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April 19, 2018

Ms. Stephanie Humphries
Finance Office
Camden County
117 N Carolina Hwy 343 S
Camden, NC, 27921

Dear Ms. Humphries:

Raftelis has completed an evaluation to develop cost-justified water and wastewater system development fees for consideration by Camden County (County). 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 wastewater 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 wastewater systems in North Carolina, and was recently passed by the North Carolina General Assembly and signed into law on July 20, 2017. According to the statute, system development fees must be adopted in accordance with the conditions and limitations of Article 8, and must conform to the requirements set forth in the Article no later than July 1, 2018. 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 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 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 10 years, nor more than 20 years.

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

Article 8 references three methodologies that can 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 follows:

Buy-In Approach

The System Buy-In Approach calculates a system development fee based upon the proportional cost of each user's share of existing system capacity, and is most appropriate in cases where the existing system assets provide adequate capacity to provide service to new customers. The cost of the facilities is based on fixed assets records and can include escalation of the depreciated value of those assets to current dollars, or "replacement costs" as identified in the general statute. The general statute also identifies adjustments to be made to the replacement cost such as "debt credits, grants, and other generally accepted valuation adjustments."

Incremental Cost Approach

The Incremental Cost (or Marginal Incremental) Approach calculates a system development fee based upon a new customer's proportional share of the incremental future cost of system capacity. This approach focuses on the cost of adding additional facilities to serve new customers. It is most appropriate 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 10-year planning period. Per the general statute, a revenue credit must be applied "against the projected aggregate cost of water or sewer capital improvements."

Combined Approach

The Combined Approach is a combination of the Buy-In and Incremental Cost approaches, and is appropriate to be used when the existing assets provide some capacity to accommodate new customers, but where the capital improvement plan also identifies significant capital investment to add additional infrastructure to address future growth and capacity needs.

Summary of Results

Raftelis requested and was provided with the following data from County staff to complete the system development fee calculation:

- Water and wastewater fixed asset data, as of June 30, 2017;
- Outstanding utility debt and associated debt service;
- Contributed capital;
- Grant- funded assets;
- Capacity in plants, and
- History of system development fees collected

The Buy-In Approach was chosen as the method to calculate the system development fees. Adequate capacity currently exists in the water and wastewater treatment facilities and in the water transmission and wastewater collection lines to accommodate the anticipated growth in the near term. The County has identified several projects in its capital improvement plan to expand the wastewater system capacity to serve future development. However, the County currently only has a 5-year capital improvement plan, which does not meet the 10-year planning horizon requirement set forth in the General Statute.

Buy-In Calculation

Using the Buy-In approach, Raftelis calculated the estimated cost, or investment in, the current capacity available to provide water and wastewater utility services to existing and new customers. This analysis was based on a review of fixed asset records and other information as of June 30, 2017. The depreciated value of the assets is first adjusted to reflect an estimated replacement cost to determine the "replacement cost new less depreciation" (RCNLD) value for the assets. The asset values were adjusted using the Handy Whitman Index of Public Utility Construction Costs (South Atlantic Region).

As shown in Exhibit 1, several adjustments were then made to the estimated water and wastewater RCNLD values in accordance with Article 8, which included adjustments for contributed assets, non-core assets, and outstanding debt as described below.

- *Contributed Assets* - All assets contributed by or paid for by developers, or assets that were grant funded were excluded from the calculation since these costs were not ultimately "paid" by the existing customers. The County indicated that no assets were contributed by developers. Therefore, only grant funded assets were removed from the analysis.
- *Other Non-Core Assets* - Equipment, vehicles, and meters were excluded since they do not represent core assets.
- *Outstanding Principal Debt* - Utilities often borrow funds to construct assets, and revenues from retail rates and charges can be used to make the payments on these borrowed funds. To ensure that new customers are not being double charged for these 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 is typically deducted from the system development fee calculation. Since the County makes debt service payments exclusively with retail rates and charges, and instead uses system development fee revenues to pay for capital projects, all outstanding principal debt was deducted.

Exhibit 1 – RCNLD Value and Adjustments[1]

	Water	Wastewater	Total
Total RCNLD Value of Fixed Assets	**$ 19,671,494**	**$ 14,530,562**	**$ 34,202,056**
Adjustments			
Contributed Capital	(11,275,146)	(12,377,496)	(23,652,642)
Outstanding Principal Debt	(2,145,962)		(2,145,962)
Equipment	(33,388)	-	(33,388)
Vehicles	(45,304)	-	(45,304)
Meter	(2,319)	-	(2,319)
Adjusted RCNLD	**$ 6,169,376**	**$ 2,153,065**	**$ 8,322,441**

The adjusted RCNLD values for water and wastewater were then converted to a unit cost of system capacity as shown by dividing the RCNLD values by the water and wastewater capacities.

The cost per gallon per day (GPD)for water and wastewater capacity is shown below in Exhibit 2.

Exhibit 2 – Cost per GPD of Core Utility Assets for Buy-In Approach

	Water	Wastewater
Adjusted RCNLD	$6,169,376	$2,153,065
Total Capacity (GPD)	720,000	100,000
Cost per Gallon per Day	**$8.57**	**$21.53**

This measure becomes the basic building block or starting point for determining the *maximum cost-justified level* of the water and wastewater system development fees. Fees for different types of

[1] Additional details regarding the RCNLD calculation are provided in the Schedules from the System Development Fee Model in the Appendix.

customers are based on this cost of capacity multiplied by the amount of capacity needed to serve each type or class of customer.

