available in parts of the existing system,

but incremental capacity will be needed for other parts of the system to serve new customers at some point in the future.

The Capacity Buy-In method was used to calculate the water and sewer system development fees for the City, since, in general, the City's existing water and sewer treatment facilities have adequate capacity to accommodate the anticipated future growth over the near term. The following steps were completed to calculate the fees under the Capacity Buy-In Method:

1. The replacement value of existing system facilities was calculated, and adjustments were made to derive a net replacement value estimate in accordance with Article 8. Adjustments to the calculated replacement value included deducting accumulated depreciation, developer/grant funded contributions, and outstanding debt.
2. The unit cost of system capacity was estimated by dividing the net replacement value of existing system facilities by the current capacity of the system.
3. The amount of capacity associated with a service unit of new development was estimated. One equivalent residential unit ("ERU") was defined as the smallest service unit of new development.
4. The system development fee for one service unit of development was calculated by multiplying the cost per unit of system capacity by the capacity associated with one ERU, as defined below.
5. The calculated system development fee for one ERU was scaled for different categories of demand. Meter capacity ratios were used to scale system development fees from a base meter size from the smallest unit of new development (one ERU) to different categories of demand, defined by different customer meter sizes.

System Development Fee Calculation

Step 1 – Estimate the Replacement Value of System Facilities and Apply Adjustments

A listing of fixed assets provided by the City from their accounting system, as of June 30, 2020, was reviewed, and each individual asset was categorized into one of the categories shown in Table 1. General assets, such as those related to rolling stock and equipment items that were not directly attributable to either the water or sewer system, were assumed to be shared equally between the water and sewer systems.

Table 1. Fixed Asset Categories by System

Water System	Sewer System
Water Lines	Sewer Lines
Treatment Plants	I-77 Project
Pumps & Tanks	Treatment Plants
Equipment	Pumps & Tanks
Meters	Equipment
Land & Easement	Meters
Vehicles	Land & Easement
	Vehicles

Next, Raftelis estimated the replacement value of existing assets. The depreciated value of the assets was escalated to reflect an estimated replacement cost, or “replacement cost new less depreciation” (RCNLD). The asset values were escalated using the Handy Whitman Index of Public Utility Construction Costs (for the South Atlantic Region).

Article 8 defines allowable assets to include the following types, as provided in Section 201:

“A water supply, treatment, storage, or distribution facility, or a wastewater collection, treatment, or disposal facility, including for reuse or reclamation of water, owned or operated, or to be owned and operated, by a local government unit and land associated with such facility.”

The method used to calculate system development fees for the City included system facility assets that satisfy this definition, which means that equipment, meters, and vehicles were removed from the calculation. The estimated RCNLD values for water and sewer system assets allowable under Article 8 are provided in Tables 2 and 3, respectively.

Table 2. Water System Value (RCNLD)

Description	RCNLD Value
Water Lines	\$23,648,998
Treatment Plants	29,565,985
Pumps & Tanks	119,274
Land & Easement	1,089,638
Total	\$54,423,896

Table 3. Sewer System Value (RCNLD)

Description	RCNLD Value
Sewer Lines	\$26,561,044
I-77 Line	6,308,087
Treatment Plants	36,306,094
Pumps & Tanks	1,304,989
Land & Easement	422,574
Total	\$70,902,788

As shown in Table 2, the RCNLD value of the water system was estimated to be approximately \$54.4 million, and, as shown in Table 3, the RCNLD value of the sewer system was estimated to be approximately \$70.9 million. Several additional adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, which included adjustments for construction work -in-progress, developer/grant funded assets, and a portion of outstanding debt, as described below.

Construction Work- in-progress

Construction work in progress represents water/sewer infrastructure that is in the process of being completed but not yet booked as fixed assets. The City identified several projects under construction, but these future fixed assets were not included since they were anticipated to be funded with debt and would require an offsetting debt credit.

Developer/Grant Funded Assets

The listing of fixed assets was reviewed to identify assets that were contributed or paid for by developers or funded by grants, and these assets were subtracted from the RCNLD value as they do not represent an investment in system capacity by the City. The City's fixed asset listing from the accounting system did not identify contributed or grant funded assets on an individual asset basis, except for the I-77 project. In order to identify contributed or grant funded assets for all other fixed asset line items, historical comprehensive annual financial reports were obtained and contributed capital was identified. This information was used to estimate the portion of RCNLD related to contributed and grant funded assets, as shown in Schedule 3 of the Appendix. In addition, City staff identified recent grant funded assets associated with the I-77 sewer project. The total RCNLD value of contributed and grant funded water and sewer system assets was estimated to be \$7,476,824 and \$9,440,634, respectively.

