

January 24, 2024

Mr. DJ Señeres  
The City of Archdale  
307 Balfour Drive  
Archdale, NC 27263

**Subject: System Development Fee Study Update**

Dear Mr. Señeres:

Raftelis Financial Consultants, Inc. (“Raftelis”) has completed an evaluation to develop cost-justified water and sewer system development fees for fiscal year (“FY”) 2024 for consideration by the City of Archdale (City). 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.

The preparation of this report was developed by Raftelis for the City 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 the City. It is the responsibility of the City to ensure compliance of the system development fees with North Carolina General Statute 162A Article 8 – “System Development Fees.”. The scope of work does did 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 the City.

In developing the conclusions contained within this report, Raftelis has relied on certain assumptions and information provided by the City, 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 the City. 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

## The City of Archdale, NC

North Carolina and was passed by the North Carolina General Assembly and signed into law on July 20, 2017 and has been modified several times since then. According to the statute, system development fees are required to be adopted in accordance with the conditions and limitations of Article 8, and the fees are required to conform to the requirements set forth in the Article no later than July 1, 2018.<sup>1</sup> 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.
- Employ 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 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 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 2024 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 the City included system facility assets that satisfied this definition.

## The City of Archdale, NC

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, 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 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 enough capacity to accommodate anticipated future growth over the near term. The following steps were completed to calculate the fees under the 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 contributions, and a portion of outstanding debt.
2. The unit cost of system capacity was estimated by dividing the calculated system value from step 1 by the total treatment 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.

## Calculation of System Development Fees

### *Step 1 – Estimate the System Value and Apply Adjustments*

A listing of fixed assets provided by the City, as of August 11, 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**

<b>Water System</b>	<b>Sewer System</b>
Land	Land
Water Distribution	Sewer Collection
Water Rights	Wastewater Rights

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 the City, 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 (“HWI”) for the South Atlantic Region, which provides an annual index value representing the relative change in costs for each year from 1908 to 2023. Using the HWI 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 Table 2.

As shown in Table 2, the RCNLD value of the water system was estimated to be approximately \$12.4 million, and the RCNLD value of the sewer system was estimated to be approximately \$19.1 million. Several additional adjustments were made to the estimated water and sewer system RCNLD values in accordance with Article 8, which included adjustments for meters, vehicles, other non-core assets, developer contributed assets, grant funded assets, and a portion of outstanding debt, as described below.

#### Non-Core and Developer Contributed / Grant Funded Assets:

General assets, such as those related to administrative buildings, certain vehicles, and certain equipment items were not directly attributable to a specific category. As a result, these assets were categorized as “Non-Core Assets.” These assets 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, vehicles, and various types of equipment.

Additionally, the listing of fixed assets was reviewed to identify assets that were contributed, or paid for, by developers or grant funded. A portion of the water and sewer lines in the fixed asset system are developer contributed. The City tracks which lines have been donated based on an analysis of linear feet by diameter. Based on this data, a percentage of the total value of water and sewer lines was deducted from the total system value to represent the portion donated or contributed by developers.

#### Debt Credit

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

## The City of Archdale, NC

credit is applied to reflect that a portion of the outstanding debt associated with the system facilities will be repaid with water and sewer user charges and a portion will be repaid with system development fee revenues. An adjustment was made to prevent recovering the cost of the assets twice, once when assessing system development fees for new customers, and then again when these customers pay user charges.

The amount of the credit was calculated by first identifying the amount of existing outstanding debt attributable to both the water and sewer systems that funded qualifying assets. The total outstanding principal for each system was then deducted from the system value as a credit. A summary of the total credits and adjustments is provided in Table 2.

**Table 2. Water and Sewer System Value**

Description	Water	Sewer
System Facilities RCNLD	\$12,394,134	\$19,054,167
Less: Equipment	-\$878,862	-\$878,862
Less: Contributed Capital	-\$2,102,004	-\$11,923,647
Less: Debt Credit/Revenue Credit	-\$2,126,594	-\$2,273,060
<b>Net System Value</b>	<b>\$7,241,674</b>	<b>\$3,978,598</b>

### *Step 2 – Calculate the Unit Cost of System Capacity*

The cost per unit of system capacity was calculated by dividing the adjusted system values (derived in Step 1) by the water and sewer system capacities. The treatment capacity of the water system is currently 2.559 million gallons per day (“MGD”). Therefore, the cost per unit of system capacity for the water system was calculated to be \$2.83 per gallon per day ( $\$7,241,674 \div 2.559 \text{ MGD}$ ).

The treatment capacity of the sewer system is 2.50 MGD. Therefore, the cost per unit of system capacity for the sewer system was calculated to be \$1.59 per gallon per day ( $\$3,978,598 \div 2.50 \text{ MGD}$ ). The calculations are provided in Table 3.

**Table 3. Calculation of Water and Sewer System Development Fees Unit Cost**

Description	Water	Sewer
Net System Value	\$7,241,674	\$3,978,598
System Capacity (MGD)	2.559	2.50
<b>Unit Cost of Capacity (\$ / gallon per day)</b>	<b>\$2.83</b>	<b>\$1.59</b>

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

Section 205 of Article 8 states that the system development fee calculation “...use the gallons per day per service unit that the local governmental unit applies to its water or sewer system engineering for planning purposes for water or sewer, as appropriate, in calculating the system development fee.” The City uses the North Carolina Administrative Code 15A NCAC 02T.0114 Wastewater Design Flow Rates to define the level of demand associated with a typical, or average, residential customer, which has recently been updated to 75 gallons per day per bedroom. The City’s average single-family residential customer has a three-bedroom home which results in 225 gallons per day.

## The City of Archdale, NC

### 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 4.

**Table 4 Calculation of Water and Sewer System Development Fee for One ERU**

Description	Water	Sewer
Unit Cost of Capacity (\$/gallon per day)	\$2.83	\$1.59
Capacity per one Single-Family ERU (gallons per day)	225	225
<b>System Development Fee for One ERU</b>	<b>\$637</b>	<b>\$358</b>

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

The system development fees for various categories of demand associated with non-residential customers 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, as shown in Table 5.<sup>2</sup>

**Table 5. Maximum Cost-Justified Water and Sewer SDF**

Meter Size	Flow Ratio	Water Fee	Sewer Fee	Total
¾" Meter	1.0	\$637	\$358	\$995
1" Meter	1.7	\$1,061	\$597	\$1,658
1 ½" Meter	3.3	\$2,122	\$1,194	\$3,316
2" Meter	5.3	\$3,396	\$1,910	\$5,306
3" Meter	10.0	\$6,367	\$3,581	\$9,948
4" Meter	16.7	\$10,612	\$5,968	\$16,580

The water and sewer system development fees shown in Table 5 represent the maximum cost-justified level of system development fees that can be assessed by the City per Article 8. If the City chooses to assess fees that are less than those shown in the tables, the adjustments need to be reflected consistently across all categories of demand.

We appreciate the opportunity to assist the City of Archdale with this important engagement. Should you have questions, please do not hesitate to contact me at (704) 936-4436.

Very truly yours,

RAFTELIS FINANCIAL CONSULTANTS, INC.



**Elaine Conti**

*Executive Vice President*

<sup>2</sup> 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.