RAFTELIS

April 26, 2024

Mr. Thomas Wrenn
Chief Executive Officer
Roanoke Rapids Sanitary District
PO Box 308
Roanoke Rapids, NC 27870

Subject: Calculation of Water and Sewer System Development Fees for FY 2025

Dear Mr. Wrenn:

Raftelis Financial Consultants, Inc. ("Raftelis") has completed an evaluation to calculate cost-justified water and sewer system development fees for fiscal year ("FY") 2025 for consideration by the Roanoke Rapids Sanitary District ("RRSD"). This report documents the results of the analysis, which was based on an approach for establishing system development fees set forth in North Carolina General Statute 162A Article 8 – "System Development Fees." The purpose of this report is to summarize Raftelis' conclusion related to cost-justified water and sewer system development fees. It is not intended to address anything else associated with the system development fees, such as the administration of these fees, etc.

The preparation of this report was developed by Raftelis for RRSD based on a specific scope of work agreed to by both parties. The scope of Raftelis' work consisted of completing a calculation of cost-justified water and sewer system development fees using common industry practices and industry standards. We provide no opinion on the legality of the system development fees implemented by RRSD. It is the responsibility of RRSD to ensure compliance of the system development fees with North Carolina General Statute 162A Article 8 – "System Development Fees". The scope of work does not include any additional work other than the calculation associated with the system development fees, such as opinions or recommendations on the administration of these fees, the timing and use application of revenues from the collection of these fees, etc., as that is the responsibility of RRSD.

In developing the conclusions contained within this report, Raftelis has relied on certain assumptions and information provided by RRSD, who is most knowledgeable of the water and sewer system, its finances, etc. Raftelis has not independently verified the accuracy of the information provided by RRSD. We believe such sources are reliable and the information obtained to be reasonable and appropriate for the analysis undertaken and the conclusions reached. The conclusions contained in this report are as of the stated date, for a specific use and purpose, and made under specific assumptions and limiting conditions. The reader is cautioned and reminded that the conclusions presented in this report apply only as to the effective date indicated. Raftelis makes no warranty, expressed or implied, with respect to the opinions and conclusions contained in this report. Any statement in this report involving estimates or matters of opinion, whether or not specifically designated, are intended as such, and not as representation of fact.

Background

System development fees are one-time charges assessed to new water and/or sewer customers for their use of system capacity and serve as an equitable method by which to recover up-front system capacity costs from those using the capacity. 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 was modified by Session Law 2021-76 and House Bill 344, which was approved on July 2, 2021. According to the statute, system development fees are required to be adopted in accordance with the conditions and limitations of Article 8. In addition, the system development fees must also 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.
- Employs generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined 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 Article 8.
- 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 five years, nor more than 20 years.
- Use the gallons per day per service unit that the local government unit applies to its water or sewer system engineering for planning purposes for water or sewer, as appropriate, in calculating the system development fee.

This letter report documents the results of the calculation of water and sewer system development fees for FY 2025 in accordance with these requirements. In general, system development fees are calculated based on (1) a cost analysis of the existing or planned infrastructure that is in place, or will be constructed, to serve new capacity demands, and (2) the existing or additional capacity associated with these assets. Article 8 is relatively explicit in the identification of infrastructure assets that may be included as part of the system development fee calculation, as the Article 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 providing a general benefit to the area that facility serves and is owned or operated, or to be owned or operated, by a local governmental unit. This shall include facilities for the reuse or reclamation of water and any land associated with the facility."*

Therefore, the method used to calculate system development fees for RRSD included system facility assets that satisfied this definition.

Article 8 references three methodologies that could be used to calculate system development fees. These include the buy-in method, the incremental cost method, and the combined cost method. A description of each of these methods is included in the following paragraphs:

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 can 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. Adjustments to the value of existing facilities are made for developer contributed assets, grant funds, non-core equipment such as vehicles and meters, administrative assets, and 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 have limited or no capacity to accommodate future growth. The cost of capacity is calculated by dividing the total cost of growth-related capital investments by the additional capacity provided as a result of 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, or where 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 RRSD, since in general, RRSD's existing water and sewer treatment facilities have adequate capacity to accommodate 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, grant funded assets, non-core equipment, administrative assets, and a portion of 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 assumed to be demanded by one service unit of new development was identified. 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, or the smallest unit of new development (one ERU), to different categories of demand, as defined by the 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 RRSD, as of June 30, 2023, was reviewed and each individual asset was categorized into one of the categories shown in Table 1.