Debt Credit:

A credit was applied to the RCNLD value to reflect that a portion of the outstanding debt associated with system facilities may be repaid with water and sewer monthly user charges. The amount of the credit was calculated by estimating the amount of existing outstanding debt attributable to both the water and sewer systems. The City’s outstanding debt is comprised of several State Revolving Loans for both the water and sewer systems. As of June 30, 2020, the total outstanding debt principal was \$23,126,217, of which \$5,038,970 is related to the water system and \$18,087,247 is related to the sewer system.

The resulting adjustments to the water and sewer RCNLD values for developer/grant funded assets and outstanding debt are shown in Table 4.

Table 4. Calculation of Net Water and Sewer System Value

Description	Amount
<u>Water System:</u>	
System Facilities RCNLD	\$54,423,896
Less: Contributed/Grant Funded Assets	-7,476,824
Less: Credit for Outstanding Debt	<u>-5,038,970</u>
Net System Value (RCNLD)	\$41,908,102
<u>Sewer System:</u>	
System Facilities RCNLD	\$70,902,788
Less: State Grant Funded (I-77 Line)	-4,745,146
Less: Contributed/Grant Funded Contributed Assets	-4,695,487
Less: Credit for Outstanding Debt	<u>-18,087,247</u>
Net System Value (RCNLD)	\$43,374,908

Step 2 – Calculate the Unit Cost of System Capacity

The cost per unit of system capacity was calculated by dividing the adjusted RCNLD values (derived in Step 1) by the water and sewer system treatment capacities. The total treatment capacity of the water system is currently 15 million gallons per day (“MGD”). Therefore, the cost per unit of system capacity for the water system was calculated to be \$2.79 per gallon, per day (\$41,908,102 ÷ 15 MGD). The total treatment capacity of the sewer system is 12 MGD. Therefore, the cost per unit of system capacity for the sewer system was calculated to be \$3.61 per gallon, per day (\$43,374,908 ÷ 12 MGD).

Step 3 – Estimate the Amount of Capacity Per Service Unit of New Development

The smallest service unit of new development was defined as one ERU. The City uses the North Carolina guidelines for permitted sewer capacity¹ to determine the amount of water or sewer usage corresponding to one single-family ERU. Using these regulations, the consumption corresponding to

¹ 15A NCAC 02T.0014 Wastewater Design Flow Rate, readopted effective September 1, 2018.

one bedroom is 120 gallons per day. Based on Census data for the City, the majority of dwelling units have 3 bedrooms². Therefore, one ERU of capacity was defined as 360 gallons per day (“GPD”).

Step 4 – Calculate the System Development Fee for One ERU

The system development fee for one ERU was calculated by multiplying the unit cost of capacity from Step 2 by the capacity associated with one ERU from Step 3. The calculations are provided in Table 5.

Table 5. Calculation of Water and Sewer System Development Fees for Base Meter Size

Description	Amount
Water System:	
Net System Value	\$41,908,102
System Capacity (MGD)	15
Unit Cost of Capacity (\$ / gallon per day)	\$2.79
Capacity Required for 1 ERU (gallons per day)	360
System Development Fee (5/8 or 3/4-inch meter)	\$1,006
Sewer System:	
Net System Value	\$43,374,908
System Capacity (MGD)	12
Unit Cost of Capacity (\$ / gallon, per day)	\$3.61
Capacity Required for 1 ERU (gallons per day)	360
System Development Fee (5/8 or 3/4-inch meter)	\$1,301

Step 5 – Scale the System Development Fees for Various Categories of Demand

The system development fees for various categories of demand were scaled using water meter capacity ratios. The scaling factors were based on rated meter capacities for each meter size, as published by the American Water Works Association in *Principles of Water Rates, Fees, and Charges*.³ The meter scaling factors are shown in Table 6.

² American Community Survey; Selected Housing Characteristics; 2018 ACS 5-Year Estimates Data Profiles

³ Manual of Water Supply Practices (M1), Principles of Water Rates, Fees, and Charges, American Water Works Association, 7th Edition, Table VII.2-5 on p. 338.

