

Brunswick Regional Water and Sewer H2GO

System Development Fee Analysis

Project No. 3081-BF
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The logo for Wooten, featuring the word "Wooten" in a bold, dark blue sans-serif font. The letter "W" is stylized with a light blue triangle pointing upwards from its top-left corner.

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1. EXECUTIVE SUMMARY

In December 2017, the North Carolina General Assembly amended Chapter 162A of the General Statutes by passing House Bill 436. This amendment created “Article 8: System Development Fees”, and requires local governments to adopt uniform system development fees for public water and sewer systems by July 1, 2018 if the local government desires to charge system development fees thereafter. A factor driving the legislation is application of the ‘rational nexus text’, which requires decision makers to confirm the direct and reasonable connection between the impact of the new development, need for new infrastructure to support that development, and justify the appropriated **System Development Fees (SDFs)** necessary to support that growth. Prescribed methodologies to determine these SDFs are the *Buy-In (Equity) Cost Method*, *Incremental Cost (Marginal) Method*, and *Combined Cost Method*.

Brunswick Regional Water and Sewer H2GO (BRWSH2GO) has retained the professional engineering services provided by The Wooten Company to conduct the SDF analysis. Historically, BRWSH2GO SDF analysis utilized the Incremental Method only, but since Leland has relinquished ownership and operational control of its water distribution and wastewater collection system to H2GO, the Buy-In method has also become necessary for the analysis. Therefore, the most practical methodology to calculate SDFs for BRWSH2GO is the Combined Cost Method. This method accounts for the costs of existing infrastructure serving both existing and future customers while avoiding adverse financial impacts to existing customers for construction of new infrastructure necessary to support new development.

Based on existing infrastructure costs and the next FY2025-2030 planned capital improvement costs totaling \$192 million (refer to **Appendix 4**), the unit cost per gallon of water is \$26.70 and unit cost per gallon of sewer is \$31.50, for a maximum allowable combined unit cost of \$58.20 per gallon. Applying this unit cost to the average 210 gallons per day consumed by the typical BRWSH2GO residential (5/8” meter size) connection, the maximum allowable combined water and sewer SDF is \$12,220 per residential connection (\$5,607 water and \$6,615 sewer), as shown in **Table 1**. Commercial, institutional, and industrial connections, which require larger water meters, may be charged higher SDFs based on American Water Works Association (AWWA) – prescribed equivalent ratios or other approved rate adjustment factors. **Table 1** also shows SDFs for meters ranging in size from 1- to 12-inch. This analysis allows policymakers to make an informed decision when allocating system capacity costs between existing and new customers.



Table 1. Maximum Allowable System Development Fees

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/gallon	Sewer Capacity Cost, \$/gallon	Total Capacity Cost, \$/gallon	Total Capacity Cost, \$/connection*
5/8	1.0	\$26.70	\$31.50	\$58.20	\$12,220
1	2.5				\$30,550
1-1/2	5.0				\$61,110
2	8.0				\$97,770
3	16.0				\$195,550
4	25.0				\$305,550
6	50.0				\$611,100
8	80.0				\$977,760
10	115.0				\$1,405,530
12	215.0				\$2,627,730

*Based on 210-GPD¹ use for a 5/8" residential connection.

It is expected that, at the rates listed in **Table 1**, water SDFs will generate \$62.9 million and sewer SDFs will generate \$77.8 million for a total of \$141 million over a five-year planning horizon, to support necessary water and sewer infrastructure rehabilitation and expansion. The rates listed in **Table 1** represent the maximum rate supported by the SDF analysis. BRWSH2GO can elect to assess lower rates at BRWSH2GO's discretion. As required by the legislation, BRWSH2GO will need to re-evaluate this analysis and proposed SDFs at a minimum every five years and make necessary fee adjustments.

¹ NCDEQ approved a flow reduction request by BRWSH2GO to reduce their residential sewer usage rate to 210 gallons/day/unit.



2. INTRODUCTION

2.1 Background

The North Carolina General Assembly (NCGA) ratified House Bill 436 (HB 436)² in December of 2017, amending Chapter 162A: *Water and Sewer Systems*, Article 8: *System Development Fees* of the NC General Statutes (NCGS)³. HB 436 was codified as Session Law (SL) 2018-34. This legislation became effective on July 1, 2018. System development fees (SDFs) for water and sewer systems collected after that date must comply with HB 436/SL 2018-34, as amended. SDFs, also commonly known as capacity charges, are charges imposed to customers (users) to fund capital improvements for new development, to recuperate costs of existing facilities that serve new development, or a combination⁴. According to N.C. General Statute Chapter 162A, Article 8 beginning at section 162A-201, units of local government, authorities, and districts that provide water and sewer services are required to do the following:

- Calculate SDFs by using a buy-in, incremental, or combined costs method;
- Identify assumptions and limitations of the data analysis;
- Identify metric components of the SDF, demand, and capacity by customer class/category;
- Illustrate clear factors for units of measurement;
- Provide a 5- to 20-year planning timeline;
- Provide public notice and conduct a public hearing;
- Adopt fees by resolution or ordinance to incorporate into the jurisdiction’s annual budget; and
- Update and reevaluate the SDFs every five (5) years.

The University of North Carolina at Chapel Hill (UNC) School of Government (SOG) Environmental Finance Center (EFC)⁵ and American Water Works Association (AWWA) *Manual of Water Supply Practices*

² North Carolina General Assembly (NCGA). “Public Water and Sewer System Development Fee Act.” *Local Government/Regulatory Fees, House Bill 436*. Session Law 2017-138. Ratified 20 December 2017. [HB 436] <https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>

³ North Carolina General Statutes (NCGS). Chapter 162A. *Water and Sewer Systems*. <https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>

⁴ NCGA. N.C. General Statute section 162A-207(b). <https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>

⁵ Hughes, Jeff & Millonzi, Kara. (2017, August 17). “Update on the Authority to Charge Water System Development Fees.” [Webinar]. University of North Carolina at Chapel Hill (UNC). School of Government (SOG). Environmental Finance Center (EFC). <https://efc.sog.unc.edu/resource/update-authority-charge-water-system-development-fees>



(M1)⁶ provide detailed guidance and considerations for SDF determinations. In general, jurisdictions will need an inventory and condition of assets, financial commitment to capital improvements, and evidence of master planning strategies.

2.2 Purpose

Brunswick Regional Water and Sewer H2GO (BRWSH2GO) in North Carolina has requested The Wooten Company to provide professional consulting services, conduct an in-depth analysis of anticipated system costs, and project estimated revenues from SDFs using BRWSH2GO's FY2025-2030 Capital Improvements Plan (CIP). The previous 2021 SDF analysis incorporated data from the 2018 McGill System Development (SDF) report for the Town of Leland, which included Leland's 2012 infrastructure depreciation schedule and 5-year CIP. This 2024 analysis builds off the 2021 analysis and will evaluate the System Development Fee methodologies, investigate the scenario that provides the optimum outcome, present findings, and calculate proposed SDFs for public comment and adoption by BRWSH2GO.

⁶ American Water Works Association (AWWA). *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices (M1)*. 7th Edition, 2017.



3. METHODOLOGIES OF DETERMINING SYSTEM DEVELOPMENT FEES

System Development Fees (SDFs) are charges to new water and wastewater (sewer) system customers for system capacity. Revenue from these development fees funds capital improvements for new development, recuperates costs of existing facilities that serve new development, or some combination⁷. SDFs do not include routine BRWSH2GO administrative or system inspection fees, connection (tap) fees, or ancillary development costs without written agreement regarding credit to the developer. Available methodologies to calculate SDFs are the *Buy-In Method*, *Incremental Cost Method*, and *Combined Method*, as described in more detail below.

3.1 Buy-In Method

The Buy-In Method, otherwise known as the equity method, is appropriate for use when the current system facilities are sufficient to serve existing and future customers or in systems where existing components do not anticipate needing replacement or expansion in the near future. In this approach, the past contributions of existing customers count as built-in equity accrued. New customers contribute equity (buy-in) to the system, relative to the debt-free position of current customers, accounting for their new share of the system cost. In simplest terms, the process of the buy-in method is to:

1. Identify existing capacity of assets;
2. Value that capacity;
3. Calculate a cost per unit of capacity; and
4. Provide conversion units to assign capacity based on customer type and demand.

The costs of facilities are based on system assets and liabilities, equity sources, and usage. Costs of system assets include replacement costs and depreciated value of that asset. System liabilities and equity include outstanding long-term debt, contributions such as grants, and revenues from existing users and customers. A common unit of measurement by type of customer and demand, such as *equivalent residential unit* (ERU), calculates the cost per unit of increased capacity. ERUs are converted to determine the SDF based on meter size (example “base” meter size, 5/8-inch meter), fixture units (number of water-using devices), square footage of property, or number of bedrooms. Revenue from SDFs using the Buy-In

⁷ NCGA. N.C. General Statute section 162A-205.

<https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>



Method must be expended on repair or rehabilitation of system components, as well as previously completed capital improvements activities where capacity still exists for new customers.

3.2 Incremental Cost Method

The Incremental Cost Method, or marginal method, is appropriate for use when the current system facilities are sufficient to serve existing customers, but significant upgrades or expansion are required to serve any new customers. The primary concept of this approach is to charge new customers for the new development without existing user rates being adversely affected, but concurrently tackling the debt service associated with the capital improvements.

A primary step in calculating the SDF is determining the service area, such as jurisdictional boundaries or corporate limits. The SDF planning period aligned with projected growth and demand patterns within an existing master plan or Capital Improvements Plan (CIP), with projected growth and demand patterns for a 5- to 20-year lifespan to ensure adequate increase in needed system capacity.

Predicting future system expansion and capacity needs requires the type of customer, demand by customer type, and rate of growth over the planning period. Examples of customer types generally include residential, commercial, institutional, and industrial categories. Growth rates can include population and employment estimates. Just as with the Buy-In Method, a common unit of measurement by customer type or meter size is assigned a utilization rate equivalent to the typical ERU.

According to N.C. General Statute section 162A-207, the Incremental Cost Method must also account for revenue credit, which is a deduction of either the outstanding debt principal or present value of project revenues of the new development over the timeline of the planning period, at a minimum of twenty-five percent (25%) of cost of the capital improvements⁸. Separate construction or contribution credits may also be calculated to determine the excess cost of developer's share of connecting the new development to oversized facilities that accommodate anticipated future development.

System capacity expansion is more efficient and cost-effective when done in an incremental manner. The cost of each increment shifts to the new customers instead of the existing customers of the system. Revenue from collected SDFs covers the costs of constructing new capital improvements and related professional and technical fees to service new customer growth.

⁸ NCGA. N.C. General Statute section 162A-207(b).

<https://www.ncleg.net/gascripts/billlookup/billlookup.pl?Session=2017&BillID=H436>



3.3 Combined Method

The Combined Method is a combination of the two previous methods. The Buy-In Cost component and Incremental Cost component are added together. This approach is generally appropriate for use when the current system facilities have capacity to serve some of the new growth, but the CIP identifies infrastructure to be constructed to meet the needs of the projected growth. Calculation of SDFs using this method includes both existing and planned capacity.

3.4 Overall Technical Approach

To determine the most appropriate and logical approach to calculate SDFs, the jurisdiction must evaluate its service area priorities and financial objectives:

- Are major expansions anticipated?
- Will new developments solely pay for new capacity?
- What financial reserves exist for capital improvements?
- What is the current debt situation?
- Does current capacity adequately support the needs of the anticipated demand?
- Do current revenues adequately support the needs of the system?
- Are there any system assumptions or limitations?
- What does the local government hope to achieve by charging SDFs? (What is the financial function for SDFs?)
- Besides state legislation and local ordinances, are there any case law(s) applicable to the local system service area?
- Are there any unique criteria important to the jurisdiction or local system service area?

3.4.1 Rational Nexus Test

A legal consideration that must be applied when determining SDFs is the 'rational nexus test' to ensure appropriate relationship between the SDF and cost of the new development. The Supreme Court of the United States (SCOTUS) ruled there had to be a "rational nexus" for regulatory takings in *Dolan v. City of Tigard*⁹ and *Nollan v. California Coastal Commission*¹⁰. The Supreme Court of North Carolina

⁹ *Dolan v. City of Tigard*, 512 U.S. 374, 512 S. Ct. 2309 (1994).

¹⁰ *Nollan v. California Coastal Commission*, 483 U.S. 825, 107 S. Ct. 3141 (1987).



(SCONC) has opined that no exactions are permissible unless expressly granted by the General Assembly¹¹. N.C. General Statute Chapter 162A, Article 8 is an express grant of authority from the General Assembly to local governments. The ‘rational nexus test’ requires the following:

- Confirm the direct and reasonable connection between the impact of the new development and need of new or expanded infrastructure (e.g., evaluation of master planning documents);
- Determine the cost of the new infrastructure to support the new development (e.g., evaluating intricacies of how new infrastructure is financed and its economic development contributions); and
- Demonstrate the rationale of appropriating the capital necessary to support that growth (e.g., providing a direct link between the establishment of fair and just fees to the amenities and benefits received by the new users of the new infrastructure).

3.4.2 Costs in SDF Calculations

The American Water Works Association (AWWA) *Manual of Water Supply Practices (M1)*¹² provides detailed guidance and considerations for SDF determinations. In general, costs related to existing system assets, estimated capital projects, interest costs, and reclaimed water costs can be included in calculating SDFs. **Table 2** summarizes the typical information needed to calculate the various methods.

Table 2. Data Needed for SDF Calculations

Data Needed	Buy-In / Equity Method	Incremental Cost / Marginal Method
Construction/Developer Contribution Credits	X	X
Actual Value of Assets	X	
Replacement Value of Assets	X	
Debt and Grant Credits	X	X
Revenue Credits		X
Existing Asset Inventory	X	
5-20 Year CIP		X
Capacity of Existing Assets	X	
Capacity of Planned CIP Assets		X
Estimated Capacity Needs of Customers based on Demand	X	X

¹¹ See *Lanvale Properties, LLC v Cabarrus County and City of Locust* 366 NC 142, 731 S.E. 2d 800 (2012).

¹² American Water Works Association (AWWA). *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices (M1)*. 7th Edition, 2017.



4. EXISTING CONDITIONS

Utility system components including water source, treatment, and distribution as well as wastewater collection, treatment, and discharge must be identified and their overall condition assessed for adequacy to continue providing services to new customers. In 2021-2022, BRWSH2GO negotiated an agreement whereby the Town of Leland relinquished its water distribution and wastewater collection system to BRWSH2GO for ownership and operation. The information in the following sections include Leland’s assets.

4.1 Water Treatment & Distribution

The district’s primary service area includes the Town of Leland and portions of the Town of Belville, south of the Town of Navassa, and west of the Brunswick River (refer to **Appendix 1**). The BRWSH2GO water distribution system consists of two elevated storage tanks (one 1.5-MGAL tank and 0.75-MGAL tank), one booster pump station, and approximately 251 miles of 2- to 24-inch diameter polyvinyl chloride (PVC) and ductile iron (DI) water lines, as shown in **Table 3**. Historically, BRWSH2GO purchased all its water from Brunswick County, which withdraws groundwater from the Cape Fear River Basin¹³; the County is contracted to provided up to 1.00 MGD in potable water through a 24-inch interconnections, although the County does regularly provide significantly more than that. In 2023, the district completed the construction of a new 6.00-MGD Reverse Osmosis (RO) Water Treatment Plant (WTP), several groundwater, and two 1.0-MGAL ground storage tanks.

Table 3. Water System Components

Component	Design Capacity	Overall Condition
Water Supply/Treatment	1.00 MGD (County contract) 6.00 MGD (RO WTP)	<i>Satisfactory</i>
Booster Pump Station	1 (770 gpm)	<i>Satisfactory</i>
Water Storage Tanks	1.0 MGAL (elevated) 0.75 MGAL (elevated) 1.0 MGAL (ground) 1.0 MGAL (ground) 0.5 MGAL (ground)	<i>Satisfactory</i>
Water Mains	251 miles of PVC and DIP 2-24 inch diameter	<i>Satisfactory</i>

Finished water provided by the district’s groundwater wells and purchased from Brunswick County is used to supply metered customers with potable drinking water in the BRWSH2GO district, with

¹³ NC DEQ. DWR. *Basin Planning Branch*. <https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning>



some of the finished water being unmetered, “lost” through leaks, or due to metering inaccuracies (“unaccounted-for” water). According to 2023 Local Water Supply Plan (LWSP) for the Brunswick Regional Water and Sewer District (refer to **Appendix 2**), the water system served 17,202 residential customers, 536 commercial customers, and 45 institutional customers. The metered monthly water usage averages 1.995 MGD, 0.248 MGD, and 0.028 MGD for residential, commercial, and institutional customers, respectively, for a total averaged metered water flow of 2.270 MGD. Thus, a typical residential water customer has a metered average monthly water use of approximately 116 GPD, a typical commercial customer has 463 GPD, and a typical institutional customer has 613 GPD. According to the 2022 LWSP, BRWSH2GO had an average daily demand of 2.965 MGD and a maximum daily demand of approximately 5.258 MGD. Therefore, the MDD-to-ADD ratio is about 1.77. Finally, BRWSH2GO’s water system lost about 8% of the finished water it received from Brunswick County and produced via its WTP in 2022.

