

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. W-354, SUB 364

In the Matter of)	
Application by Carolina Water Service,)	TESTIMONY OF
Inc., of North Carolina, 4944 Parkway)	LINDSAY DARDEN
Plaza Boulevard, Suite 375, Charlotte,)	PUBLIC STAFF – NORTH
North Carolina 28217, for Authority to)	CAROLINA UTILITIES
Adjust and Increase Rates for Water)	COMMISSION
and Sewer Utility Service in All Service)	
Areas in North Carolina)	
)	
)	

**CAROLINA WATER SERVICE, INC. OF NORTH CAROLINA
DOCKET NO. W-354, SUB 364**

**TESTIMONY OF LINDSAY DARDEN
ON BEHALF OF THE PUBLIC STAFF
NORTH CAROLINA UTILITIES COMMISSION**

NOVEMBER 4, 2019

1 **Q. PLEASE STATE FOR THE RECORD YOUR NAME, BUSINESS**
2 **ADDRESS, AND PRESENT POSITION.**

3 A. My name is Lindsay Darden. My business address is 430 North
4 Salisbury Street, Dobbs Building, Raleigh, North Carolina. I am a
5 Utilities Engineer with the Water, Sewer, and Telephone Division of the
6 Public Staff – North Carolina Utilities Commission (Public Staff).

7 **Q. BRIEFLY STATE YOUR QUALIFICATIONS AND EXPERIENCE**
8 **RELATING TO YOUR PRESENT POSITION WITH THE PUBLIC**
9 **STAFF.**

10 A. I graduated from North Carolina State University, earning a Bachelor
11 of Science Degree in Civil Engineering. I am a licensed Professional
12 Engineer in North Carolina. I am also certified as a B-Well Operator
13 by the North Carolina Water Treatment Facility Operators Certification
14 Board. While employed by the Public Staff, I have presented
15 recommendations in utility rate case proceedings, new franchise and
16 transfer applications, and other matters relating to water, wastewater,
17 and telephone utility regulation before the Commission. I worked for

1 the North Carolina Department of Environmental Quality (DEQ), Public
2 Water Supply Section, for four years prior to joining the Public Staff in
3 December 2016. Prior to working with DEQ, I worked for Smith
4 Gardner, an engineering consulting firm.

5 **Q. WHAT ARE YOUR DUTIES IN YOUR PRESENT POSITION?**

6 A. My duties with the Public Staff are to monitor the operations of
7 regulated water and wastewater utilities with regard to rates and
8 service. Included in these duties are conducting field investigations to
9 review, evaluate, and recommend changes in the design, construction,
10 and operations of regulated water and wastewater utilities;
11 presentation of expert testimony in formal hearings; and presentation
12 of information, data, and recommendations to the Commission.

13 **Q. PLEASE DESCRIBE THE SCOPE OF YOUR INVESTIGATION IN**
14 **THIS CASE.**

15 A. On June 28, 2019, Carolina Water Service, Inc. of North Carolina
16 (CWSNC or Company) filed an application with the Commission
17 seeking authority to increase its rates for providing water and
18 wastewater utility service in all of its service areas in North Carolina.
19 My areas of investigation in this proceeding have been the review of
20 Company records, assisting in the review of customer complaints and
21 Department of Environmental Quality (DEQ) records, and conducting

1 several site inspections. I have also assisted the Public Staff
2 Accounting Division in the review of the following expenses: Testing,
3 Purchased Power, Chemicals, Meter Reading, Maintenance and
4 Repair, Sludge Hauling, Purchased Water, and Purchased Sewer
5 Treatment.

6 **Q. HAVE YOU INSPECTED CWSNC'S WATER AND SEWER**
7 **SYSTEMS?**

8 A. Yes, on September 6, 2019, I inspected Well No. 7 at the Danby well
9 water system in Mecklenburg County. The Danby well water system
10 currently consists of seven active wells, an interconnection with
11 Lancaster County, and elevated and hydropneumatic storage. The
12 development project for Well No. 7 cost approximately \$89,200. Well
13 No. 7 is approved for 87 gallons per minute pumping capacity, a
14 10,000-gallon hydropneumatic tank, and chlorine treatment. On
15 inspection, the construction of the well house and the
16 hydropneumatic tank was completed, and the new well testing was
17 also completed. The only remaining portion of the project that was
18 remaining to be completed was the power to be connected by Duke
19 Energy. In June 2019, CWSNC had completed all other construction
20 beside the power connection and expected Duke Energy to complete
21 the connection work by the date of the evidentiary hearing,