Equivalent Residential Unit (ERU) Calculation and Assessment of Fee

The next step is to define the level of demand associated with a typical, or average, residential customer, often referred to as an Equivalent Residential Unit, or ERU. The County uses the wastewater design flow rates as specified by the North Carolina Administrative Code Title 15A (Department of Environment and Natural Resources) Subchapter 2T, which states that the sewage from dwelling units is 120 gallons per day per bedroom. The County uses a three-bedroom home (or 360 gallons per day) as the equivalent residential unit.

The calculation of the system development fee is based on the cost per gallon per day multiplied by the number of gallons per day required to serve each customer, as shown below in Exhibit 3.

Exhibit 3 – Calculated Maximum Residential System Development Fees

Single-Family	Water	Wastewater
Cost per GPD	**$8.57**	**$21.53**
GPD per ERU	**360**	**360**
Calculated System Development Fee per ERU	**$3,085**	**$7,751**
Existing System Development Fee per ERU	**$2,500**	**$7,400**

For non-residential customers with larger meters, the fees for the smallest residential meter are used and then scaled up by the flow ratios for each meter size, as specified in the AWWA M-1 Manual[2]. Exhibit 4 shows the resulting system development fees by meter size for meters ranging from 3/4 inches to 12 inches. For these calculations, the system development fees have been rounded to the nearest dollar.

[2] See the AWWA M-1 Manual – Appendix B- Equivalent Meter Ratios; pp.326

Exhibit 4 – Calculated Maximum System Development Fees for Non-Residential Customers

Calculated Fee				
Meter Size	Flow (gpm)	Ratio	Water	Wastewater
5/8"	20	1.0	$ 3,085	$ 7,751
1"	50	2.5	7,712	19,378
1.5	100	5.0	15,423	38,755
2"	160	8.0	24,678	62,008
3"	320	16.0	49,355	124,017
4"	500	25.0	77,117	193,776
6"	1000	50.0	154,234	387,552
8"	1600	80.0	246,775	620,083
10"	4200	210.0	647,784	1,627,717
12"	5300	265.0	817,442	2,054,024

The County may elect to charge a cost per gallon that is less than the maximum cost-justified cost documented in this report. If the County elects to charge a fee that is less, all customers must be treated equally, meaning the same reduced cost per gallon per day must be used for all customers.

Please contact me at your convenience if you have any questions regarding this report. We appreciate the opportunity to assist Camden County with this important engagement.

Very truly yours,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Keith Readling,
PE Executive Vice President

Melissa Levin,
Senior Manager

Appendix

Supporting Schedules
From the
System Development Fee Model

Schedule 1 – Buy-In Approach for Water and Wastewater System

	Water	Sewer	Total
Fixed Assets (1)			
Water Equipment	21,281	-	21,281
Heavy Machinery	-	-	-
Other Moterized	6,458	-	6,458
Water Vehicles	38,846	-	38,846
Vehicles	-	-	-
R/O Plant/Sewer	-	937,839	937,839
Office Furniture	-	-	-
Sewer Plant	71,001	-	71,001
Radios	-	-	-
Plant & Distribution	19,003,607	-	19,003,607
Equipment	12,107	-	12,107
Collections/Lines	-	8,003,918	8,003,918
Treatment Plant	-	4,748,935	4,748,935
Sewer Buildings	-	770,575	770,575
R/O Plant	72,069	-	72,069
Water Construction	396,126	-	396,126
Sewer Construction	-	69,295	69,295
Office Machinery	-	-	-
Land	50,000	-	50,000
Total RCNLD Value of Fixed Assets	$ 19,671,494	$ 14,530,562	$ 34,202,056
Adjustments (2)			
Contributed Capital	(11,275,146)	(12,377,496)	(23,652,642)
Outstanding Principal Debt	(2,145,962)		(2,145,962)
Equipment	(33,388)	-	(33,388)
Vehicles	(45,304)	-	(45,304)
Meter	(2,319)	-	(2,319)
Net RCNLD	$ 6,169,376	$ 2,153,065	$ 8,322,441
Divided by:			
System Capacity (Gallons per Day) (3)	720,000	100,000	820,000
Net Cost per Gallon per Day	$ 8.57	$ 21.53	$ 10.15
Multiplied by:			
Average Consumption per ERU	360	360	
Maximum System Development Fee per ERU	**$ 3,085**	**$ 7,751**	**$ 10,836**
Existing System Development Fee	$ 2,500	$ 7,400	$ 9,900

(1) Fixed asset information was provided by the County and the net book value was escalated to 2017 to calculate the replacement cost new less depreciation (RCNLD)
(2) The RCNLD is adjusted to exclude contributed or grant funded or developer-contributed assets, outstanding principal debt, as well as vehicles, equipment, and meters
(3) This represents the rated capacity of the water and wastewater treatment plants
(4) The average daily consumption is based on NCAC 02T.0114, which states that the average wastewater permitted capacity design flow rates are 120 gallons per bedroom per day. A 3 bedroom ERU was assumed for this analysis

Schedule 2 – Outstanding Principal Debt Adjustment

Outstanding Principal Debt	Water	Wastewater
Installation of Water Lines	$ 1,047,537	$ -
Phase II Water Lines	203,395	-
Reverse Osmosis Plant	404,770	-
Reverse Osmosis Upgrade	490,260	-
Total	**$ 2,145,962**	**$ -**