4.2 Wastewater Treatment & Collection

The primary service area is the same as the water system. The BRWSH2GO wastewater (sewer) system includes a 0.65-MGD Beville Wastewater Treatment Plant (WWTP), 88 pump stations, and approximately 267 miles 1- to 15-inch DIP, galvanized steel (GS), PVC, truss, and vitrified clay pipe (VCP) gravity and pressurized sewer lines, as shown in **Table 4**. Sewer collected in the district’s system is either treated at the 0.65-MGD Belville WWTP and then discharged into the Brunswick River, or it is transmitted to Brunswick County Utilities for processing and treatment at their Northeast Brunswick Regional Sewer Treatment Plant (this is done when the influent flow to the WWTP exceeds its treatment capacity). The district’s contract with the County is for 3.83 MGD, and any flow exceeding the 0.65-MGD capacity of the Belville WWTP is diverted to the County.

Table 4. Sewer System Components

Component	#/Design Capacity	Overall Condition
Sewer Treatment	3.83 MGD (County contract) 0.65 MGD (Belville WWTP)	<i>Satisfactory</i>
Pump Stations	88 (46 – 1,261 gpm)	<i>Satisfactory</i>
Gravity Mains	210 miles of DIP, GS, PVC, Truss, and VCP 1-15 inch diameter	<i>Satisfactory</i>
Force Mains	57 miles 1.5-10 inch diameter	<i>Satisfactory</i>

According to 2023 LWSP and the billing records (refer to **Appendix 2**), the sewer system serves a total of 18,682 customers. Assuming the 536 commercial and 45 institutional water customers also rely on the district’s sewer system, it is estimated that there are 18,101 residential customers. It is assumed



that metered monthly sewer usage for the residential, commercial, and institutional customers is equivalent to the metered monthly water usage for the customers. The 2023 LWSP showed that BRWSH2GO discharged approximately 2.556 MGD of sewer from its WWTP and to the County in total. Compared to the estimated 2023 average daily sewer flow of approximately 2.412 MGD listed in the 2017-2023 sewer billing records, it estimated that about 0.144 MGD of the treated sewer is inflow and infiltration (I/I) into the district’s sewer system.

4.3 Total System Capacity

Available water system supply capacity is based on meeting the maximum daily demand (MDD) through water purchase and treatment, while available capacity for the wastewater collection and treatment system is based on average daily demand. For the water system, the MDD can be met through a combination of H2GO’s contracted capacity with Brunswick County and H2GO’s WTP. It is clear from the amount of water typically purchased from Brunswick County that the County has agreed to work with BRWSH2GO in order to meet their demands. Thus, for the water system, the available MDD capacity for new customers is equal to the contracted capacity with Brunswick County plus the WTP’s permitted capacity minus the existing 2022 maximum daily water demand. According to the 2023 LWSP for the Brunswick Regional Water and Sewer District, BRWSH2GO produced an estimated average daily sewer flow of approximately 2.556 MGD. **Table 5** lists available daily capacity for the water and wastewater systems, and it shows that the capacities for the water and wastewater systems do meet the need for existing customer demand and use.

Table 5. Water and Sewer System Available Capacity

System Capacity Million Gallons Per Day (MGD)	Design Capacity	Maximum Daily Demand	Average Daily Discharge	Available Daily Capacity
Water System	7.000 MGD	5.258 MGD	---	1.742 MGD
Wastewater System	4.480 MGD	---	2.556 MGD	1.925 MGD



5. FUTURE CONDITIONS

To determine future capacity, planned water and sewer system components are identified and prioritized in the service area. Such improvements are typically identified in a 5- to 20-year capital improvements planning (CIP) document adopted by the governing body. The 2021 SDF analysis was used as the starting basis for this 2024 analysis. The purpose of this 2024 SDF analysis is to add future projects from the BRWSH2GO FY2025-2030 CIP to the BRWSH2GO SDF calculations, or revise the projects already included in the analysis to match the FY2025-2030 CIP. The FY2025-2030 CIP provides a list of capital improvement water and sewer projects for the time period 2023-2031. Projects identified for the period July 2029 – December 2031 are not included in the SDF analysis. Once the projects ineligible for SDFs were determined, the remaining potentially eligible projects were evaluated via two methods: the **Buy-In Method** and the **Incremental Method**. The CIP projects involving improvements to existing infrastructure that **do not** include an expansion in capacity, and said infrastructure **does** have capacity left within it for future customers to use, will be analyzed under the **Buy-in Method**. The CIP projects involving the installation of new infrastructure whose purpose is to serve future customers will be analyzed under the **Incremental Method**. In addition, the CIP projects involving improvements to existing infrastructure that **does** include a capacity expansion and said infrastructure **does not** have any capacity left within it for future customers should go into the **Incremental Method**.

5.1 Improvements to Existing Systems

To evaluate planned projects applicable to the **Buy-In or Incremental Cost Methods**, the district's updated FY2025-2030 Capital Improvements Plan (CIP)¹⁴ was examined (refer to **Appendix 3**). The CIP specifically identifies improvements to the existing utility systems, including the necessary utility transmission extensions and expansions to meet future demands. The 2025-2030 CIP includes 34 projects to be reviewed – 27 water projects and seven (7) sewer projects. Out of the 34 assets listed on the schedule, seven (7) of these projects were eliminated as they fall outside of the five-year SDF analysis period of 2024-2029, leaving a total of 27 projects that will take place within the next five years. The total projected five-year water system needs are estimated to cost approximately \$141 million. These improvements include the expansion of the RO WTP to 6.0 MGD, the addition of a fourth treatment train at the RO WTP with a new cartridge filter, new groundwater wells, access roads to those wells, electric

¹⁴ BRWSH2GO, NC. FY 2025-2030 Capital Improvements Plan (CIP).



service to those wells, the purchase of future well sites, a new Aquifer Storage and Recovery (ASR) System, raw and potable water line extensions, and new 1.0-MGD elevated storage tank. The total projected five-year sewer system needs are estimated to cost approximately \$230 million. These improvements include the allocation of expanded capacity from the Northeast Brunswick Regional Sewer Treatment Plant to H2GO, the new Malmo Loop Regional Pump Station and its force main, upgrades of the Weirs Lift Station, and expansion the Del-Webb Lift Station. Lastly, the cost of a new H2GO Operations Complex is distributed between the water and sewer CIP. However, the Complex project is eliminated from further analysis because it is unrelated to water/sewer utilities. So out of the 27 projects, 25 projects could be potentially SDF eligible and are to be analyzed under the **Buy-In and Incremental Methods**. The assets included or excluded from the 2024 SDF analysis are distinguished by highlights on the 2025-2030 CIP in **Appendix 3**.

In comparing the 25 projects with those projects already included in the 2021 SDF analysis worksheet, some overlap was noted – nine (9) of the projects listed on the CIP are already included in the analysis. These projects include the 6.0-MGD RO WTP Expansion (RO1), three 12-inch water line extension projects (W01, W02, and W04), construction of a 1.0-MG elevated water tower (W07), the allocation of the 2021 expanded capacity from the Northeast Brunswick Regional WWTP to H2GO (NEWWTP01), and the construction of the Malmo Loop Regional Pump Station (S01) and its force main (S02). In these cases, the Project ID and costs for those projects were updated using the IDs and costs shown on the 2025-2030 CIP for corresponding projects.

As part of the 2024 SDF analysis, assets were further excluded from eligibility for SDFs if the specific asset is not of sufficient size to serve additional future users (such as 8-inch gravity sewers, 6-inch or smaller water lines) or served a limited geographic area. This is discussed in the following subsections.

5.1.1 Existing Assets

Capital improvements to the existing water and wastewater systems are necessary to ensure continued reliable operation. System Development Fees (SDFs) may be charged based on existing asset values if excess capacity is available and after the assets have been depreciated to provide a proper current value. In this way, the SDFs can be charged to account for the remaining portion of the assets' useful service life. Depreciation for the projects was calculated using the straight-line. Depreciation is not accounted for in the user charges of existing water and sewer customers. Assets included in the buy-in valuation are those that provide the available capacity of the system, are “owned” by the ratepayers,



and therefore provide a benefit to all customers. Typically, these assets are water supply, treatment, pump stations, storage, and mains; wastewater treatment plant, lift stations, and sewers. Assets contributed by or paid for by developers are deducted from the calculation since these costs were not “paid” by the existing customers. Non-capacity related assets such as vehicles, computers and software are also excluded from the calculation.

As stated previously, the 2021 SDF analysis was used as the starting basis for this 2024 analysis. The 2021 analysis analyzed six (6) projects under the Buy-In Method and 15 projects under the Incremental Method. Of these projects, four (4) water assets and six (6) sewer assets are now considered existing infrastructure and were evaluated for their SDF eligibility. The results of this evaluation for each project are listed below:

Water CIP Projects

- **Asset W1: 0.75-MGAL Leland Water Tank / Storage.** In 2015, the Town of Leland paid for the construction of a 0.75-MG Elevated Water Tank for an estimated total cost of approximately \$2.63 million. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.
- **Asset Old W02: 18" Water Line Extension from Lanvale Rd. to Existing 24" on Trade Street.** The project was completed in 2023 and the estimated total cost of the project was approximately \$862,500. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**. The 18" water line has a capacity of up to 5,000 gpm (7.200 MGD), all of which will go towards future customers. However, since 2018, the metered water demand has increased by 0.957 MGD. This means that 13% of the 7.200 MGD is currently utilized by existing customers, and the remaining capacity of the water line may serve future customers. To account for this, the minimum 25% developer credit was increased to 38%.
- **Asset Old W14: New 4.0 MGD Reverse Osmosis Water Treatment Plant.** In 2023, H2GO tapped a new deep aquifer source and constructed a new Reverse Osmosis (RO) Water Treatment Plant (WTP) with a design capacity of 4.0 MGD. The estimated total cost of the project was approximately \$49.9 million, and 50% of the entire capital project was allocated to serve future development (i.e., \$25.0 million) while the remaining 50% was allocated to existing customers. Based on the maximum daily water demand at the time, only 50% of the WTP's 4.0-MGD capacity (i.e., 2 MGD) was allocated to serve future development, while the remaining 50% was allocated to existing customers. However, this project is subsumed under the future **Project RO1**, which is discussed further in the following subsection. Therefore, this project is **not analyzed** under the Incremental Cost Method.



- **Project RO1: RO Water Treatment Plant (6.0 MGD) (UPDATED).** The expansion of the 4.0-MGD RO WTP to 6.0 MGD occurred shortly after the completion of the WTP’s initial construction (i.e., **Asset Old W14**). The estimated total cost of the project, based on the 2025-2030 CIP, is approximately \$62.2 million, including the interest to pay off the bonds. However, only \$53.7 million of that total cost will be spent within the next five years. Because the 4.0-MGD WTP was expanded to 6.0 MGD when 50% of the 4.0-MGD capacity was already dedicated to future growth, this means that future customers will receive 4.0 MGD (6.0 MGD – 50% of 4.0 MGD) in additional capacity from this project. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

Sewer CIP Projects

- **Project NEWWTP01: Brunswick County Wastewater Treatment Plant 2.5-MGD Expansion (UPDATED).** In 2022, the Brunswick WWTP Capacity was expanded to 2.5 MGD, with 1.985 MGD of this capacity allocated to H2GO (and Leland) for future growth. The estimated total cost of the project, based on the 2025-2030 CIP, is \$54.0 million, including the interest to pay off the bonds. However, only \$45.0 million of that total cost will be spent within the next five years. Furthermore, H2GO is responsible for paying 80% of the debt service. Therefore, a 20% credit (\$9.0 million) is applied for this project. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Asset SC1: Regional Plant Transmission Mains.** In 2018, the Town of Leland paid for the construction of new wastewater transmission mains to the Brunswick County Regional WWTP. The estimated total cost of the project was approximately \$1.79 million with \$543,810 in credits applied. The transmission mains have a capacity of 0.413 MGD. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.
- **Asset SC2: Lift Station #1 Relocation.** In 2018, the Town of Leland paid for the relocation of Lift Station #1. The estimated total cost of the project was approximately \$582,350. Lift Station #1 still has 0.389 MGD of capacity left to serve future customers. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.
- **Asset SC3: Kay Todd Road Regional Lift Station #33 & Force Main Extension.** This project involved the construction of the regional pump station, Lift Station #33, and the extension of its force main along Kay Todd Road. The estimated total cost of the project was approximately \$4.40 million with \$3.50 million in credits applied. The new pump station had a capacity of 4.253 MGD. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.



- **Asset SC4: U.S. Hwy. 17 Lift Station Sewer Expansion II, Phase 1.** This project involved the expansion of the regional pump station, Lift Station #10 (Phase 1), and the extension of its force main along Hwy. 17. The estimated total cost of the project was approximately \$4.22 million with \$1.73 million in credits applied. The Phase 1 expansion resulted in an additional design capacity of 0.764 MGD. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.
- **Asset SC5: U.S. Hwy. 17 Lift Station Sewer Expansion II, Phase 2.** Designated as the Phase 2 expansion, this project followed the Phase 1 expansion (SC4) and involved additional expansion of Lift Station #10 as well as further extension of its force main along US Hwy. 17, to provide an additional 0.600 MGD. The estimated total cost of the project was approximately \$2.45 million with \$2.00 million in credits applied. This project is **SDF eligible** and is analyzed under the **Buy-In Method**.

In total, six (6) existing assets will be analyzed under the **Buy-in Method** and three (3) existing assets will be analyzed under the **Incremental Method** in the SDF worksheets.

5.1.2 Future Projects

The 2021 SDF analysis was performed using the 2020-2030 CIP, which has been included in **Appendix 3**. Several of the projects have been discontinued since then, so these projects were removed from the 2024 analysis. Then new projects from the 2025-2030 CIP were evaluated and added to the 2024 SDF analysis if they are eligible. Twenty-five (25) CIP projects (19 water projects and six sewer projects) from the 2025-2030 CIP were evaluated for their SDF eligibility. Two of these projects were already evaluated in the previous subsection (**Projects RO1 and NEWWTP01**). Two more projects (**Projects S04 and S07**) were considered ineligible because they serve only a small area of the district and therefore are not considered major sewer infrastructure. This left 24 CIP projects to be analyzed. The results of the analyzed for these 24 remaining CIP projects are listed below:

Water CIP Projects

- The old project titled **Installation of 12"-18" diameter water line extensions** was split into two projects and updated with costs from the 2025-2030 CIP:
 - **Project W01: 12" Water line Extension from Malmo Loop Road through East Lake Development (UPDATED).** This project involves 25,000 LF of new 12-inch water line extension to provide redundancy through looping and higher water quality to an adjacent development. According to the 2025-2030 CIP, the total project costs is \$2.00 million and \$325,000 in capacity credit will be applied due to the development financially contributing to the project. The capacity of a 12-inch



water line is approximately 2.450 MGD, all of which goes towards future growth. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

- **Project W02: 12" Water line Extension from Compass Point west entrance to Ashton Woods Spine Road (UPDATED).** Similar to **Project W01**, this extension is essential to provide redundancy through looping and higher water quality. The estimated total cost of the project, based on the 2025-2030 CIP, was approximately \$150,000. The capacity of a 12-inch water line is approximately 2.450 MGD, all of which goes towards future growth. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Project W03: 12" Water Line Extension from Pinewood on Pinecliff, west to Grayson Park 3C Entrance (NEW).** This project involves 900 LF of new 12-inch water line extension as well as 3 hydrants, and it will improve redundancy and water pressure throughout the district's water system. According to the 2025-2030 CIP, the total project costs is \$150,000. The capacity of a 12-inch water line is approximately 2.450 MGD, all of which goes towards future growth. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Project W04: 12" Water line Extension from Bishops Ridge to Brunswick Village Blvd. (UPDATED).** This project involves 8,000 LF of new 12-inch water line extension as well as 18 hydrants. According to the 2025-2030 CIP, the total project costs is \$1.53 million. The capacity of a 12-inch water line is approximately 2.450 MGD, all of which goes towards future growth. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Project W05: 12" Water Line Extension from Grayson Park East Entrance on Pinewood, East along Pinecliff to Maco Road (NEW).** This project involves 2,200 LF of new 12-inch water line extension and five new hydrants, and it will improve redundancy and water pressure throughout the district's water system. According to the 2025-2030 CIP, the total project costs is \$400,000. The capacity of a 12-inch water line is approximately 2.450 MGD, all of which goes towards future growth. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Project W07: 1.0-MG Elevated Water Tower for Maco Rd./Towne Creek Rd. Growth Corridors (UPDATED).** The original project, which involved the construction of a 0.75-MG elevated storage tank, has changed to involve the construction of a 1-MG tank. According to the 2025-2030 CIP, the total project costs is \$7.00 million. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Project RO2: 4th Cartridge Filter (NEW).** This project involves the installation of a fourth cartridge filter at the RO WTP, which expands the pre-membrane capacity of the plant from 6.0 MGD to 8.0