1 December 2, 2019. Currently, Well No. 7 is supplied with generator
2 power.

3 Additionally, on September 11, 2019, I inspected the wastewater
4 treatment plant (WWTP) at The Village of Nags Head, in Dare
5 County. On January 8, 2019, the Company received a permit major
6 modification (Permit No. WQ0000910) to complete the conversion of
7 the existing WWTP to a 400,000 gallons per day (GPD) new
8 membrane bioreactor (MBR) WWTP, which costs approximately
9 \$6.5 million. A fine stainless steel influent screen and pump station
10 were installed. The five existing basins were converted to an
11 equalization basin, emergency residuals storage basin, pre-anoxic
12 basin, aeration basin, and post-anoxic basin. Two membrane
13 filtration units were installed. A new building was constructed for the
14 membrane equipment, electrical panels, and aeration blowers.
15 Electrical upgrades consisting of a new generator and transfer switch
16 and the site being converted to a single utility service was completed.
17 Demolition of existing equipment was necessary, while the use of
18 existing equipment was also utilized, such as the basins and the
19 spray fields. The WWTP improvements were primarily to address
20 water quality concerns raised by the Department of Environmental
21 Quality (DEQ). The WWTP serves primarily seasonal customers,
22 and the area is not expected to have significant growth in the near

1 future. All construction was complete, and the new WWTP was in
2 operation on the date of the site visit.

3 On October 9, 2019, I inspected the WWTP at Connestee Falls in
4 Transylvania County. I was accompanied by Gina Holt, Public Staff
5 Attorney. The Company constructed a new 0.36 million gallons per
6 day (MGD) sequencing batch reactor (SBR) WWTP and
7 decommissioned the existing WWTP under Permit NC004295. The
8 project cost approximately \$7.1 million. The new WWTP consists of
9 influent screening, extended aeration activated sludge basin, settling
10 basin, effluent filtration basin, UV disinfection, aerobic sludge
11 digestion, and effluent flow metering. New buildings to protect the
12 equipment and serve as storage for the surrounding service areas
13 were constructed. The existing WWTP was decommissioned and
14 replaced due to old age and numerous service issues. The
15 demolition of the entire existing WWTP was complete before the date
16 of the site visit, and the new WWTP was in operation. The
17 decommissioning of the existing WWTP and start-up of the new
18 WWTP were staged so that service was not affected for the
19 customers.

1 Q. HAVE YOU RECOMMENDED ANY ADJUSTMENTS TO
2 EXPENSES RELATED TO WATER AND WASTEWATER
3 OPERATIONS?

4 A. Yes, I have provided Public Staff Accountant Lynn Feasel with
5 recommendations for adjustments to testing expenses, purchased
6 power expenses, chemical expenses, maintenance, and repair
7 expenses, which includes other maintenance expenses and sludge
8 hauling expenses, purchased water expenses, and purchased sewer
9 treatment expenses.

10 **TESTING EXPENSES**

11 The Public Staff has reviewed CWSNC's water and sewer testing
12 expenses. The Public Staff's recommendation for testing expenses
13 reflects the most current testing requirements, changes to the
14 number or frequency of each test, and current testing costs,
15 represented over the required frequency (monthly, annually, and
16 every three, six, or nine years) for each test under the Safe Drinking
17 Water Act and CWSNC's wastewater permits.

18 The Company calculated the testing expense as the Public Staff
19 traditionally has, using current testing schedules going forward,
20 amortizing the expense over the number of years corresponding to the
21 testing frequencies for the various tests, and using the current unit

1 costs for the tests. CWSNC provided the current testing
2 requirements for each system and current invoices and/or price lists
3 from all testing laboratories. In response to Engineering Data
4 Request (EDR) No. 39, CWSNC provided updated costs for any test
5 that had changed since the test year. The updated testing costs
6 were incorporated into the testing requirement schedules to project
7 an accurate total cost of testing for the future.

8 The total testing expense recommendations detailed below include
9 the testing amounts that are based on the most current testing pricing
10 available and the most current compliance schedule for every
11 system and also includes Equipment and Chemical costs associated
12 with testing. For CWSNC's uniform rate systems, the Public Staff
13 recommends testing expenses of \$202,228 for water operations and
14 \$308,671 for sewer operations. For Treasure Cove, Bradfield Farms,
15 and Fairfield Harbour (TC/BF/FH) water operations, the Public Staff
16 recommends testing expenses of \$8,314, and for Bradfield Farms
17 and Fairfield Harbour (BF/FH) sewer operations, the Public Staff
18 recommends testing expenses of \$25,219.