Table 1. Fixed Asset Categories by System

Water System	Sewer System
Admin	Admin
Distribution and Collection (1)	Distribution and Collection (1)
Water Treatment Plant	Wastewater Treatment Plant
Construction in Progress	Construction in Progress
Land	Land
Vehicles, Non-core Equipment, Computers	Vehicles, Non-core Equipment, Computers
Meters	Meters

(1) Includes distribution and collection lines, pump stations, lift stations, tanks, and other assets/improvements.

Assets in categories identified as "Vehicles, Non-core Equipment, Computers" and "Meters" were excluded from the calculation of system value as these assets were not specifically identified as allowable under Article 8. Excluded assets included those relating to administrative and miscellaneous type buildings, rolling stock, and various types of equipment.

Next, the replacement value of existing assets in allowable categories was estimated. Each asset's original cost, as contained in the fixed asset listing provided by RRSD, was escalated to 2023 dollars based on the year the asset was purchased and the corresponding escalation factor for that year. Escalation factors for each year were developed using the Handy Whitman Index of Public Utility Construction Costs (for the South Atlantic Region), which provides an annual index value representing the relative change in construction costs for each year from 1912 to 2023. Using the Handy Whitman Index to estimate an asset's current replacement cost is an industry accepted method by which to value system facilities.

The replacement costs of the assets were adjusted by their indexed accumulated depreciation to derive the replacement cost new less accumulated depreciation ("RCNLD") amounts. The estimated RCNLD values for water and sewer system assets allowable under Article 8 are summarized in Tables 2 and 3, respectively.

Table 2. Water System Value (RCNLD)

Description	RCNLD Value
Admin	$ 645,585
Distribution and Collection	18,547,516
Water Treatment Plant	8,054,833
Construction in Progress	1,675,675
Land	101,971
Total	**$ 29,025,580**

Table 3. Sewer System Value (RCNLD)

Description	RCNLD Value
Admin	$ 1,706,342
Distribution and Collection	30,912,119
Wastewater Treatment Plant	14,341,880
Construction in Progress	179,000
Land	501,456
Total	**$ 47,640,797**

As shown in Table 2, the RCNLD value of the water system was estimated to be approximately $29.0 million, and, as shown in Table 3, the RCNLD value of the sewer system was estimated to be approximately $47.6 million. Several additional adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, which included adjustments for developer contributed assets, grant funded assets, non-core equipment, administrative assets, and a portion of outstanding debt, as described below.

Grant Funded and Donated/Contributed Assets:

The listing of fixed assets was reviewed to identify assets that were contributed, or paid for, by outside sources (i.e. donated/contributed or grant-funded assets). RRSD staff identified assets that were contributed or funded by grants and these assets were subtracted from the RCNLD value, as they do not represent an investment in system capacity by RRSD. The total RCNLD value of contributed water and sewer system assets was estimated to be approximately $686,000 and $2.3 million, respectively.

Outstanding Principal Debt Credit:

Article 8 specifies that the capacity buy-in calculation should be determined using generally accepted methods, including the consideration of debt credits and other generally accepted valuation adjustments.

To ensure that new customers are not being double charged for core system assets, once through the system development fee and again through retail rates and charges, the proportion of the outstanding debt principal amount that is anticipated to be paid for through retail rates and charges was deducted from the system development fee calculation. For the 2025 fee calculation, all principal on outstanding debt service for revenue bonds and state revolving fund loans has been deducted from the system asset values.

Non-Core Fixed Assets

In accordance with Article 8, RCNLD value excludes non-core assets such as small equipment, vehicles, and meters.

The resulting adjustments to the water and sewer RCNLD values for developer contributions, grant funded assets, administrative assets, non-core equipment such as vehicles, and a portion of outstanding debt are shown in Table 4.