MGD. This will allow the operators to take one full filter offline for maintenance. The RO WTP is already receiving peak flows that are close to its existing 6.0-MGD capacity, so this expansion is necessary in the next five years. According to the 2025-2030 CIP, the total project costs is \$200,000. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

- **Projects RO3, RO4, and RO5:** Three new wells will be constructed as part of the 8.0-MGD expansion of the RO WTP (**Projects RO6, RO7, and RO8**). These wells will need electrical service in order to operate, district staff will need to build access roads in order to easily access the wells, and transmission lines are necessary in order to transport raw water from these wells to the RO WTP for treatment. In total, these projects will cost \$6.82 million and the total 12-hour water supply of the three wells will be approximately 2.600 MGD, all of which will go towards future growth. These projects are all **SDF eligible** and are analyzed under the **Incremental Cost Method**. Below is a break down for each project:
 - **Project RO3: Access Road to Wells 6, 7, 8 (NEW).** (**Projects RO6, RO7, and RO8**). This project involves the construction of access roads to these wells. According to the 2025-2030 CIP, the total project costs is approximately \$1.76 million.
 - **Project RO4: Raw Water Transmission Line from Wells 6, 7, 8 (NEW).** This project involves the installation of transmission lines from these wells to the RO WTP. According to the 2025-2030 CIP, the total project costs is approximately \$4.57 million.
 - **Project RO5: Duke-Energy Electric Service to Wells 6, 7, 8 (NEW).** This project involves the installation of electrical services to these three wells. According to the 2025-2030 CIP, the total project costs is approximately \$500,000.
- **Projects RO6, RO7, and RO8: Well Sites 6, 7, and 8 (NEW).** Three new wells will be constructed as part of the 8.0-MGD expansion of the RO WTP. Each well will cost \$2.18 million and will have a 12-hour supply of 0.9 MGD. In total, these projects will cost \$6.54 million and will provide a total capacity of 2.600 MGD capacity to future customers. These projects are all **SDF eligible** and are analyzed under the **Incremental Cost Method**.
- **Project RO9: 4th RO Train (NEW).** The RO WTP is already receiving flows that are close to its existing 6.0-MGD capacity, so another expansion is necessary in the next five years. This project involves the installation of a fourth RO train at the WTP, which expands the plant from 6.0 MGD to 8.0 MGD. According to the 2025-2030 CIP, the total project costs is \$2.30 million. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

- **Project RO10: Well Sites 9, 10, 11, 12, & 13 (Purchase) (NEW).** BRWSH2GO will purchase the land for five wells, which will expand the district’s well site production by 3.500 MGD; these wells be constructed at a later date, when the demand for potable water is realized. This project includes the costs for land acquisition and engineering design/permitting for these wells; in total, this project costs \$280,000. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- **Projects ASR1, ASR2, & ASR3: Aquifer Storage and Recovery System (ASR) Wells 1, 2, & 3 (NEW).** Finished water from the RO WTP is stored underground after treatment. ASR wells are then used to later retrieve the stored water. This project involves the construction of three new 1-MGD wells, which will provide additional storage of treated water from the RO WTP; all of this capacity will go towards future growth and will be used for irrigation purposes. In total, these projects will cost approximately \$15.6 million. However, the construction of ASR Well 3 will occur outside of the five-year SDF analysis period; discounting the construction cost for this well results in a total applicable cost of approximately \$10.2 million. Each ASR well will provide at least 1.0 MGD for peak demand, for a total of 3.0 MGD. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

Sewer CIP Projects

- **Project NEWWTP02: Brunswick County Wastewater Treatment Plant 3.75-MGD Expansion (NEW).** The Brunswick WWTP Capacity will be expanded to 3.75 MGD, with 50% of this capacity (i.e., 1.875 MGD) being allocated to BRWSH2GO for future growth. The estimated total cost of the project, based on the 2025-2030 CIP, is approximately \$251 million, including the interest to pay off the bonds. As of this report, a debt service schedule has not been developed for the payment of the project. H2GO anticipates that their portion of the bond will be \$114 million at 6% interest for 20 years. Assuming two payments per year with the first bond payment made in 2026, the total debt service for the 2026-2029 period was estimated to be approximately \$33.2 million. According to the 2025-2030 CIP, H2GO is responsible for paying only 50% of this debt service, so a 50% credit (\$16.6 million) is applied for this project. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.
- The old project titled **1,500 GPM Colon Mintz Regional Pump Station and FM (from Colon Mintz near Malmo Loop to Commerce PS)** was split into two projects and updated with costs from the 2025-2030 CIP:
 - **Project S01: Malmo Loop Regional Pump Station (UPDATED).** This project involved the construction of the Malmo Loop Regional Pump Station, which will serve 1,508 new connections in an adjacent development. According to the 2025-2030 CIP, the total project costs is \$2.55



million and \$1.80 million in credit will be applied. The development will financially contribute to the project through the collection of \$1,000 capital recovery fees as part of a special provision in the developers agreement. Assuming 210 gpd/connection, the 1,508 new connections will receive a capacity of approximately 0.317 MGD. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

- **Project S02: Malmo Loop Regional Force Main (UPDATED)**. This project involves the installation of the 10-inch force main for the Malmo Loop Regional Pump Station. In addition to the 1,508 new connections that the pump station will serve in the adjacent development, the force main has the capacity to serve 2,092 more connections, for a total of 3,600 new connections. Assuming 210 gpd/connection, this is equivalent to a capacity of approximately 0.756 MGD provided for future growth. According to the 2025-2030 CIP, the total project costs is \$2.68 million. This project is **SDF eligible** and is analyzed under the **Incremental Cost Method**.

From the CIP, 23 of the 25 projects will be analyzed under the **Incremental Method** in the SDF worksheets in total: 19 water projects and four (4) sewer projects.

5.2 Future Demand

The future water and sewer demands are projected five years forward through 2029 to gauge the need for improvements during the five-year planning period. Brunswick County has the highest percent of population growth in the State of North Carolina, experiencing nearly 19% growth between April 2010 and July 2016¹⁵. Historically, BRWSH2GO staff estimated the annual population growth for their service area would be 3.5% for the 2018-2023 period, and then slow to 3.0% percent thereafter. However, according to BRWSH2GO, the service area population decreased from 47,241 persons¹⁶ in 2018 to 43,693 persons in 2023. Contrastingly, the number of water and sewer connections in the service area is on a general incline. **Table 6** outlines the number and type of connections for the BRWSH2GO water and sewer service areas. Based on the historical water and sewer connections, annual growth rates have been assumed as shown in **Table 6**.

¹⁵ BRWSH2GO. Staff Projection.

¹⁶ In 2018, the BRWSH2GO district and the Town of Leland are. In 2021-2022, the BRWSH2GO district's service area now includes the Town of Leland. Therefore, in order for the service area population in 2018 to be comparable to the service area population in 2023, the 2018 population (and the No. of Connections listed in **Tables 6 and 7**) include the BRWSH2GO district population and the Town of Leland's population in 2018.



Table 6. Estimated Annual Metered Connection Growth

Connection Type	No. of Connections			Average % Annual Growth	% Annual Growth from 2018 to 2023	Chosen % Annual Growth
	2018 ¹⁶	2022	2023			
WATER						
Residential	14,087	15,909	17,202	5.68%	4.42%	8%
Commercial	564	483	536	3.69%	-0.99%	10%
Institutional	40	43	45	3.26%	2.50%	4%
Industrial	0	0	0	–	–	0%
TOTAL WATER	14,691	16,435	17,783	–	–	–
SEWER						
Residential	9,104	16,792	18,101	14.5%	19.8%	8%
Commercial	329	483	536	11.3%	12.6%	10%
Institutional	25	43	45	11.3%	16.0%	4%
Industrial	0	0	0	–	–	0%
TOTAL SEWER	9,458	17,318	18,682	–	–	–

Table 7 shows the projected number of water and sewer future connections for BRWSH2GO during the 2023-2029 period, using the annual growth rates listed in Table 6.

Table 7. Number of Projected Connections

WATER CONNECTIONS	Existing (2023)	Future (2029)
Residential	17,202	25,459
Commercial	536	858
Institutional	45	56
Industrial	0	0
TOTAL WATER	17,783	26,372

SEWER CONNECTIONS	Existing (2023)	Future (2029)
Residential	18,101	26,789
Commercial	536	858
Institutional	45	56
Industrial	0	0
TOTAL SEWER	18,682	27,703



According to calculation guidelines from state administrative code and statutes^{17,18,19}, increases in water and sewer demands are anticipated with the additional connections in **Table 7**. Projected water demands are based on the existing average demands and MDD peaking factors as determined in Section 4.1 and then adding the new customers from **Table 7** (for 2029). For future demands, the future residential demand is based on the 210 gallons per day (gpd) sewer flow approved for BRWSH2GO, while the non-residential demands were based on the 2023 LWSP data (refer to **Appendix 2**).

Table 8 lists the estimated 2029 water demands. In 2023, the total metered flow was approximately 2.270 MGD. In 2022, about 8% of the water supplied/purchased by BRWSH2GO for distribution was lost before reaching the customers, and it is assumed that this will remain constant for the next five years. Therefore, the total projected 2029 ADD is equivalent to the sum of the existing ADD, the additional flow as a result of the additional connections, and the additional water lost (i.e., ~8% x ADD Total). In order to calculate the projected 2029 MDD, the MDD-to-ADD ratio of 1.77 was utilized. The projected 2029 MDD of 8.004 MGD does exceed the current collective capacity of the BRWSH2GO water system of 7.0 MGD (1.0 MGD contracted with Brunswick County + 6.0-MGD RO WTP). However, as indicated in Section 4.1, the County does regularly provide significantly more than what they are contracted for, which indicates the County will work with BRWSH2GO to meet the MDD prior to 2029. Furthermore, the 2025-2030 CIP includes the expansion of the district's RO WTP to 8.0 MGD, which will help the district to meet the 2029 MDD.

¹⁷ North Carolina Administrative Code (NCAC). 15A NCAC 02T. *Waste Not Discharged to Surface Waters*.

<http://reports.oah.state.nc.us/ncac.asp?folderName=\Title%2015A%20-%20Environmental%20Quality\Chapter%2018%20-%20Environmental%20Health>

¹⁸ NCAC. 15A NCAC 18C .0409. *Service Connections*. <http://reports.oah.state.nc.us/ncac.asp?folderName=\Title%2015A%20-%20Environmental%20Quality\Chapter%2018%20-%20Environmental%20Health>

¹⁹ NCGS. Chapter 162A. *Water and Sewer Systems*. <https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>



Table 8. Estimated Water Demands, 2029

Expanded Service Area Customer Type	Quantity	Design Flow (gallons per unit per day)	Average Daily Design Flow (MGD)
Existing Customer Demand	---	---	2.270
New Residential	8,257	210	1.734
New Commercial	322	463	0.149
New Institutional	11	613	0.007
New Industrial	0	0	0.000
ADD Billable Total			4.160
Unaccounted-For Water:			0.362
ADD Total			4.522
MDD:ADD Ratio			1.77
MDD Total			8.004

Table 9 provides estimated sewer demands based on existing average daily demand for the residential, commercial, institutional, and industrial customer categories and projected demand per connection for future customers. As stated in Section 4.2, BRWSH2GO billed its customers for approximately 2.412 MGD (not including I/I flow) in 2023. For this calculation, it is assumed the volume of I/I in 2023 (0.144 MGD) will remain constant for the next five years. The 2029 Average Daily Flow (ADF) estimates result in a total ADF of 4.536 MGD, which does exceed the current collective capacity of the BRWSH2GO sewer system of 4.480 MGD (3.83 MGD contracted with Brunswick County + 0.65-MGD Belville WWTP). However, the 3.75-MGD expansion of the Brunswick County WWTP will allocate an additional 1.875 MGD. This will allow the BRWSH2GO to meet its 2029 ADF.

Table 9. Estimated Sewer Demand, 2029

Expanded Service Area Customer Type	Quantity	Design Flow (gallons per unit per day)	Average Daily Design Flow (MGD)
Existing Base Wastewater Flow	---	---	2.412
New Residential	8,688	210	1.824
New Commercial	322	463	0.149
New Institutional	11	613	0.007
New Industrial	0	0	0.000
ADF Billable			4.392
I/I ADF			0.144
ADF Total			4.536



5.3 Assumptions & Limitations

The projected 2029 water and wastewater demands are subject to change, given the developmental pace of BRWSH2GO. The intent of the capacity discussion above was to demonstrate the future water and sewer demands required of BRWSH2GO and Brunswick County to sufficiently handle the projected population of BRWSH2GO within the five-year planning period of the SDF analysis.

5.4 Water System Future Improvements

Future improvements for the water distribution system to serve future growth within the five-year SDF planning period were identified. These improvements were detailed in Section 5.1.2 and include the following: the extensions of 12-inch water mains from Malmo Loop Road through the East Lake Development, from Compass Point to Ashton Woods Spine Road, from Pinewood to Grayson Park, from Bishops Ridge to Brunswick Village Boulevard, and from Grayson Park to Maco Road; new groundwater wells and new raw water transmission lines, access roads, and electrical service for those wells; the purchase of future well sites; the addition of a fourth RO train at the Water Treatment Plant, including a new cartridge filter; a new ASR system with three new wells; and a new 1.0-MGD elevated storage tank. Overall, 18 of the 19 future water projects are fully or partially SDF eligible: the five 12-inch water main extensions projects, the new groundwater wells and their associated improvements (e.g., raw water transmission lines, electrical service, and purchasing land), the purchase of future well sites, the new ASR system, the addition of a fourth RO train at the Water Treatment Plant, and a new 1.0-MGD elevated storage tank.

5.5 Sewer System Future Improvements

Future improvements for the wastewater collection system to serve future growth within the five-year SDF planning period were identified. These improvements were detailed in Section 5.1.2 and include the allocation of 3.75-MGD expanded capacity from the same plant to H2GO, the new Malmo Loop Regional Pump Station and its force main, upgrades of the Weirs Lift Station, and the expansion the Del-Webb Lift Station. Overall, only three of the five future sewer projects are SDF eligible: the allocation of the 3.75-MGD expanded capacities from the Northeast Brunswick Regional Sewer Treatment Plant to H2GO, the new Malmo Loop Regional Pump Station and its force main.

5.6 Methodology Selection

Remaining capacity exists within both the water and wastewater systems to serve near term growth within BRWSH2GO. Debt service was incurred for capital improvements that continue to serve existing and future development. Because the depreciated assets identified in Section 5.1.1 can serve future population growth without expansion, their remaining non-depreciated value is appropriate to recover using the Buy-in Cost Methodology.

Likewise, projects identified in Section 5.1.2 are associated with projects required that are needed to service future growth. The Incremental Cost Methodology is appropriate to charge new development for the increased capacity to serve it. For example, the costs for the additional capacity related to the RO WTP to extend service to proposed developments should be borne by the new development being served.

Therefore, the **Combined Cost Method**, employing both the Buy-in Cost Methodology and Incremental Cost Methodology, is appropriate for BRWSH2GO to assess System Development Fees.



6. ANALYSIS OF SYSTEM DEVELOPMENT FEES

The **Buy-In (Equity) Cost Method** is appropriate when the existing system facilities are sufficient to service existing and new customers. The primary concept of this approach is to charge new customers for their equitable share of an asset with remaining service life. The **Incremental Cost (Marginal) Method** is appropriate when the existing system facilities are sufficient to serve existing customers, but significant upgrades or expansion are required to serve any new customers. The primary concept of this approach is to charge new customers for the new development without adversely affecting user rates for the existing customers. BRWSH2GO has need for both methodologies; therefore, the **Combined Cost Method** is appropriate. The full tables for the SDF Combined Cost Method are presented in **Appendix 4**.