Table 6. Meter Capacities and Scaling Factors by Meter Size

Meter Size	Rated Meter Capacity (gpm)	Scaling Factor
5/8" or 3/4" Displacement	30	1.00
1" Displacement	50	1.67
1-1/2" Displacement	100	3.33
2" Displacement	160	5.33
3" Singlejet	320	10.67
3" Compound, Class I	320	10.67
3" Turbine, Class I	350	11.67
4" Singlejet	500	16.67
4" Compound, Class I	500	16.67
4" Turbine, Class I	630	21.00
6" Singlejet	1,000	33.33
6" Compound, Class I	1,000	33.33
6" Turbine, Class I	1,300	43.33
8" Compound, Class I	1,600	53.33
8" Turbine, Class II	2,800	93.33
10" Turbine, Class II	4,200	140.00
12" Turbine, Class II	5,300	176.67

gpm = gallons per minute

The system development fees for various meter sizes were calculated by multiplying the system development fee for one ERU by the meter scaling factors shown in Table 6. The resulting water and sewer system development fees for all meter sizes are shown in Table 7.

Table 7. Water and Sewer System Development Fees by Meter Size for Single-Family Customers, Multi-Family Customers with Master Meters, and Non-Residential Customers

Meter Size	Water Fee	Sewer Fee
5/8" or 3/4" Displacement	\$1,006	\$1,301
1" Displacement	\$1,676	\$2,169
1-1/2" Displacement	\$3,353	\$4,337
2" Displacement	\$5,364	\$6,940
3" Singlejet	\$10,728	\$13,880
3" Compound, Class I	\$10,728	\$13,880
3" Turbine, Class I	\$11,734	\$15,181
4" Singlejet	\$16,763	\$21,687
4" Compound, Class I	\$16,763	\$21,687
4" Turbine, Class I	\$21,122	\$27,326
6" Singlejet	\$33,526	\$43,375
6" Compound, Class I	\$33,526	\$43,375
6" Turbine, Class I	\$43,584	\$56,387
8" Compound, Class I	\$53,642	\$69,400
8" Turbine, Class II	\$93,874	\$121,450
10" Turbine, Class II	\$140,811	\$182,175
12" Turbine, Class II	\$177,690	\$229,887

The system development fee for the 5/8" or 3/4" meter shown above will be adjusted for multi-family customers with individual meters per unit and with less than 3 bedrooms per unit. The adjustment will be based on the proportion of gallons per day for the multi-family unit in relation to the single-family ERU of 360 gallons per day, as shown in Table 8.

Table 8. Water and Sewer System Development Fees for Multi-Family Customers with an Individual 5/8" or 3/4" Meter per Unit and Less than 3 Bedrooms per Unit

Number of Bedrooms	Gallons per Day	% of Single-Family ERU	Water Fee per Unit	Sewer Fee per Unit
1 bedroom	120	120/360 = .333	\$335	\$434
2 bedrooms	240	240/360 = .667	\$671	\$867

The water and sewer system development fees shown in Tables 7 and 8 represent the maximum cost justified level of system development fees that can be assessed by the City, as stated in Article 8. If the City chooses to assess fees that are less than those shown in the table, the adjusted fee amounts should still reflect the scaling factors by meter size, as shown in Table 6, and the proportionality in Table 8.

Mr. Ralph Staley
City of Statesville

January 28, 2021
Page 10

We appreciate the opportunity to assist the City with the calculation of its water and sewer system development fees. Should you have questions or need any additional information, please do not hesitate to contact me at 704-936-4436.

Very truly yours,

RAFTELIS FINANCIAL CONSULTANTS, INC.

A handwritten signature in cursive script that reads "Elaine Conti".

Elaine Conti
Executive Vice President

Appendix

Schedule 1: Calculation of Water System Development Fee

City of Statesville, NC Water System		
Total Fixed Assets		RCNLD (1)
Water Lines	\$	23,648,998
I77 Line		-
Treatment Plants		29,565,985
Pumps & Tanks		119,274
Equipment		398,401
Meters		2,416
Land & Easement		1,089,638
Vehicles		644,779
Total	\$	55,469,492
Less Fixed Asset Adjustments (Exclusions):		
Equipment	\$	(398,401)
Meters		(2,416)
Vehicles		(644,779)
Grant Funded assets I-77 Line		-
Contributed or grant funded assets prior to 2018 (2)		(7,476,824)
<i>Subtotal: Fixed Asset Exclusions</i>	\$	(8,522,420)
Additional Adjustments		
Outstanding Principal (3)	\$	(5,038,970)
Net Fixed Assets	\$	41,908,102
Capacity in treatment plants (MGD) (4)		15
Cost per gallon per day of capacity	\$	2.79
Estimated ERU (rounded) - gallons per day per ERU (5)		360
Calculated Water Fee for Residential Customer	\$	1,006

Notes:

- 1) The RCNLD is based on the accounting fixed asset records as of June 30, 2020. The net book value is escalated using the Handy Whitman Index for the South Atlantic Region.
- 2) Estimate of contributed and grant funded assets through 2017.
- 3) Represents outstanding principal debt for the water system paid by water user charges.
- 4) Represents the total capacity of the water treatment plant.
- 5) The City uses the sewer state guidelines for permitted capacity for its ERU which specifies 120 gallons per day per bedroom (15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATE, readopted effective September 1, 2018). Based on Census data for the City, the majority of dwelling units have 3 bedrooms.