Table 4. Calculation of Net Water and Sewer System Value

Description		Amount
Water System:		
System Facilities RCNLD	$	29,025,580
Less: Contributed and Grant Funded Assets		(686,063)
Less: Vehicles, Non-core Equipment, Computers		(227,084)
Less: Meters		(3,004,312)
Less: Admin		(645,585)
Less: Outstanding Principal		(2,077,567)
Net System Value	**$**	**22,384,970**
Sewer System:		
System Facilities RCNLD	$	47,640,797
Less: Contributed and Grant Funded Assets		(2,312,839)
Less: Vehicles, Non-core Equipment, Computers		(246,887)
Less: Meters		-
Less: Admin		(1,706,342)
Less: Outstanding Principal		(5,032,189)
Net System Value	**$**	**38,342,540**

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 capacities. The treatment capacity that can currently be delivered by the water system is currently 10.0 million gallons per day ("MGD"). Therefore, the cost per unit of system capacity for the water system was calculated to be $2.24 per gallon, per day ($22,384,970 ÷ 10.0 MGD).

The wastewater treatment capacity of the sewer system is 8.34 MGD. Therefore, the cost per unit of system capacity for the sewer system was calculated to be $4.60 per gallon, per day ($38,342,540 ÷ 8.34 MGD).

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

The next step is to define the level of demand associated with a typical residential customer often referred to as an Equivalent Residential Unit, or ERU. Under previous standards a peak flow rate of 120 gallons per day per bedroom for a residential home was required, but this standard has since been modified and

adopted by the State. Per the new wastewater flow design standards adopted by the State and defined in the North Carolina Administrative Code (NCAC 02T.0114), the peak flow rate of 120 gallons per day per bedroom for a residential home has been reduced to 75 gallons per day per bedroom for a residential home as the requirement. Based on discussions with RRSD staff, this analysis assumes an average of a three-bedroom home. Applying the State standards to the average number of bedrooms, it is determined that an ERU requires a standard level of service of 225 gallons per day of capacity for wastewater[1]. It is assumed for this analysis that the same level of service of capacity (225 gallons per day) will be needed for water as well.

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 demanded by one ERU from Step 3. The calculations are provided in Table 5.

Table 5. Calculation of Water and Sewer System Development Fees for One ERU

Description		Amount
Water System:		
Net System Value	$	22,384,970
System Capacity (MGD)		10.0
Unit Cost of Capacity ($/gallon per day)	$	2.24
Capacity Required for 1 ERU (gallons per day)		225
System Development Fee per ERU	**$**	**503.66**
Sewer System:		
Net System Value	$	38,342,540
System Capacity (MGD)		8.34
Unit Cost of Capacity ($/gallon per day)	$	4.60
Capacity Required for 1 ERU (gallons per day)		225
System Development Fee per ERU	**$**	**1,034.42**

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, for meters up to 1.5" and as calculated by the rated meter capacity of Octave Ultrasonic Meters, RSSD's meter supplier, for meters larger than 2".[2]

[1] The water system and sewer system service unit of 225 is based on 75 gallons per bedroom and the assumption of a three-bedroom home. Section 18 of Session Law 2023-137 modified the wastewater design flow rates in 15ANCAC02T.0114(b).
[2] See 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, for meter sizes through 1.5". For meters 2" and larger, RRSD uses Octave Ultrasonic Meters. See https://www.mastermeter.com/wp-content/uploads/Octave-Ultrasonic-Meter-Product-Sheet-v1202.20F.pdf .

Table 6. Water and Sewer System Development Fees by Meter Size

Meter Size	Scaling Factor	Water Fee	Sewer Fee
3/4"	1.0	$ 504	$ 1,034
1"	1.7	$ 841	$ 1,727
1.5"	3.3	$ 1,677	$ 3,445
2"	8.3	$ 4,196	$ 8,617
3"	16.7	$ 8,396	$ 17,244
4"	33.3	$ 16,787	$ 34,477
6"	53.3	$ 26,860	$ 55,166
8"	93.3	$ 47,007	$ 96,543
10"	183.3	$ 92,336	$ 189,640

The water and sewer system development fees shown in Table 6 represent the maximum cost justified level of system development fees that can be assessed by RRSD per Article 8. If RRSD 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.

We appreciate the opportunity to assist RRSD 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 704-327-3231.

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Will Kerr
Manager