6.1 Buy-In Component for Existing Facilities

The evaluation described in Section 5.1 provided a listing of projects that are eligible to be included in the SDF Buy-in analysis. In total, six assets are eligible for SDFs and are analyzed under the Buy-in Method, as shown in the Buy-In SDF worksheets in **Appendix 4**. At this point, The Wooten Company performed additional evaluation to determine the current net project cost after depreciation. Depreciation for the projects was calculated utilizing the Construction Cost Index (CCI) and the year of project completion under the straight-line method (refer to CCI Worksheet in **Appendix 4**). In addition to the depreciation, debt credit or third-party funds were subtracted from the total costs. The results of the asset evaluation are that the original asset value of \$16.1 million for these assets was reduced by accumulated depreciation to date of \$2.03 million and credits of \$7.78 million, to yield a total net asset value of \$6.31 million. These assets are listed in **Tables 10 and 11**.

Water System: Only one water system asset was considered eligible – the 0.75-MGal Leland water storage tank, as shown in **Table 10**. With a net total cost of \$2.04 million eligible for SDFs, the total water cost per gallon of capacity is \$2.72.

Wastewater System: Wastewater system infrastructure have been grouped into five categories in **Table 11** – the relocation of Lift Station #1, the Phase 1 and Phase 2 expansion of Lift Station #10, the Lift Station #33 and its force main, and the transmission mains for the Northeast Brunswick Regional Sewer Treatment Plant. With a net total cost of \$4.27 million eligible for SDFs, the total sewer cost per gallon of capacity is \$6.83.



Table 10. Water System Buy-In Valuation

Group Asset ID	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	% SDF Eligible	Net Total Cost per Gal Capacity, \$/GPD
0.75-MGAL Leland Water Storage Tank (Asset W1)	2,628,810	[591,482]	2,037,328	0.750	100%	2.72
TOTAL WATER COST/GALLON CAPACITY						2.72

Table 11. Sewer System Buy-In Valuation

Group Asset ID	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	% SDF Eligible	Net Total Cost per Gal Capacity, \$/GPD
Lift Station #1 Relocation (Asset SC2)	582,350	[174,705]	407,645	0.389	100%	1.05
Lift Station #10 Sewer Expansion II, Phase 1 (Asset SC4)	4,222,658	[2,155,599]	2,067,059	0.764	100%	2.71
Lift Station #10 Sewer Expansion II, Phase 2 (Asset SC5)	2,449,250	[2,183,694]	265,556	0.600	100%	0.44
Lift Station #33 & Force Main Extension (Asset SC3)	4,440,185	[3,944,018]	496,166	4.253	100%	0.12
Regional Plant Transmission Mains (Asset SC1)	1,794,110	[759,103]	1,035,007	0.413	100%	2.51
TOTAL SEWER COST/GALLON CAPACITY						6.83



6.2 Incremental Component for Future Facilities

Future capacity related assets for the water and sewer systems are included in BRWSH2GO's CIP. Based on the analysis detailed in Section 5.1.2, a total of 24 assets and projects were analyzed under the Incremental Method, as shown in **Appendix 4**. Project capacity credit or third-party funds were subtracted from the total costs. The results of the asset evaluation are that the original total costs of \$176 million for these assets and projects was reduced by credits of \$27.7 million, to yield a total net project cost of \$148 million. These projects are listed in **Tables 12 and 13**.

Water System: Existing water system assets and future water system infrastructure projects for serving future growth are grouped into seven categories in **Table 12** – 12" water line extensions; an 18" water line extension; the expansion of the RO WTP to 6.0 MGD; new groundwater wells 6-8 and associated projects (i.e., raw water transmission lines, access roads, and electrical service); new groundwater wells 9-13; new ASR Wells 1-3; the addition of a 4th RO train to the WTP; and 1-MGal elevated storage tank. All of these projects are eligible for SDFs. The Additional Design Capacity for Projects W01-W05 was based on the estimated capacity of 12-inch water lines. The 18" water line category (Asset Old W02), which has a capacity of 5,000 gpm, refers to the extension from Lanvale Road to Trade Street. For Project RO1, the expansion of the RO WTP to 6.0 MGD will provide 4.0 MGD in capacity to serve future growth. The new groundwater wells 6-8 each have a 12-hour water supply of 0.9 MGD (Projects RO3-RO8), for a total of 2.6 MGD. The new groundwater wells 9-13 (Project RO10) will increase H2GO's well site production by 3.5 MGD. The three ASR wells will provide a total of 3.0 MGD for peak demand. The 4th RO train (Projects RO2 and RO9) expands the capacity of the WTP by 2.0 MGD, all of which will go towards future customers. Lastly, the BRWSH2GO elevated tank (Project W07) is based on a storage volume of 1.0 million gallons. With a net total cost of \$91.7 million eligible for SDFs, the total water cost per gallon of capacity is \$23.98.

Table 12. Water System Incremental Valuation

CIP Project Description	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	% Credit*	% SDF Eligible	Net Total Cost per Gal Capacity, \$/GPD
12" Water Line Extensions (Projects W01-W05)	4,230,000	[325,000]	3,905,000	2.450	25%	100%	1.20
18" Water Line Extension (Asset Old W02)	862,523	[0]	862,523	7.200	38%	100%	0.07
RO WTP Expansion from 4.0 MGD to 6.0 MGD (Project RO1)	53,656,524	[0]	53,656,524	4.000	25%	100%	10.06
New Groundwater Wells 6-8 and Associated Improvements (Projects RO3-RO8)	13,360,000	[0]	13,360,000	2.600	25%	100%	3.86
New Groundwater Wells 9-13 (Project RO10)	280,000	[0]	280,000	3.500	25%	100%	0.06
New ASR Wells (Projects ASR1, ASR2, & ASR3)	10,150,000	[0]	10,150,000	3.000	25%	100%	2.54
4th RO Train including 4th Cartridge Filter (Projects RO2 & RO9)	2,500,000	[0]	2,500,000	2.000	25%	100%	0.94
1-MGAL Elevated Storage Tank (Project W07)	7,000,000	[0]	7,000,000	1.000	25%	100%	5.25
TOTAL WATER COST/GALLON CAPACITY							23.98

*Includes minimum 25% credit per N.C. General Statute section 162A-207(b).

Table 13. Sewer System Incremental Valuation

CIP Project Description	Total Costs, \$	Total Credits, \$	Net Total Cost, \$	Capacity, MGD	% Credit*	% SDF Eligible	Net Total Cost per Gal Capacity, \$/GPD
Malmo Loop Regional Pump Station (Project S01)	2,545,000	[1,800,000]	745,000	0.317	25%	100%	1.76
Malmo Loop Regional Force Main (Project S02)	2,680,000	[0]	2,680,000	0.756	25%	100%	2.66
Brunswick Co. WWTP 2.5-MGD Expansion (Project NEWWTP01)	45,003,000	[9,000,600]	36,002,400	1.985	25%	100%	13.60
New Brunswick Co. WWTP 3.75-MGD Expansion (Project NEWWTP02)	33,237,118	[16,618,559]	16,618,559	1.875	25%	100%	6.65
TOTAL SEWER COST/GALLON CAPACITY							24.67

*Includes minimum 25% credit per N.C. General Statute section 162A-207(b).



Sewer System: Future sewer system infrastructure projects for serving future growth are grouped into four categories in **Table 13** – the construction of the Malmo Loop Regional Pump Station and its force main, and H2GO’s cost for the Northeast Brunswick Regional Sewer Treatment Plant 2.5-MGD and 3.75-MGD expansions. All of these projects are eligible for SDFs. The Additional Design Capacity for Projects S01 and S02 was based on the number of new connections served by the future projects. For the 2.5-MGD Brunswick WWTP expansion, 1.175 MGD of the capacity was allocated to BRWSH2GO and 0.810 MGD was allocated to the Town of Leland, for a total of 1.985 MGD toward future growth. Fifty (50%) of the 3.75-MGD Brunswick WWTP Capacity will be allocated to BRWSH2GO (Project NEWWTP02), for a total of 1.875 MGD toward future growth. Dividing the net total cost of \$56.0 million by the incremental increase in capacities yields a total sewer cost per gallon capacity of \$24.67.

6.2.1 Valuation Adjustments

N.C. General Statute section 162A-207(b) specifies that a minimum 25% credit be applied towards the calculated incremental cost per gallon capacity. This credit assumes that existing retail user rates and charges will generate at least 25% of the present worth capital costs through the five-year planning period necessary to construct new infrastructure. To avoid collecting revenues twice (first through the SDF, and secondly through retail water and sewer rates), credits were applied to the incremental costs calculated in **Tables 12 and 13** above.

Note this credit adjustment is different from specific credits given to an individual developer for constructing infrastructure *above and beyond* its proportionate share to service anticipated future connections. These additional credits may be applied by BRWSH2GO to individual developers on a case-by-case basis.

6.3 Combined Cost

Adding the buy-in cost to the incremental cost yields a combined cost per gallon of capacity, as shown in **Table 14**. The combined water cost is \$26.70 per gallon and combined sewer cost is \$31.50 per gallon. The total water and sewer combined cost is \$58.20 per gallon.

Table 14. Combined Cost Valuation

Utility	Buy-In Cost per Gallon, \$	Incremental Cost per Gallon, \$	Combined Cost per Gallon, \$
Water	2.72	23.98	26.70
Sewer	6.83	24.67	31.50
Total	9.55	48.65	58.20

6.4 Cost per Unit of Volume

The maximum-allowable combined costs of \$26.70 per one-gallon capacity of water and \$31.50 per one-gallon capacity of sewer serves as the basis for adjusting the fees for different customer classes. Using an equivalent ratio recommended by *AWWA Manual M1*, increased operational demands on the water and sewer systems for larger customers are calculated to produce higher SDFs.

In this analysis, meter sizes are utilized to estimate how much water or sewer the new customer can be expected to use. The equivalent ratio for larger meters represents the higher demand of larger customers, computed using the 5/8-inch meter as a base unit. The ratio is representative of the maximum safe operating flow through the meter as compared to a residential meter. **Table 15** calculates the water and sewer capacity costs for larger meter sizes using the equivalent ratios.

As an alternative to equivalent meter ratios, which are conservative by nature, BRWSH2GO may also consider charging non-residential (i.e., commercial, institutional, and industrial) customers based on estimated water consumption, number of plumbing fixture units, or other special considerations that may affect water or sewer demand.

Given that a residential customer may consume up to 210 gallons per day (GPD) per NCDEQ, the water and sewer capacity costs from **Table 14** are converted into typical ‘per connection’ fees for the various water meter sizes, using the same equivalent ratios. These typical ‘per connection’ costs, illustrated in **Table 15**, are the basis for the annual revenue forecasts in Section 7.0. For example, a residential customer with a 5/8” water meter may be charged a maximum-allowable system development fee of \$12,220 for both water and sewer service.

Table 15. Maximum Allowable Capacity Cost Per Equivalent Connection

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/connection	Sewer Capacity Cost, \$/connection	Total Capacity Cost, \$/connection*
5/8	1.0	\$5,607	\$6,615	\$12,220
1	2.5	\$14,018	\$16,538	\$30,550
1-1/2	5.0	\$28,035	\$33,075	\$61,110
2	8.0	\$44,856	\$52,920	\$97,770
3	15.0	\$89,712	\$105,840	\$195,550
4	25.0	\$140,175	\$165,375	\$305,550
6	50.0	\$280,350	\$330,750	\$611,100
8	80.0	\$448,560	\$529,200	\$977,760
10	115.0	\$644,805	\$760,725	\$1,405,530
12	215.0	\$1,205,505	\$1,422,225	\$2,627,730

**Based on 210-GPD²⁰ use for a 5/8" residential connection.*

Note that the above capacity costs per connection represent the maximum fee that may be assessed to a new water and/or sewer customer. BRWSH2GO may elect to implement a lower fee schedule to remain economically competitive with neighboring utilities or to better attract new residential and commercial development.

²⁰ NCDEQ approved a flow reduction request by BRWSH2GO to reduce their residential sewer usage rate to 210 gallons/day/unit.



7. APPLICATION OF SYSTEM DEVELOPMENT FEES

According to Article 8 (System Development Fees) of the NC General Statutes²¹, SDFs are collected for subdivisions of land at the time of plat recording, or when the unit of local government commits water or sewer service for the new development. For un-subdivided land, the SDF applies when the individual customer applies to connect to the system. Additional guidance for fee collection was released in the spring of 2021.

A projection of water and sewer customer connections in the five-year SDF planning period (2024 to 2029) is provided in **Table 16**. This projection is based on the projected metered connections in Section 5.2 and in **Table 7**, which were based on the annual growth rates assumed in **Table 6**. No industrial growth is anticipated, given proximity to the industrial development presence in nearby Wilmington.

Table 16. Projected Cumulative Water and Sewer Customers, 2029

Year	WATER				SEWER			
	Residential	Commercial	Institutional	Industrial	Residential	Commercial	Institutional	Industrial
2023	17,202	536	45	0	18,101	536	45	0
2024	18,578	590	47	0	19,549	590	47	0
2025	20,064	649	49	0	21,113	649	49	0
2026	21,670	713	51	0	22,802	713	51	0
2027	23,403	785	53	0	24,626	785	53	0
2028	25,275	863	55	0	26,596	863	55	0
2029	27,297	950	57	0	28,724	950	57	0

Capacity costs per connection in **Table 15** multiplied by the annual customer growth projections in **Table 16** result in the estimated annual revenues – that is, revenue projections from water and sewer SDFs – for the five-year planning period as shown in **Tables 17 and 18**. Revenues assume that the typical residential customer will have a 5/8” water meter, commercial customers a 1” water meter, institutional customers a 2” water meter, and industrial customers a 3” water meter. The full revenue calculations, which are summarized in **Tables 17 and 18**, are presented in **Appendix 4**.

Estimated SDF water revenues for the next five-year planning period are approximately \$62.9 million from new residential and non-residential growth while estimated SDF sewer revenues total \$77.8 million during the same timeframe. *If BRWSH2GO elects to charge SDFs on a per gallon basis instead of*

²¹ NCGS. Chapter 162A. *Water and Sewer Systems*. <https://www.ncleg.net/gascripts/Statutes/StatutesTOC.pl>



an equivalent meter basis, or if BRWSH2GO elects to charge SDFs on a per equivalent meter basis using their actual residential water/sewer usages (currently lower than the 210-GPD flow reduction approved for BRWSH2GO), then the projected SDF revenues will likely be less than what it shown in **Tables 17 and 18**.

Table 17. Estimated Water Revenues, 2029

Year	Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL WATER SDF REVENUE
2024	\$7,715,232	\$756,945	\$89,712	\$0	\$8,561,889
2025	\$8,332,002	\$827,033	\$89,712	\$0	\$9,248,747
2026	\$9,004,842	\$897,120	\$89,712	\$0	\$9,991,674
2027	\$9,716,931	\$1,009,260	\$89,712	\$0	\$10,815,903
2028	\$10,496,304	\$1,093,365	\$89,712	\$0	\$11,679,381
2029	\$11,337,354	\$1,219,523	\$89,712	\$0	\$12,646,589
TOTAL	\$56,602,665	\$5,803,245	\$538,272	\$0	\$62,944,182

Table 18. Estimated Sewer Revenues, 2029

Year	Residential (5/8")	Commercial (1.5")	Institutional (4 compound)	Industrial (1.5")	TOTAL SEWER SDF REVENUE
2024	\$9,578,520	\$893,025	\$105,840	\$0	\$10,577,385
2025	\$10,345,860	\$975,713	\$105,840	\$0	\$11,427,413
2026	\$11,172,735	\$1,058,400	\$105,840	\$0	\$12,336,975
2027	\$12,065,760	\$1,190,700	\$105,840	\$0	\$13,362,300
2028	\$13,031,550	\$1,289,925	\$105,840	\$0	\$14,427,315
2029	\$14,076,720	\$1,438,763	\$105,840	\$0	\$15,621,323
TOTAL	\$70,271,145	\$6,846,525	\$635,040	\$0	\$77,752,710

The foregoing revenue projections intend to provide a gauge of anticipated income based on the assessment of the maximum allowable SDFs. The projections are highly dependent on BRWSH2GO's assigned land uses and zoning, which will influence the future development type and associated water and sewer demands. After projects in the CIP are better defined and planning costs refined, the revenue projections may be re-evaluated and adjusted accordingly.



8. CONCLUSIONS & RECOMMENDATIONS

The Wooten Company has calculated maximum allowable water and sewer System Development Fees (SDFs) on a ‘per gallon’ basis and ‘per connection’ basis for new development within the BRWSH2GO service area. These fees may be assessed by BRWSH2GO at a lower rate but cannot exceed the calculated figures for a five-year SDF analysis period. The calculated combined water cost is \$26.70 per gallon capacity and combined sewer cost is \$31.50 per gallon capacity, for a total of \$58.20 per gallon.