Schedule 2: Calculation of Wastewater System Development Fee

City of Statesville, NC Sewer System	
Total Fixed Assets	RCNLD (1)
Sewer Lines	\$ 26,561,044
I77 Line	6,308,087
Treatment Plants	36,306,094
Pumps & Tanks	1,304,989
Equipment	640,328
Meters	-
Land & Easement	422,574
Vehicles	644,779
<i>Total</i>	<i>\$ 72,187,896</i>
Less Fixed Asset Adjustments (Exclusions):	
Equipment	\$ (640,328)
Meters	-
Vehicles	(644,779)
Grant Funded assets (75.2% of I-77 Line) (2)	(4,745,146)
Contributed or grant funded assets prior to 2018 (3)	(4,695,487)
<i>Subtotal: Fixed Asset Exclusions</i>	<i>\$ (10,725,741)</i>
Additional Adjustments	
Outstanding Principal (4)	\$ (18,087,247)
Net Fixed Assets	\$ 43,374,908
Capacity in treatment plants (MGD) (5)	12
Cost per gallon per day of capacity	\$ 3.61
Estimated ERU (rounded) - gallons per day per ERU (6)	360
Calculated Sewer Fee for Residential Customer	\$ 1,301

Notes:

- 1) The RCNLD is based on the accounting fixed asset records as of June 30, 2020. The net book value is escalated using the Handy Whitman Index for the South Atlantic Region.
- 2) The City received a grant from the NC DOT for a portion of the I-77 sewer lines. The amount grant funded is subtracted from the fixed assets.
- 3) Estimate of contributed and grant funded assets through 2017.
- 4) Represents outstanding principal debt for the sewer system paid by sewer user charges
- 5) Represents the total capacity of the sewer treatment plant.
- 6) The City uses the sewer state guidelines for permitted capacity for its ERU which specifies 120 gallons per day per bedroom (15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATE , readopted effective September 1, 2018). Based on Census data for the City, the majority of dwelling units have 3 bedrooms.

Schedule 3: Estimate of Contributed Capital

	Net Book Value		RCNLD	
	Capital Contributions	Depreciated Value In 2008 (2)	Water	Sewer
Estimate of Contributed/Grant Funded Capital (1):				
Accounting Fixed Assets up to (and including) 2002	\$ 8,077,030	\$ 6,801,709	\$ 19,447,720	\$ 28,721,022
Accounting Fixed Assets - 2003	\$ 346,457	\$ 300,871	\$ 6,739,565	\$ -
Accounting Fixed Assets - 2004	\$ 8,400	\$ 7,516	\$ -	\$ -
Accounting Fixed Assets - 2005	\$ 13,797	\$ 12,708	\$ 22,123,095	\$ 9,562
Accounting Fixed Assets - 2006	\$ -	\$ -	\$ -	\$ 2,684,792
Accounting Fixed Assets - 2007	\$ 700,000	\$ 681,579	\$ -	\$ -
Accounting Fixed Assets - 2008	\$ 729,124	\$ 729,124	\$ 3,527,958	\$ 1,139,390
	\$ 9,874,808	\$ 8,533,507	\$ 51,838,337	\$ 32,554,767
Net Asset Value in 2008 - Total Net Book Value (3)		\$ 59,164,532		
Estimate of % of Contributed/Grant Funded Assets as a % of Total Net Book Value		14.4%	\$ (7,476,824)	\$ (4,695,487)

(1) Prior to 2003, contributed capital was shown in the balance sheet (cumulative net amount) of the annual financial statements. In 2003 and beyond, contributed and grant funded capital was shown in the schedule of revenues and expenditures.

(2) Based on weighted average service life of original cost of assets prior to 2003.

Note 2:	<i>Original Cost</i>	<i>Weight</i>	<i>Weighted Service Life</i>
Assets less than or equal to 2002 - 40 yr	\$ 42,000,000	77.5%	31
Assets less than or equal to 2002 - 30 yr	\$ 12,200,000	22.5%	7
Weighted average service life	\$ 54,200,000	100.0%	38

(3) Obtained from the City's FY 2008 Comprehensive Annual Financial Plan Schedule 6.