BRWSH2GO has existing water and sewer assets with available capacity and useful life to serve both existing and new customers, as well as major water and sewer capacity expansion needs on the horizon. Therefore, the SDFs are based on the Combined Cost methodology, a combination of Buy-In (Equity) and Incremental (Marginal) Cost methodologies. Application of the ‘rational nexus test’ to the calculated SDFs for BRWSH2GO demonstrates that:

- The existing water and sewer treatment capacities for BRWSH2GO are adequate to handle the projected population increase, but planning for new or expanded infrastructure must be accomplished within the next 20 years to support new development;
- The total costs of the maintaining existing infrastructure and adding new infrastructure to support the new development are estimated to be \$16.1 million and \$176 million, respectively, for the next five years; \$141 million may be collected in the next five years through adoption of SDFs; and
- Appropriation of capital funds necessary to support that growth can be achieved through collection of SDFs using a combined cost approach, so that new development customers are afforded the same level of service as existing utilities customers.

Based on the calculated capacity costs per gallon and per connection, **Table 19** summarizes the maximum allowable SDFs for the connection of new water and sewer customers using meter size to determine the equivalent ratio for non-residential customers.

Table 19. Maximum Allowable System Development Fees

Meter Size, inches	Equivalent Ratio	Water Capacity Cost, \$/gallon	Sewer Capacity Cost, \$/gallon	Total Capacity Cost, \$/gallon	Total Capacity Cost, \$/connection*
5/8	1.0	\$26.70	\$31.50	\$58.20	\$12,220
1	2.5				\$30,550
1-1/2	5.0				\$61,110
2	8.0				\$97,770
3	16.0				\$195,550
4	25.0				\$305,550
6	50.0				\$611,100
8	80.0				\$977,760
10	115.0				\$1,405,530
12	215.0				\$2,627,730

*Based on 210-GPD²² use for a 5/8" residential connection.

Per AWWA Manual M1 guidance, larger meter sizes dictate higher capacity fees for assumed higher water consumption. Since the typical BRWSH2GO residential customer consumes up to 210 gpd, the water SDF of \$5,607 and sewer SDF of \$6,615 (total of \$12,220) is proposed per equivalent residential unit (ERU) connection. It is expected that the SDFs will generate approximately \$62.9 million for water improvements (refer to **Table 17**) and \$77.8 million for sewer improvements (refer to **Table 18**) over the next five years to support necessary rehabilitation and upgrades. *Note if BRWSH2GO elects to charge SDFs on a per equivalent meter basis using their actual residential water/sewer usages (currently lower than the 210-GPD flow reduction approved for BRWSH2GO), then the per-connection SDFs will be less than what is shown in **Table 19**. As a result, the projected revenues will also be less than what is presented.* In accordance with HB 436/SL 2018-34, this analysis provides information to the public and to BRWSH2GO policymakers to assign system development fees to customers, with re-evaluation occurring at least every five years.

²² NCDEQ approved a flow reduction request by BRWSH2GO to reduce their residential sewer usage rate to 210 gallons/day/unit.



APPENDIX 1

H2GO Water System Map

H2GO Sewer System Map



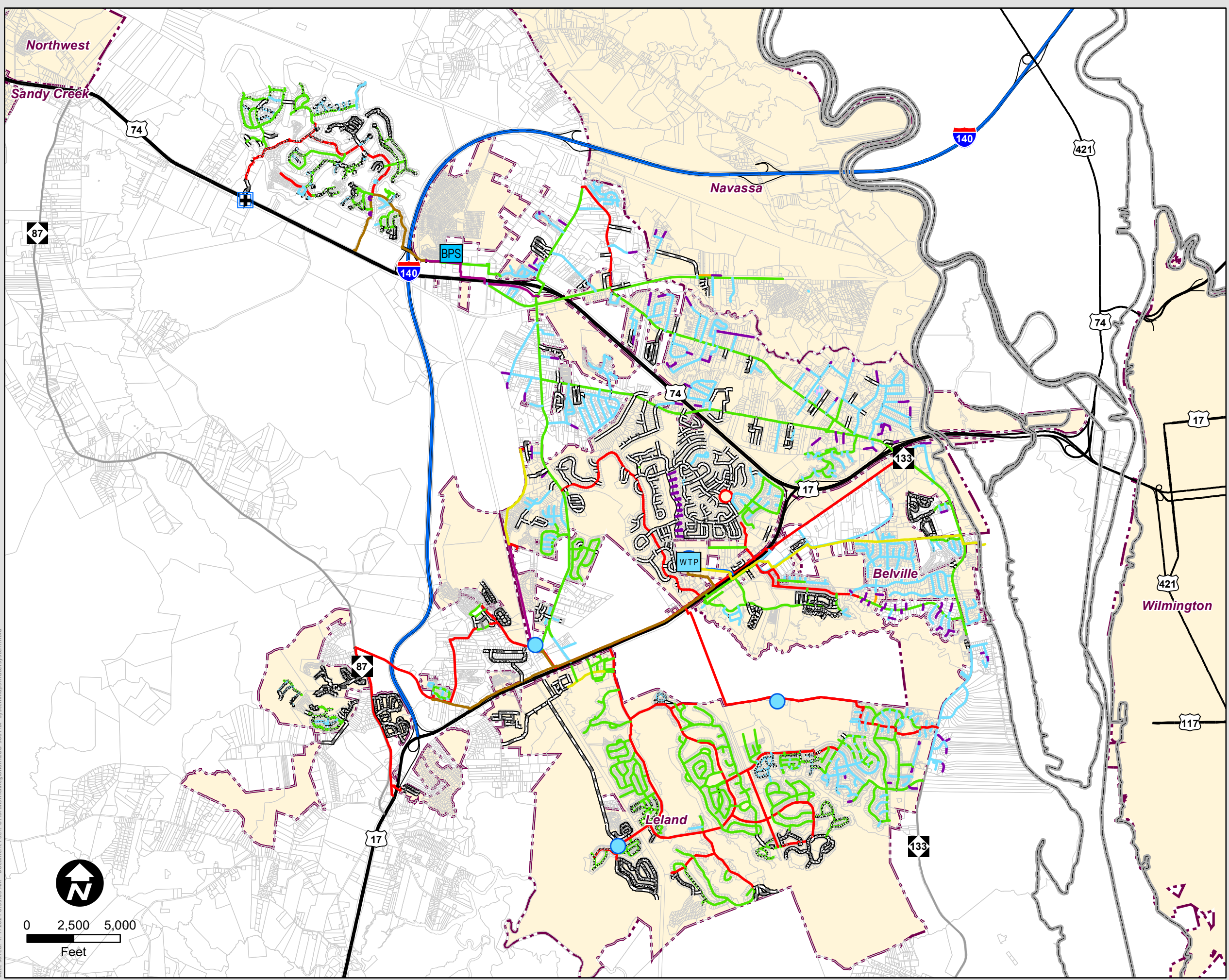
H2GO Water System Brunswick County, NC April 2024

Legend

- Master Meter
- Storage Tank
- Booster Pump Station
- RO WTP
- 1" Water Main
- 2" Water Main
- 3" Water Main
- 4" Water Main
- 6" Water Main
- 8" Water Main
- 10" Water Main
- 12" Water Main
- 16" Water Main
- 18" Water Main
- 24" Water Main
- Unknown Diameter
- Interstate
- US Route
- NC Route
- Ramp
- Rest Area
- Parcel
- Municipal Boundary
- County Boundary



The Wooten Company makes every effort to produce and publish GIS maps using the most current and accurate information possible, however the maps are strictly for planning purposes only. The maps are compiled from recorded deeds, plats, and other public and private records and data. Users of the maps are hereby notified that the aforementioned public primary information sources should be consulted for verification of the information on this map. The Wooten Company assumes NO responsibility for the information contained on the maps unless the map is signed and sealed by a licensed Professional Land Surveyor. Please contact the GIS Group at (919) 828-0531 or tcohan@thewootencompany.com for data source information.



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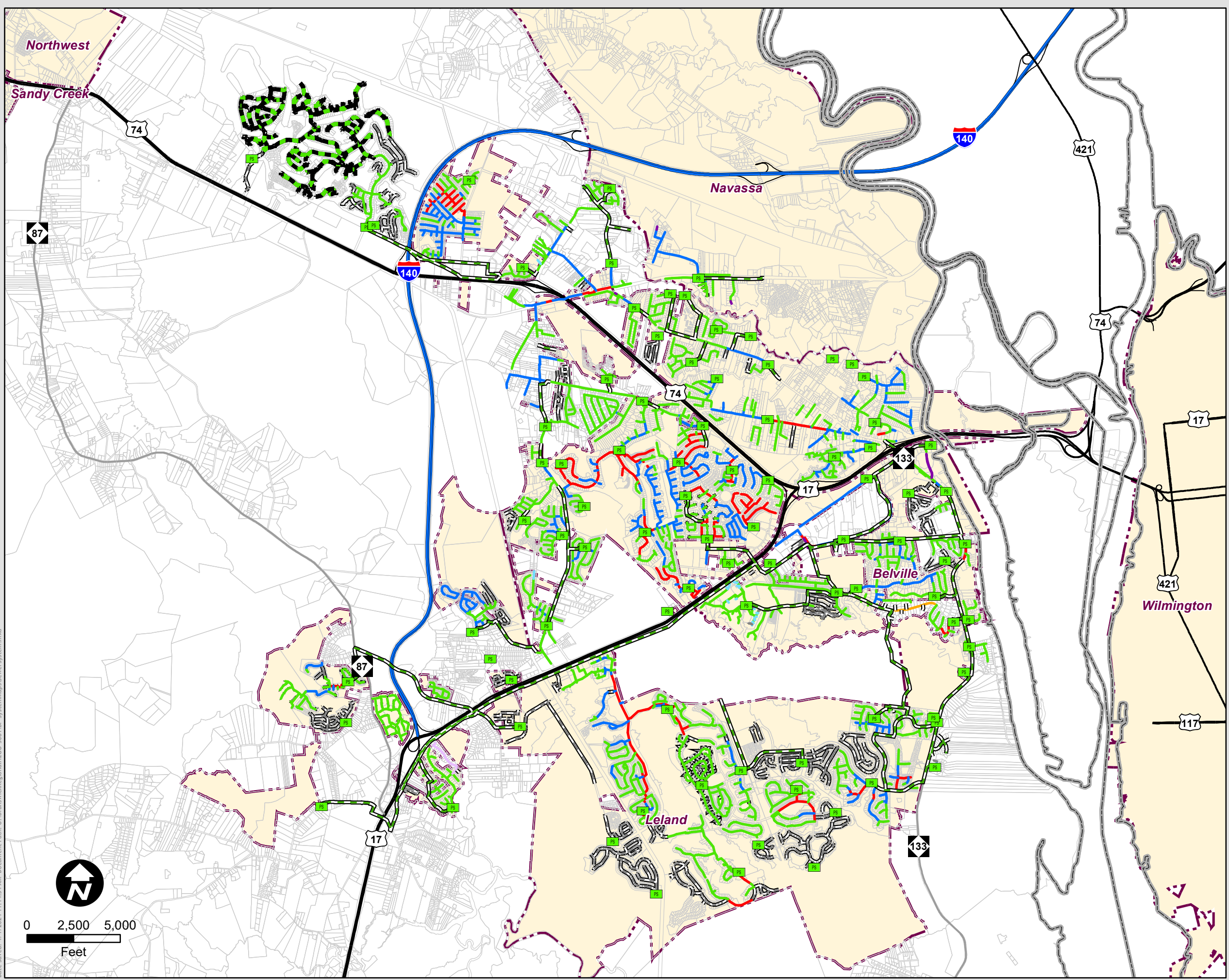
H2GO Sewer System Brunswick County, NC April 2024

Legend

- Pump Station
- Force Main
- Force Main (Grinder Tanks)
- 1" Gravity Main
- 2" Gravity Main
- 3" Gravity Main
- 4" Gravity Main
- 6" Gravity Main
- 8" Gravity Main
- 10" Gravity Main
- 12" Gravity Main
- 15" Gravity Main
- Unknown Diameter
- Interstate
- US Route
- NC Route
- Ramp
- Rest Area
- Parcel
- Municipal Boundary
- County Boundary



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APPENDIX 2

2022-2023 H2GO Local Water Supply Plans

2017-2023 Sewer Billing Summary

Brunswick Regional WSD

2022 ▾

The Division of Water Resources (DWR) provides the data contained within this Local Water Supply Plan (LWSP) as a courtesy and service to our customers. DWR staff does not field verify data. Neither DWR, nor any other party involved in the preparation of this LWSP attests that the data is completely free of errors and omissions. Furthermore, data users are cautioned that LWSPs labeled **PROVISIONAL** have yet to be reviewed by DWR staff. Subsequent review may result in significant revision. Questions regarding the accuracy or limitations of usage of this data should be directed to the water system and/or DWR.

1. System Information

Contact Information

Water System Name: Brunswick Regional WSD PWSID: 04-10-070
 Mailing Address: PO Box 2230 Ownership: District
 Leland, NC 28451
 Contact Person: Bob Walker Title: Director
 Phone: 910-371-9949 Cell/Mobile: 910-279-4581

Complete

Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Ductile Iron	4-24	5.00 %
Polyvinyl Chloride	2-24	95.00 %

What are the estimated total miles of distribution system lines? 234 Miles

How many feet of distribution lines were replaced during 2022? 0 Feet

How many feet of new water mains were added during 2022? 24,808 Feet

How many meters were replaced in 2022? 0

How old are the oldest meters in this system? 3 Year(s)

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? 6,363

What is this system's finished water storage capacity? 2.2500 Million Gallons

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* No

Programs

Does this system have a program to work or flush hydrants? Yes, Annually

Does this system have a valve exercise program? Yes, As Needed

Does this system have a cross-connection program? Yes

Does this system have a program to replace meters? Yes

Does this system have a plumbing retrofit program? No

Does this system have an active water conservation public education program? Yes

Does this system have a leak detection program? No

Water Conservation

What type of rate structure is used? Increasing Block

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? No

2. Water Use Information

Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Cape Fear River (02-3)	100 %	Brunswick	100 %

What was the year-round population served in 2022? 40,408

Has this system acquired another system since last report? No

Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	15,909	1.8498	0	0.0000
Commercial	483	0.2166	0	0.0000
Industrial	0	0.0000	0	0.0000
Institutional	43	0.0280	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 0.6200 MGD

3. Water Supply Sources

Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	2.1079	2.6113	May	3.8868	4.6182	Sep	3.3800	3.9925
Feb	2.0777	2.3460	Jun	4.1143	5.2582	Oct	2.9309	3.8459
Mar	2.2797	2.9478	Jul	3.4014	4.5378	Nov	2.5136	3.4974
Apr	2.8948	3.7615	Aug	3.6748	4.9491	Dec	2.2640	2.6263



Water Purchases From Other Systems

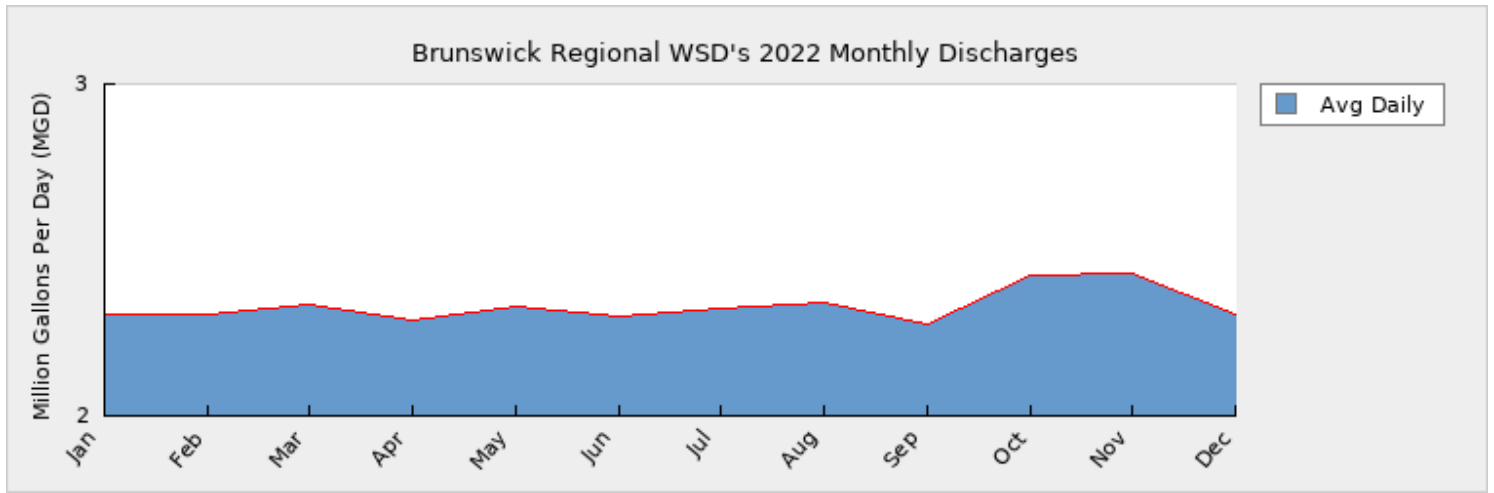
Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract		Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
				MGD	Expiration			
Brunswick County	04-10-045	2.9648	365	1.0000	2034	Yes	24	Regular

In the contract with Brunswick Regional it states Brunswick County is to supply "such quantity that may be required by the purchaser not to exceed 30 million gallons per month." On the average, the county supplies significantly more than that.

4. Wastewater Information

Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	2.3079	May	2.3304	Sep	2.2753
Feb	2.3057	Jun	2.2978	Oct	2.4210
Mar	2.3338	Jul	2.3216	Nov	2.4283
Apr	2.2889	Aug	2.3417	Dec	2.3054



How many sewer connections does this system have? 17,318

How many water service connections with septic systems does this system have? 0

Are there plans to build or expand wastewater treatment facilities in the next 10 years? No

Wastewater Permits

Permit Number	Type	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0075540	WWTP	0.8000	0.6500	0.4536	0.6027	Brunswick River	Cape Fear River (02-3)

Wastewater Interconnections

Water System	PWSID	Type	Average Daily Amount		Contract Maximum (MGD)
			MGD	Days Used	
Brunswick County	04-10-045	Discharging	1.8764	365	3.8300

5. Planning

Projections

	2022	2030	2040	2050	2060	2070
Year-Round Population	40,408	46,065	54,357	64,141	75,686	89,310
Seasonal Population	0	0	0	0	0	0
Residential	1.8498	2.1088	2.4884	2.9363	3.4648	4.0884
Commercial	0.2166	0.2469	0.2913	0.3437	0.4056	0.4786
Industrial	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Institutional	0.0280	0.0319	0.0376	0.0444	0.0524	0.0618
System Process	0.6200	0.7068	0.8340	0.9841	1.1612	1.3702
Unaccounted-for	0.2504	0.2855	0.3369	0.3975	0.4691	0.5535

Future Supply Sources

Source Name	PWSID	Source Type	Additional Supply	Year Online	Year Offline	Type
BRWS	04-10-070	Ground	6.0000	2023		Regular

Demand v/s Percent of Supply

	2022	2030	2040	2050	2060	2070
Surface Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ground Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Purchases	1.0000	2.9648	2.9648	2.9648	2.9648	2.9648

Future Supplies		6.0000	6.0000	6.0000	6.0000	6.0000
Total Available Supply (MGD)	1.0000	8.9648	8.9648	8.9648	8.9648	8.9648
Service Area Demand	2.9648	3.3799	3.9882	4.7060	5.5531	6.5525
Sales	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	2.9648	3.3799	3.9882	4.7060	5.5531	6.5525
Demand as Percent of Supply	296%	38%	44%	52%	62%	73%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

Your long-term water demand is 46 gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)? If these practices are covered elsewhere in your plan, indicate where the practices are discussed here.

Are there other demand management practices you will implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

Additional Information

Has this system participated in regional water supply or water use planning? No

What major water supply reports or studies were used for planning?

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues:

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Brunswick Regional WSD

2023 ▾

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1. System Information

Contact Information

Water System Name: Brunswick Regional WSD PWSID: 04-10-070
 Mailing Address: PO Box 2230 Leland, NC 28451 Ownership: District
 Contact Person: Bob Walker Title: Director
 Phone: 910-371-9949 Cell/Mobile: 910-279-4581

Provisional

Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Ductile Iron	4-24	5.00 %
Polyvinyl Chloride	2-24	95.00 %

What are the estimated total miles of distribution system lines? 251 Miles

How many feet of distribution lines were replaced during 2023? 0 Feet

How many feet of new water mains were added during 2023? 88,516 Feet

How many meters were replaced in 2023? 0

How old are the oldest meters in this system? 4 Year(s)

How many meters for outdoor water use, such as irrigation, are not billed for sewer services? 6,846

What is this system's finished water storage capacity? 4.2500 Million Gallons

Has water pressure been inadequate in any part of the system since last update? *Line breaks that were repaired quickly should not be included.* No

Programs

Does this system have a program to work or flush hydrants? Yes, Annually

Does this system have a valve exercise program? Yes, As Needed

Does this system have a cross-connection program? Yes

Does this system have a program to replace meters? Yes

Does this system have a plumbing retrofit program? No

Does this system have an active water conservation public education program? Yes

Does this system have a leak detection program? No

Water Conservation

What type of rate structure is used? Increasing Block

How much reclaimed water does this system use? 0.0000 MGD For how many connections? 0

Does this system have an interconnection with another system capable of providing water in an emergency? No

2. Water Use Information

Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Cape Fear River (02-3)	100 %	Brunswick	100 %

What was the year-round population served in 2023? 43,693

Has this system acquired another system since last report? No

Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	17,202	1.9946	0	0.0000
Commercial	536	0.2482	0	0.0000
Industrial	0	0.0000	0	0.0000
Institutional	45	0.0276	0	0.0000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? 1.1138 MGD

3. Water Supply Sources

Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	2.2503		May	3.6045		Sep	4.3875	
Feb	2.2438		Jun	4.9250		Oct	4.2625	
Mar	2.5453		Jul	4.7750		Nov	3.6625	
Apr	3.1209		Aug	4.6250		Dec	3.2375	



Ground Water Sources

Name or Number	Average Daily Withdrawal (MGD)		Max Day Withdrawal (MGD)	12-Hour Supply (MGD)	CUA Reduction	Year Offline	Use Type
	MGD	Days Used					
01B	0.6712	210	1.0452	0.6480	CUA0		Regular
01P	0.4283	210	0.8356	0.4320	CUA0		Regular
02B	0.0975	63	0.5828	0.5790	CUA0		Regular
02P	0.1089	63	0.5809	0.5790	CUA0		Regular
03B	0.6086	210	0.8984	0.5040	CUA0		Regular
03P	0.5630	210	0.8272	0.5040	CUA0		Regular
04B	0.4870	185	0.9951	0.6480	CUA0		Regular
04P	0.4541	185	0.924	0.7092	CUA0		Regular
05B	0.6480	199	0.9994	0.6480	CUA0		Regular
05P	0.5039	199	0.776	0.5040	CUA0		Regular

Ground Water Sources (continued)

Name or Number	Well Depth (Feet)	Casing Depth (Feet)	Screen Depth (Feet)		Well Diameter (Inches)	Pump Intake Depth (Feet)	Metered?
			Top	Bottom			
01B	561	561	450	556	12	290	Yes
01P	400	400	319	395	12	250	Yes
02B	566	566	493	561	12	391	Yes
02P	417	417	330	411	12	240	Yes
03B	543	543	460	538	12	420	Yes
03P	393	393	306	388	12	200	Yes
04B	554	554	483	549	12	300	Yes

04P	397	397	322	393	12	230	Yes
05B	560	560	460	525	12	350	Yes
05P	390	390	310	385	12	240	Yes

Are ground water levels monitored? **Yes, Daily**

Does this system have a wellhead protection program? **Yes**

Water Purchases From Other Systems

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract MGD	Expiration	Recurring	Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
Brunswick County	04-10-045	2.7600	151	1.0000	2034	Yes	Yes	24	Regular

Water Treatment Plants

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
Treatment PLT H2GO WP1	6.0000	Yes	Yes	Ground Water

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2023? **No**

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2023? **No**

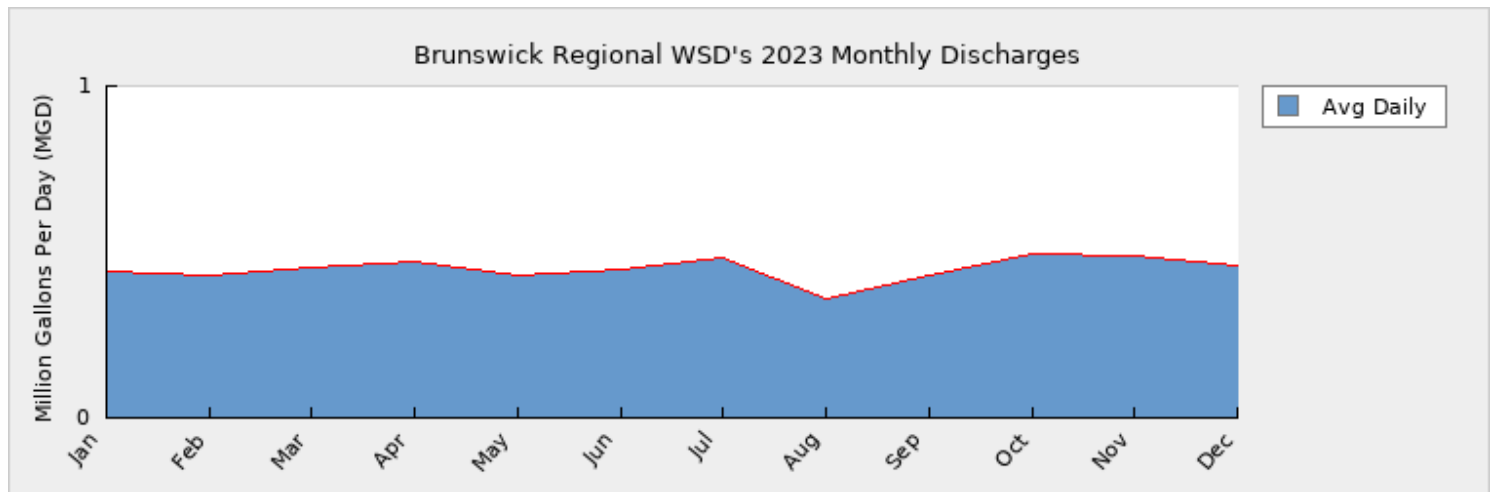
If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? **No**

4. Wastewater Information

Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	0.4395	May	0.4285	Sep	0.4285
Feb	0.4299	Jun	0.4446	Oct	0.4952
Mar	0.4510	Jul	0.4844	Nov	0.4876
Apr	0.4712	Aug	0.3567	Dec	0.4599



How many sewer connections does this system have? **18,682**

How many water service connections with septic systems does this system have? **0**

Are there plans to build or expand wastewater treatment facilities in the next 10 years? **No**

Wastewater Permits

Permit Number	Type	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
---------------	------	--------------------------	-----------------------	--------------------------------------	-----------------------------	------------------	-----------------

NC0075540 WWTP 0.8000 0.6500 0.4480 0.5522 Brunswick River Cape Fear River (02-3)

Wastewater Interconnections

Water System	PWSID	Type	Average Daily Amount		Contract
			MGD	Days Used	Maximum (MGD)
Brunswick County	04-10-045	Discharging	2.1075	365	3.8300

5. Planning

Projections

	2023	2030	2040	2050	2060	2070
Year-Round Population	43,693	49,810	59,772	71,726	86,071	103,286
Seasonal Population	0	0	0	0	0	0
Residential	1.9946	2.2738	2.7286	3.2743	3.9292	4.7150
Commercial	0.2482	0.2829	0.3395	0.4074	0.4889	0.5867
Industrial	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Institutional	0.0276	0.0276	0.0377	0.0453	0.0540	0.0650
System Process	1.1138	1.2697	1.5237	1.8284	2.1941	2.6330
Unaccounted-for	0.2049	-0.7719	-0.1543	-0.0300	-0.0061	-0.0012

Future Supply Sources

Source Name	PWSID	Source Type	Additional Supply	Year Online	Year Offline	Type
BRWS	04-10-070	Ground	3.2400	2024		Regular

Demand v/s Percent of Supply

	2023	2030	2040	2050	2060	2070
Surface Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Ground Water Supply	5.7552	5.7552	5.7552	5.7552	5.7552	5.7552
Purchases	1.0000	2.7600	2.7600	2.7600	2.7600	2.7600
Future Supplies		3.2400	3.2400	3.2400	3.2400	3.2400
Total Available Supply (MGD)	6.7552	11.7552	11.7552	11.7552	11.7552	11.7552
Service Area Demand	3.5891	3.0821	4.4752	5.5254	6.6601	7.9985
Sales	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Future Sales		0.0000	0.0000	0.0000	0.0000	0.0000
Total Demand (MGD)	3.5891	3.0821	4.4752	5.5254	6.6601	7.9985
Demand as Percent of Supply	53%	26%	38%	47%	57%	68%



The purpose of the above chart is to show a general indication of how the long-term per capita water demand changes over time. The per capita water demand may actually be different than indicated due to seasonal populations and the accuracy of data submitted. Water systems that have calculated long-term per capita water demand based on a methodology that produces different results may submit their information in the notes field.

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2017-2023 Sewer Billing Summary			
January through December	Sewer Connecions	Annual Sewer demand	Average Daily Demand per connection
2017	10259	465,964,888	124
2018	10783	485,514,948	123
2019	11341	536,354,418	130
2020	11856	580,070,770	134
2021	16012	716,950,221	123
2022	17318	850,450,000	135
2023	18682	880,305,107	129
		2.412	MGD

APPENDIX 3

Old 2020-2030 Capital Improvements Plan

New 2025-2030 Capital Improvements Plan

BRWSH2GO										
SDF Analysis 2020 to 2030										
Asset/Project ID	CIP Asset/Project Description	Asset Group	Construction Cost	Engineering	Land Acquisition	Reimbursement to CRF for Previous Costs	Project Costs	Bond Interest	Credits	Total Costs
S03	S01 & S02 on 2025-30 CIP: Malmo Loop Regional Pump Station and Force Main 1500 GPM Colon Mintz Regional Pump Station and FM (from Colon Mintz near Malmo Loop to Commerce PS)	Sewer	5,000,000	384,900			5,384,900		4,000,000	1,384,900
S04	Project eliminated. May revisit if/when Leland infrastructure is conveyed to H2GO	Sewer	-	-	-	-	-	-	-	-
S05	1100 GPM Town Creek Rd / NC133 Regional Pump Station and FM (to Westport twin 10" FM) Discontinued	Sewer	4,000,000	315,000			4,315,000		2,155,000	2,160,000
S06	New Brunswick Co. 1.175 MGD WWTP Capacity Allocation Completed	Sewer Trmt	24,400,000				24,400,000	7,947,000		32,347,000
							-			-
	W04 on 2025-30 CIP: 12" Water line extension from Bishops Ridge to Brunswick Village Blvd						-			-
Water							-			-
W01	12" water line extension from Carol Lynn, along US17, to existing 12" line on Maco Rd (Area 1 of 2018 CIP)	Water	1,853,000	120,155			1,973,155			1,973,155
W02	18" water line extension from Lanvale Rd to existing 24" on Trade Street (Area 3 of 2018 CIP) Completed	Water	810,000	52,523			862,523			862,523
W03	12" and 18" water line extensions from Grayson Park to Compass Pointe west entrance (system loop, Area 2 of 2018 CIP)	Water	3,680,000	238,622			3,918,622			3,918,622
W04							-			-
W05	2010 water distribution system study - improvements Group 1, #6 thru #11 Discontinued	Water	2,000,000	150,000			2,150,000			2,150,000
W06	2010 water distribution system study - improvements Group 2, #12 thru #18 Discontinued	Water	500,000	50,000			550,000			550,000
W07	750,000 Gal Elevated Water Storage Tank - Compass Pointe service area	Water	2,500,000	200,000			2,700,000			2,700,000
W08	12" water main extension - Mallory Creek to Town Creek service area along NC133 Discontinued	Water	3,000,000	250,000			3,250,000			3,250,000
W09	Project eliminated.	Water	-	-	-	-	-	-	-	-
W10	Project eliminated.	Water	-	-	-	-	-	-	-	-
W11	Project eliminated.	Water	-	-	-	-	-	-	-	-
W12	18" water main extension from Atkinson Trail to existing 12" tie-in on Wire Rd Discontinued	Water	150,000	15,000			165,000			165,000
W13	12" connection from Kay Todd Rd at US17 to Brunswick Forest 16" Point of Entry Discontinued	Water	225,000	20,000			245,000			245,000
W14	New 4.0 MGD Reverse Osmosis Water Treatment Plant Completed	Water	33,500,000	700,000	100,000	5,700,000	40,000,000	16,300,000	28,150,000	28,150,000
W15	Expansion of RO Water Treatment Plant to 6.0 MGD Completed	Water	7,000,000	400,000	110,000		7,510,000			7,510,000
W16	ASR Well System ASR1, ASR2, & ASR3 on 2025-30 CIP.	Water	2,800,000	250,000			3,050,000			3,050,000
Total			91,418,000	3,146,200	210,000	5,700,000	100,474,200	24,247,000	34,305,000	90,416,200

APPENDIX 4

System Development Fee Worksheets

**System Development Fees
Summary Worksheet**

Client: **BRWSH2GO**

Accounting Methodology:

Buy-In Cost

Incremental Cost

Combined Cost

Pay proportional share of past and current investments (for existing utilities/facilities to support existing/new growth)

Pay increase in total costs resulting from increase in production (for new utilities/facilities to support new growth only)

Combination of Buy-In and Incremental Costs

enter as positive values and subtract from total costs

Asset ID/Ref.	Asset Description	Asset Group	Project Costs					Project Credits					Net Total Cost per				Comments					
			Construction Cost	Survey & Engineering Fees	Land Acquisition Cost	Debt Principal and Interest Pmts	Reimbursement to CRF for Previous Costs	Total Costs	Accumulated Depreciation	Project Capacity Credit ¹	Debt Credits ¹	Principal Forgiveness / Grants	Total Credits	Net Total Cost	Design Capacity, MGD	Gal Capacity, \$/GPD		% SDF Eligible	% Water System Affiliation	\$ Water System Affiliation	% Sewer System Affiliation	\$ Sewer System Affiliation
W1	0.75-MGAL Leland Water Tank / Storage (2015)	Water - Storage	\$ 2,628,810					\$ 2,628,810	\$ (591,482)				\$ (591,482)	\$ 2,037,328	0.750	\$ 2.72	100%	100%	\$ 2.72	0%	\$ -	Leland project. Matches McGill January 2021 SDF report update, accounting for additional depreciation.
SEWER																						
SC1	Regional Plant Transmission Mains (2018)	Sewer - Collection	\$ 1,794,110					\$ 1,794,110	\$ (215,293)			\$ (543,810)	\$ (759,103)	\$ 1,035,007	0.413	\$ 2.51	100%	0%	\$ -	100%	\$ 2.51	Leland project. Matches McGill January 2021 SDF report update, accounting for additional depreciation.
SC2	Lift Station #1 Relocation (2018)	Sewer - Collection	\$ 582,350					\$ 582,350	\$ (174,705)				\$ (174,705)	\$ 407,645	0.389	\$ 1.05	100%	0%	\$ -	100%	\$ 1.05	Leland project. Matches McGill January 2021 SDF report update, accounting for additional depreciation.
SC3	Kay Todd Road Regional Lift Station #33 & Force Main Extension (4.253 MGD, 2020)	Sewer - Collection	\$ 4,135,125	\$ 305,060				\$ 4,440,185	\$ (444,018)			\$ (3,500,000)	\$ (3,944,018)	\$ 496,166	4.253	\$ 0.12	100%	0%	\$ -	100%	\$ 0.12	Leland project. Updated with costs from Bob Walker in 2021. Debt credits from McGill January 2021 SDF report update.
SC4	U.S. Hwy. 17 Lift Station #10 Sewer Expansion II, Phase 1 (0.764 MGD, 2020)	Sewer - Collection	\$ 3,838,780	\$ 383,878				\$ 4,222,658	\$ (422,266)			\$ (1,733,333)	\$ (2,155,599)	\$ 2,067,059	0.764	\$ 2.71	100%	0%	\$ -	100%	\$ 2.71	Leland project. Updated with costs from Bob Walker in 2021. Debt credits from McGill January 2021 SDF report update.
SC5	U.S. Hwy. 17 Lift Station #10 Sewer Expansion II, Phase 2 (1.364 MGD, 2021)	Sewer - Collection	\$ 2,100,000	\$ 349,250				\$ 2,449,250	\$ (183,694)			\$ (2,000,000)	\$ (2,183,694)	\$ 265,556	0.600	\$ 0.44	100%	0%	\$ -	100%	\$ 0.44	Leland project. Updated with costs from Bob Walker in 2021. Debt credits from McGill January 2021 SDF report update.
TOTAL			\$ 15,079,175	\$ 1,038,188	\$ -	\$ -	\$ -	\$ 16,117,363	\$ (2,031,459)	\$ -	\$ (7,777,143)	\$ -	\$ (9,808,602)	\$ 6,308,761	\$ 9.54	\$ 6,308,761	\$ -	\$ 2.72	\$ 6.83			

CURRENT YEAR - 2023	WATER					Total	Ex. Population	Customer Ratio	SEWER					Total	Ex. Population	Customer Ratio
	Residential	Commercial	Institutional	Industrial	Population:				Residential	Commercial	Institutional	Industrial	Population:			
No. of Existing Connections	17,202	536	45	-	17,783	57,333	3.22	18,101	536	45	-	18,682	57,333	3.07		
Percent of Total Connections	96.7%	3.0%	0.3%	0.0%				96.9%	2.9%	0.2%	0.0%					
Volumetric Use per Connection, gpd	210	463	613	-	45,245			210	463	613	-	4,076,963				
Total Existing Volumetric Use, gpd	3,612,420	248,168	27,585	-	3,888,173			3,801,210	248,168	27,585	-	4,076,963				
Percent of Total Use	93%	6%	1%	0%				93%	6%	1%	0%					

Meter Size - per GALLON Basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$2.72	\$6.83	\$9.55
1	2.5	\$6.80	\$17.08	\$23.88
1-1/2	5.0	\$13.60	\$34.15	\$47.75
2	8.0	\$21.76	\$54.64	\$76.40
3 compound	16.0	\$43.52	\$109.28	\$152.80
4 compound	25.0	\$68.00	\$170.75	\$238.75
6 compound	50.0	\$136.00	\$341.50	\$477.50
8 compound	80.0	\$217.60	\$546.40	\$764.00
10 compound	115.0	\$312.80	\$785.45	\$1,098.25
12 compound	215.0	\$584.80	\$1,468.45	\$2,053.25

5/8" Residential connection: 210 gpd

Meter Size - per CONNECTION basis	Equivalent Ratio	Water	Sewer	Total
5/8 (assumes 210 GPD residential connection)	1.0	\$571	\$1,434	\$2,006
1	2.5	\$1,428	\$3,586	\$5,014
1-1/2	5.0	\$2,856	\$7,172	\$10,028
2	8.0	\$4,570	\$11,474	\$16,044
3 compound	16.0	\$9,139	\$22,949	\$32,088
4 compound	25.0	\$14,280	\$35,858	\$50,138
6 compound	50.0	\$28,560	\$71,715	\$100,275
8 compound	80.0	\$45,696	\$114,744	\$160,440
10 compound	115.0	\$65,688	\$164,945	\$230,633
12 compound	215.0	\$122,808	\$308,375	\$431,183

System Development Fees

Depreciation Worksheet

Client: BRWSH2GO

BUY-IN METHOD		Evaluation Year	Straight Line Method												
Project No.	Project Description	Year Installation	Approximate Age	Actual Cost	CCI Number	Estimated Replacement Value	Service Life	Assumed Percent Salvage Value	Estimated Salvage Value	Estimated Annual Depreciation	Accumulated Depreciation to Date	Estimated Remaining Service Life	Estimated Remaining Asset Depreciation	Estimated Remaining Asset Value (inc. Salvage)	
WATER															
W1	0.75-MGAL Leland Water Tank / Storage (2015)	2015	9	\$ 2,628,810	69.0	\$ 3,809,870	40	0%	\$ -	\$ 65,720	\$ 591,482	31	\$ 2,037,328	\$ 2,037,328	
SEWER															
SC1	Regional Plant Transmission Mains (2018)	2018	6	\$ 1,794,110	73.6	\$ 2,437,649	50	5%	\$ 89,706	\$ 35,882	\$ 215,293	44	\$ 1,578,817	\$ 1,668,522	
SC2	Lift Station #1 Relocation (2018)	2018	6	\$ 582,350	73.6	\$ 791,237	20	5%	\$ 29,118	\$ 29,118	\$ 174,705	14	\$ 407,645	\$ 436,763	
SC3	Kay Todd Road Regional Lift Station #33 & Force Main Extension (4.253 MGD, 2020)	2020	4	\$ 4,440,185	79.3	\$ 5,599,224	40	5%	\$ 222,009	\$ 111,005	\$ 444,018	36	\$ 3,996,166	\$ 4,218,175	
SC4	U.S. Hwy. 17 Lift Station #10 Sewer Expansion II, Phase 1 (0.764 MGD, 2020)	2020	4	\$ 4,222,658	79.3	\$ 5,324,916	40	5%	\$ 211,133	\$ 105,566	\$ 422,266	36	\$ 3,800,392	\$ 4,011,525	
SC5	U.S. Hwy. 17 Lift Station #10 Sewer Expansion II, Phase 2 (1.364 MGD, 2021)	2021	3	\$ 2,449,250	80.6	\$ 3,038,772	40	5%	\$ 122,463	\$ 61,231	\$ 183,694	37	\$ 2,265,556	\$ 2,388,019	
TOTAL				\$ 16,117,363		\$ 21,001,667			\$ 674,428	\$ 408,522	\$ 2,031,459		\$ 14,085,904	\$ 14,760,332	

System Development Fees Summary Worksheet

Client: **BRWSHZGO**

Accounting Methodology:
 Buy-In Cost Pay proportional share of past and current investments (for existing utilities/facilities to support existing/new growth)
 Incremental Cost Pay increase in total costs resulting from increase in production (for new utilities/facilities to support new growth only)
 Combined Cost Combination of Buy-In and Incremental Costs

INCREMENTAL COST METHOD		Anticipated Project Costs							Anticipated Project Credits													
Asset/Project ID	CIP Asset/Project Description	Asset Group	Construction Cost	Survey & Engineering Fees	Land Acquisition Cost	Debt Principal and Interest Pmts	Reimbursement to CRF for Previous Costs	Total Costs	Principal Forgiveness / Grants	Project Capacity Credit ¹	Total Credits	Net Total Cost	Additional Design Capacity, MGD ²	Net Total Cost per Gal Capacity, \$/GPD	% Developer Credit ³	Adjusted Total Net Cost	% SDF Eligible	% Water System Affiliation	\$ Water System Affiliation	% Sewer System Affiliation	\$ Sewer System Affiliation	Comments
WATER																						
W01	12" Water line Extension from Malmo Loop Road through East Lake Development	Water - Distribution	\$ 1,800,000	\$ 200,000				\$ 2,000,000		\$ (325,000)	\$ (325,000)	\$ 1,675,000	2.450	\$ 0.68	25%	\$ 1,256,250	100%	100%	\$ 0.51	0.00%	\$ -	Project W03 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
W02	12" Water line Extension from Compass Point west entrance to Ashton Woods Spine Road	Water - Distribution	\$ 130,000	\$ 20,000				\$ 150,000			\$ -	\$ 150,000	2.450	\$ 0.06	25%	\$ 112,500	100%	100%	\$ 0.05	0.00%	\$ -	Project W03 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
Old W02	18" water line extension from Lanvale Road to existing 24" on Trade Street	Water - Distribution	\$ 810,000	\$ 52,523				\$ 862,523			\$ -	\$ 862,523	7.200	\$ 0.12	38%	\$ 534,764	100%	100%	\$ 0.07	0.00%	\$ -	BRWSHZGO project from the old 2020-2030 CIP. Completed in 2023.
W03	12" Water line Extension from Pinewood on Pinecliff, West to Grayson Park 3C Entrance	Water - Distribution	\$ 130,000	\$ 20,000				\$ 150,000			\$ -	\$ 150,000	2.450	\$ 0.06	25%	\$ 112,500	100%	100%	\$ 0.05	0.00%	\$ -	New project added from 2025-2030 CIP.
W04	12" Water line Extension from Bishops Ridge to Brunswick Village Blvd.	Water - Distribution	\$ 1,400,000	\$ 130,000				\$ 1,530,000			\$ -	\$ 1,530,000	2.450	\$ 0.62	25%	\$ 1,147,500	100%	100%	\$ 0.47	0.00%	\$ -	Project W01 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
W05	12" Water line Extension from Grayson Park East entrance on Pinewood, East along Pinecliff to Maco Road	Water - Distribution	\$ 360,000	\$ 40,000				\$ 400,000			\$ -	\$ 400,000	2.450	\$ 0.16	25%	\$ 300,000	100%	100%	\$ 0.12	0.00%	\$ -	New project added from 2025-2030 CIP.
W07	1.0-MG Elevated Water Tower for Maco Rd./Towne Creek Rd. Growth Corridors	Water - Storage	\$ 6,450,000	\$ 500,000	\$ 50,000			\$ 7,000,000			\$ -	\$ 7,000,000	1.000	\$ 7.00	25%	\$ 5,250,000	100%	100%	\$ 5.25	0.00%	\$ -	Project W07 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
RO1	RO Water Treatment Plant (6.0 MGD)	Water - Supply	\$ 49,175,983			\$ 4,480,541		\$ 53,656,524			\$ -	\$ 53,656,524	4.000	\$ 13.41	25%	\$ 40,242,393	100%	100%	\$ 10.06	0.00%	\$ -	BRWSHZGO Project W15 from the old 2020-2030 CIP. Completed in 2023. Updated with costs from the 2025-2030 CIP and with 5-year interest payments.
RO2	4th Cartridge Filter	Water - Supply	\$ 190,000	\$ 10,000				\$ 200,000			\$ -	\$ 200,000	2.000	\$ 0.10	25%	\$ 150,000	100%	100%	\$ 0.08	0.00%	\$ -	New project added from 2025-2030 CIP.
RO3, RO4, & RO5	Raw Water Transmission Line, Access Road, and Duke-Energy electric service to Wells 6, 7, 8	Water - Supply	\$ 6,075,000	\$ 590,000	\$ 155,000			\$ 6,820,000			\$ -	\$ 6,820,000	2.600	\$ 2.62	25%	\$ 5,115,000	100%	100%	\$ 1.97	0.00%	\$ -	New projects added from 2025-2030 CIP. Total 12-hour production = 2.6 MGD.
RO6, RO7, & RO8	Well Sites 6, 7, & 8	Water - Supply	\$ 5,580,000	\$ 900,000	\$ 60,000			\$ 6,540,000			\$ -	\$ 6,540,000	2.600	\$ 2.52	25%	\$ 4,905,000	100%	100%	\$ 1.89	0.00%	\$ -	New projects added from 2025-2030 CIP. 12-hour production = 0.9 MGD finished water per well, or 2.6 MGD in total.
RO9	4th RO Train (WTP expanded from 6.0 MGD to 8.0 MGD)	Water - Supply	\$ 2,190,000	\$ 110,000				\$ 2,300,000			\$ -	\$ 2,300,000	2.000	\$ 1.15	25%	\$ 1,725,000	100%	100%	\$ 0.86	0.00%	\$ -	New project added from 2025-2030 CIP.
ASR1, ASR2, & ASR3	ASR Wells 1, 2, & 3	Water - Supply	\$ 8,350,000	\$ 1,700,000	\$ 100,000			\$ 10,150,000			\$ -	\$ 10,150,000	3.000	\$ 3.38	25%	\$ 7,612,500	100%	100%	\$ 2.54	0.00%	\$ -	New project added from 2025-2030 CIP. Each ASR well will provide 1.0+ MGD for peak demand. Construction of ASR Well 3 will occur outside the 5-year analysis period.
RO10	Purchase Well Sites 9, 10, 11, 12, 13	Water - Supply		\$ 30,000	\$ 250,000			\$ 280,000			\$ -	\$ 280,000	3.500	\$ 0.08	25%	\$ 210,000	100%	100%	\$ 0.06	0.00%	\$ -	New project added from 2025-2030 CIP expands well site production by 3.5 MGD.
SEWER																						
NEWWTP01	New Brunswick Co. WWTP 2.5-MGD Expansion (2021)	Sewer - Treatment	\$ 39,100,000			\$ 5,903,000		\$ 45,003,000		\$ (9,000,600)	\$ (9,000,600)	\$ 36,002,400	1.985	\$ 18.14	25%	\$ 27,001,800	100%	0%	\$ -	100.00%	\$ 13.60	BRWSHZGO Project S06 + S73 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP including 5-year interest payments. Completed in 2022.
NEWWTP02	New Brunswick Co. WWTP 3.75-MGD Expansion (2025)	Sewer - Treatment				\$ 33,237,118		\$ 33,237,118		\$ (16,618,559)	\$ (16,618,559)	\$ 16,618,559	1.875	\$ 8.86	25%	\$ 12,463,919	100%	0%	\$ -	100.00%	\$ 6.65	New project added from 2025-2030 CIP. Total cost only includes those debt service payments estimated for the next 5 years.
S01	Malmo Loop Regional Pump Station	Sewer - Collection	\$ 2,340,000	\$ 205,000				\$ 2,545,000		\$ (1,800,000)	\$ (1,800,000)	\$ 745,000	0.317	\$ 2.35	25%	\$ 558,750	100%	0%	\$ -	100.00%	\$ 1.76	LS initial design capacity = 550 gpm. Project S03 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
S02	Malmo Loop Regional Force Main	Sewer - Collection	\$ 2,457,000	\$ 180,000	\$ 43,000			\$ 2,680,000			\$ -	\$ 2,680,000	0.756	\$ 3.54	25%	\$ 2,010,000	100%	0%	\$ -	100.00%	\$ 2.66	Project S03 from the old 2020-2030 CIP. Updated with costs from the 2025-2030 CIP.
TOTAL			\$ 126,537,983	\$ 4,687,523	\$ 658,000	\$ 43,620,659	\$ -	\$ 175,504,165	\$ -	\$ (27,744,159)	\$ (27,744,159)	\$ 147,760,006	\$ 64.88			\$ 147,760,006			\$ 23.98		\$ 24.67	

¹ Project Capacity Notes: Item W01: Project credit will be attributed directly to an adjacent development, which will be collected via \$1,000 capital recovery fees included as a special provision in the developers agreement.
 Item NEWWTP01: 20% in Capacity Credits were applied.
 Item NEWWTP02: 50% in Capacity Credits were applied.
 Item S01: Project credit will be attributed directly to an adjacent development (4,000 new connections) which will be collected via \$1,000 capital recovery fees included as a special provision in the developers agreement.
 Item Old W02: The 18-inch water main will allow 5,000 gpm (7.2 MGD) at less than 7 ft/s.
 Item RO1: Pre-RO WTP, the existing demand was 2.0 MGD. Therefore, 4 MGD of the 6 MGD will be available for future customers.
 Items RO2 and RO9 will expand the RO WTP's capacity from 6.0 MGD to 8.0 MGD, so 2.0 MGD is available for future growth.
 Item NEWWTP01: H2GO's allocation of the Northeast Brunswick Regional WWTP's capacity increased by 1.985 MGD in 2021.
 Item S01 will serve 1,508 new connections.
 Item S02 will serve 3,600 new connections.

² Design Capacity Notes:

³ % Credit Notes: Item Old W02: From 2018-2023, 0.957 MGD in water consumption is credited to the growth in existing customers. This accounts for 13% of the 18" line's 7.200 MGD capacity. So 13% is credited to existing customers, on top of the minimum 25%. The remaining projects will have a minimum 25% credit for extension or new infrastructure projects, per N.C. General Statute section 162A-207(b).

NEWWTP02: New Brunswick Co. WWTP 3.75-MGD Expansion (2025)
 Total Amount = \$ 114,000,000

CURRENT YEAR - 2023	WATER					Total	Ex. Population	Customer Ratio	SEWER					Total	Ex. Population	Customer Ratio
	Residential	Commercial	Institutional	Industrial	Total				Residential	Commercial	Institutional	Industrial	Total			
No. of Existing Connections	17,202	536	45	-	17,783	57,333	3.22	18,101	536	45	-	18,682	57,333	3.07		
Percent of Total Connections	96.7%	3.0%	0.3%	0.0%				96.9%	2.9%	0.2%	0.0%					
Volumetric Use per Connection, gpd	210	463	613	-				210	463	613	-					
Total Existing Volumetric Use, gpd	3,612,420	248,168	27,585	-	3,888,173			3,801,210	248,168	27,585	-	4,076,963				
Percent of Total Use	93%	6%	1%	0%				93%	6%	1%	0%					

Meter Size - per GALLON Basis	Equivalent Ratio	Water	Sewer	Total
5/8 (assumes 210 GPD residential connection)	1.0	\$23.98	\$24.67	\$48.65
1	2.5	\$59.95	\$61.68	\$121.63
1-1/2	5.0	\$119.90	\$123.35	\$243.25
2	8.0	\$191.84	\$197.36	\$389.20
3 compound	16.0	\$383.68	\$394.72	\$778.40
4 compound	25.0	\$599.50	\$616.75	\$1,216.25
6 compound	50.0	\$1,199.00	\$1,233.50	\$2,432.50
8 compound	80.0	\$1,918.40	\$1,973.60	\$3,892.00
10 compound	115.0	\$2,757.70	\$2,837.05	\$5,594.75
12 compound	215.0	\$5,155.70	\$5,304.05	\$10,459.75

Meter Size - per GALLON Basis	Equivalent Ratio	Water	Sewer	Total
5/8 (assumes 210 GPD residential connection)	1.0	\$0.00	\$0.00	\$0.00
1	2.5	\$0.00	\$0.00	\$0.00
1-1/2	5.0	\$0.00	\$0.00	\$0.00
2	8.0	\$0.00	\$0.00	\$0.00
3 compound	16.0	\$0.00	\$0.00	\$0.00
4 compound	25.0	\$0.00	\$0.00	\$0.00
6 compound	50.0	\$0.00	\$0.00	\$0.00
8 compound	80.0	\$0.00	\$0.00	\$0.00
10 compound	115.0	\$0.00	\$0.00	\$0.00
12 compound	215.0	\$0.00	\$0.00	\$0.00

Meter Size - per CONNECTION basis	Equivalent Ratio	Water	Sewer	Total
5/8	1.0	\$5,036	\$5,181	\$10,217
1	2.5	\$12,590	\$12,952	\$25,541
1-1/2	5.0	\$25,179	\$25,904	\$51,083
2	8.0	\$40,286	\$41,446	\$81,732
3 compound	16.0	\$80,573	\$82,891	\$163,464
4 compound	25.0	\$125,895	\$129,518	\$255,413
6 compound	50.0	\$251,790	\$259,035	\$510,825
8 compound	80.0	\$402,864	\$414,456	\$817,320
10 compound	115.0	\$579,117	\$595,781	\$1,174,898
12 compound	215.0	\$1,082,697	\$1,113,851	\$2,196,548

Year	Principal	Interest	Total Debt Service	Balance
2/1/2024	\$ -	\$ -	\$ -	\$ -
8/1/2024	\$ -	\$ -	\$ -	\$ -
2/1/2025	\$ -	\$ -	\$ -	\$ -
8/1/2025	\$ -	\$ -	\$ -	\$ 114,000,000
2/1/2026	\$ -	\$ 3,420,000	\$ 3,420,000	\$ 114,000,000
8/1/2026	\$ 3,099,039	\$ 3,420,000	\$ 6,519,039	\$ 110,900,961
2/1/2027	\$ 92,971	\$ 3,327,029	\$ 3,420,000	\$ 110,807,989
8/1/2027	\$ 3,194,800	\$ 3,324,240	\$ 6,519,039	\$ 107,613,190
2/1/2028	\$ 191,604	\$ 3,228,396	\$ 3,420,000	\$ 107,421,585
8/1/2028	\$ 3,296,392	\$ 3,222,648	\$ 6,519,039	\$ 104,125,193
2/1/2029	\$ 296,244	\$ 3,123,756	\$ 3,420,000	\$ 103,828,949
8/1/2029	\$ 3,404,171	\$ 3,114,868	\$ 6,519,039	\$ 100,424,778
Subtotal 2029	\$ 13,575,222	\$ 26,180,936	\$ 39,756,158	

Total Debt Service Payments from 7/2024 to 6/2029 = \$ 33,237,118.49

System Development Fees

Summary Worksheet

Client:

BRWSH2GO

Meter Size - per GALLON Basis	Equivalent Ratio	WATER			SEWER			Combined Total
		Buy In	Incremental	Combined	Buy In	Incremental	Combined	
5/8	1.0	\$2.72	\$23.98	\$26.70	\$6.83	\$24.67	\$31.50	\$58.20
1	2.5	\$6.80	\$59.95	\$66.75	\$17.08	\$61.68	\$78.75	\$145.50
1-1/2	5.0	\$13.60	\$119.90	\$133.50	\$34.15	\$123.35	\$157.50	\$291.00
2	8.0	\$21.76	\$191.84	\$213.60	\$54.64	\$197.36	\$252.00	\$465.60
3 compound	16.0	\$43.52	\$383.68	\$427.20	\$109.28	\$394.72	\$504.00	\$931.20
4 compound	25.0	\$68.00	\$599.50	\$667.50	\$170.75	\$616.75	\$787.50	\$1,455.00
6 compound	50.0	\$136.00	\$1,199.00	\$1,335.00	\$341.50	\$1,233.50	\$1,575.00	\$2,910.00
8 compound	80.0	\$217.60	\$1,918.40	\$2,136.00	\$546.40	\$1,973.60	\$2,520.00	\$4,656.00
10 compound	115.0	\$312.80	\$2,757.70	\$3,070.50	\$785.45	\$2,837.05	\$3,622.50	\$6,693.00
12 compound	215.0	\$584.80	\$5,155.70	\$5,740.50	\$1,468.45	\$5,304.05	\$6,772.50	\$12,513.00

Meter Size - per CONNECTION basis	Equivalent Ratio	WATER			SEWER			Combined Total
		Buy In	Incremental	Combined	Buy In	Incremental	Combined	
5/8	1.0	\$571	\$5,036	\$5,607	\$1,434	\$5,181	\$6,615	\$12,220
1	2.5	\$1,428	\$12,590	\$14,018	\$3,586	\$12,952	\$16,538	\$30,550
1-1/2	5.0	\$2,856	\$25,179	\$28,035	\$7,172	\$25,904	\$33,075	\$61,110
2	8.0	\$4,570	\$40,286	\$44,856	\$11,474	\$41,446	\$52,920	\$97,770
3 compound	16.0	\$9,139	\$80,573	\$89,712	\$22,949	\$82,891	\$105,840	\$195,550
4 compound	25.0	\$14,280	\$125,895	\$140,175	\$35,858	\$129,518	\$165,375	\$305,550
6 compound	50.0	\$28,560	\$251,790	\$280,350	\$71,715	\$259,035	\$330,750	\$611,100
8 compound	80.0	\$45,696	\$402,864	\$448,560	\$114,744	\$414,456	\$529,200	\$977,760
10 compound	115.0	\$65,688	\$579,117	\$644,805	\$164,945	\$595,781	\$760,725	\$1,405,530
12 compound	215.0	\$122,808	\$1,082,697	\$1,205,505	\$308,375	\$1,113,851	\$1,422,225	\$2,627,730

System Development Fees
 Growth Projections Worksheet
 Client:

BRWSH2GO

PROJECTED GROWTH

<i>Percent Annual Growth</i>	8.00%	10.00%	4.00%	0.00%
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Total Water Connections				
Year	Residential	Commercial	Institutional	Industrial
2023	17,202	536	45	0
2024	18,578	590	47	0
2025	20,064	649	49	0
2026	21,670	713	51	0
2027	23,403	785	53	0
2028	25,275	863	55	0
2029	27,297	950	57	0

Total Sewer Connections				
Year	Residential	Commercial	Institutional	Industrial
2023	18,101	536	45	0
2024	19,549	590	47	0
2025	21,113	649	49	0
2026	22,802	713	51	0
2027	24,626	785	53	0
2028	26,596	863	55	0
2029	28,724	950	57	0

System Development Fees
Revenues Projection Worksheet
Client:

BRWSH2GO

Percent Annual Growth	8.00%	10.00%	4.00%	0.00%
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Year	Total Water Connections			
	Residential	Commercial	Institutional	Industrial
2023	17,202	536	45	-
2024	18,578	590	47	-
2025	20,064	649	49	-
2026	21,670	713	51	-
2027	23,403	785	53	-
2028	25,275	863	55	-
2029	27,297	950	57	-
TOTAL				

Percent Annual Growth	8.00%	10.00%	4.00%	0.00%
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Year	Total Sewer Connections			
	Residential	Commercial	Institutional	Industrial
2023	18,101	536	45	-
2024	19,549	590	47	-
2025	21,113	649	49	-
2026	22,802	713	51	-
2027	24,626	785	53	-
2028	26,596	863	55	-
2029	28,724	950	57	-
TOTAL				

Water Revenues from Buy-In Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 785,971	\$ 77,112	\$ 9,139	\$ -	\$ 872,222
\$ 848,803	\$ 84,252	\$ 9,139	\$ -	\$ 942,194
\$ 917,347	\$ 91,392	\$ 9,139	\$ -	\$ 1,017,878
\$ 989,890	\$ 102,816	\$ 9,139	\$ -	\$ 1,101,845
\$ 1,069,286	\$ 111,384	\$ 9,139	\$ -	\$ 1,189,810
\$ 1,154,966	\$ 124,236	\$ 9,139	\$ -	\$ 1,288,342
\$ 5,766,264	\$ 591,192	\$ 54,835	\$ -	\$ 6,412,291

Sewer Revenues from Buy-In Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 2,076,866	\$ 193,631	\$ 22,949	\$ -	\$ 2,293,446
\$ 2,243,245	\$ 211,559	\$ 22,949	\$ -	\$ 2,477,753
\$ 2,422,533	\$ 229,488	\$ 22,949	\$ -	\$ 2,674,970
\$ 2,616,163	\$ 258,174	\$ 22,949	\$ -	\$ 2,897,286
\$ 2,825,571	\$ 279,689	\$ 22,949	\$ -	\$ 3,128,208
\$ 3,052,190	\$ 311,960	\$ 22,949	\$ -	\$ 3,387,099
\$ 15,236,569	\$ 1,484,501	\$ 137,693	\$ -	\$ 16,858,762

Meter Size	Buy-in Method		Incremental Method	
	Water	Sewer	Water	Sewer
5/8"	\$ 571	\$ 1,434	\$ 5,036	\$ 5,181
1"	\$ 1,428	\$ 3,586	\$ 12,590	\$ 12,952
2"	\$ 4,570	\$ 11,474	\$ 40,286	\$ 41,446
3"	\$ 9,139	\$ 22,949	\$ 80,573	\$ 82,891

Water Revenues from Incremental Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 6,929,261	\$ 679,833	\$ 80,573	\$ -	\$ 7,689,667
\$ 7,483,199	\$ 742,781	\$ 80,573	\$ -	\$ 8,306,552
\$ 8,087,495	\$ 805,728	\$ 80,573	\$ -	\$ 8,973,796
\$ 8,727,041	\$ 906,444	\$ 80,573	\$ -	\$ 9,714,058
\$ 9,427,018	\$ 981,981	\$ 80,573	\$ -	\$ 10,489,571
\$ 10,182,388	\$ 1,095,287	\$ 80,573	\$ -	\$ 11,358,247
\$ 50,836,401	\$ 5,212,053	\$ 483,437	\$ -	\$ 56,531,891

Sewer Revenues from Incremental Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 7,501,654	\$ 699,395	\$ 82,891	\$ -	\$ 8,283,939
\$ 8,102,615	\$ 764,153	\$ 82,891	\$ -	\$ 8,949,659
\$ 8,750,202	\$ 828,912	\$ 82,891	\$ -	\$ 9,662,006
\$ 9,449,597	\$ 932,526	\$ 82,891	\$ -	\$ 10,465,014
\$ 10,205,979	\$ 1,010,237	\$ 82,891	\$ -	\$ 11,299,107
\$ 11,024,530	\$ 1,126,802	\$ 82,891	\$ -	\$ 12,234,223
\$ 55,034,576	\$ 5,362,025	\$ 497,347	\$ -	\$ 60,893,948

Water Revenues from Combined Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 7,715,232	\$ 756,945	\$ 89,712	\$ -	\$ 8,561,889
\$ 8,332,002	\$ 827,033	\$ 89,712	\$ -	\$ 9,248,747
\$ 9,004,842	\$ 897,120	\$ 89,712	\$ -	\$ 9,991,674
\$ 9,716,931	\$ 1,009,260	\$ 89,712	\$ -	\$ 10,815,903
\$ 10,496,304	\$ 1,093,365	\$ 89,712	\$ -	\$ 11,679,381
\$ 11,337,354	\$ 1,219,523	\$ 89,712	\$ -	\$ 12,646,589
\$ 56,602,665	\$ 5,803,245	\$ 538,272	\$ -	\$ 62,944,182

Sewer Revenues from Combined Cost Method				
Residential (5/8")	Commercial (1")	Institutional (2")	Industrial (3" compound)	TOTAL
\$ 9,578,520	\$ 893,025	\$ 105,840	\$ -	\$ 10,577,385
\$ 10,345,860	\$ 975,713	\$ 105,840	\$ -	\$ 11,427,413
\$ 11,172,735	\$ 1,058,400	\$ 105,840	\$ -	\$ 12,336,975
\$ 12,065,760	\$ 1,190,700	\$ 105,840	\$ -	\$ 13,362,300
\$ 13,031,550	\$ 1,289,925	\$ 105,840	\$ -	\$ 14,427,315
\$ 14,076,720	\$ 1,438,763	\$ 105,840	\$ -	\$ 15,621,323
\$ 70,271,145	\$ 6,846,525	\$ 635,040	\$ -	\$ 77,752,710