19 The calculations for the testing costs (not including Equipment and
20 Chemical testing expenses) are shown in **Darden Exhibits No. 1**
21 **and No. 2.**

1 **PURCHASED POWER EXPENSES**

2 The Public Staff has reviewed CWSNC's purchased power expenses
3 for both water and sewer operations. CWSNC's purchased power
4 records, and CWSNC's total per books purchased power expenses
5 appear to be complete and acceptable, with the exception of the pro
6 forma adjustment.

7 CWSNC included a 5.96% increase for the Dominion power expense
8 and referenced the pending Dominion rate case, E-22, Sub 562. The
9 Dominion rate case is still pending therefore, the Public Staff
10 recommends excluding the pro forma adjustment to the Dominion
11 power expense since the increase is not known and measurable.

12 The Public Staff finds the pro forma adjustment of a 3.66% increase
13 to the French Broad Electric Corp. test year amount to be acceptable.

14 CWSNC provided Duke Energy Progress and Duke Energy Carolina
15 pro forma adjustments based on news article references. The
16 Company clarified in their response to EDR No. 24 that the majority,
17 326 out of a total of 353 accounts, of the Duke Energy Progress and
18 Duke Energy Carolina accounts are the Small General Service
19 (SGS) rate schedule category or customer classification. The other
20 27 accounts are one of the following rate schedule categories: ALS,
21 MGS, OL – Outdoor Lighting, OPT-V TOU Secondary Small Gen,

1 SGS-TOU, and OPT-Optional Power Srv TOU. Due to the
2 complexity of comparing different rate schedule categories, different
3 riders for each rate schedule, and varying effective dates for rate
4 adjustments and riders, the Public Staff requested, in EDR No. 67,
5 the total kilowatt-hour (kWh) billing data for Duke Energy Progress
6 and Duke Energy Carolina accounts to accurately compare the
7 changes in the cost per kWh. CWSNC responded to EDR No. 67,
8 stating that the Company is unable to timely prepare the response to
9 this request, as the response required manual review and data entry
10 of approximately 6,000 invoices since the kWh usage is not tracked
11 by the Company.

12 Relying on information that is currently available, the Public Staff
13 accepts the Company's pro forma adjustment for Duke Energy
14 Carolinas and Duke Energy Progress purchased power expense,
15 however, this circumstantial acceptance is not to be precedent-
16 setting for future adjustments. The Public Staff recommends that the
17 Company begins and continues to track the kWh for all accounts in
18 a manner that is easily accessible and practicable for review.
19 Tracking the power usage not only helps to project accurate rate
20 fluctuations but also helps to discover potential operational issues
21 concerning power usage.

1 For CWSNC's uniform rate systems, the Public Staff recommends
2 purchased power expenses of \$1,048,858 for water operations and
3 \$838,308 for sewer operations. Furthermore, the Public Staff
4 recommends purchased power expenses of \$69,724 for TC/BF/FH
5 water operations and \$146,154 for BF/FH sewer operations.

6 **CHEMICALS EXPENSE**

7 The Public Staff reviewed CWSNC's expenses for chemicals for both
8 its water and sewer operations. The review of CWSNC's chemical
9 adjustments revealed a discrepancy between CWSNC's Appendix 3,
10 Schedule B, and its Schedules supporting the pro forma adjustment.
11 The discrepancy was discussed with the Company, and the formula
12 was corrected. The correction was reflected in the Updated Schedules
13 provided by CWSNC.

14 The chemical expense amounts were adjusted by CWSNC to reflect
15 the latest pricing provided by the chemical vendor, WaterGuard. The
16 price changes were verified by the Public Staff.

17 The Company also included a pro forma adjustment to allocate for
18 Micro-C chemical treatment at the Nags Head WWTP. In response to
19 EDR No. 72, the Company stated that upon further review of the
20 membrane type, built-in backflushing cycle, and flow expectations at
21 the new Nags Head WWTP, the Company does not anticipate a

1 change from its Test Year disinfection treatment method of Chlorine.
2 Due to this clarification and re-evaluation, the Public Staff removed the
3 pro forma adjustment from the Uniform Sewer amount from the Other
4 Treatment Chemicals account.

5 The chemical expense recommendations detailed below include the
6 expense amount for Chlorine, Odor Control Chemicals, and Other
7 Treatment Chemicals. For CWSNC's uniform rate systems, the
8 Public Staff recommends chemical expenses of \$311,580 for water
9 operations and \$318,617 for sewer operations. For TC/BF/FH water
10 operations, the Public Staff recommends chemical expenses of
11 \$44,189, and for BF/FH sewer operations, the Public Staff
12 recommends chemical expenses of \$19,210.

13 **METER READING EXPENSE**

14 The Public Staff reviewed CWSNC's expenses for meter reading for
15 its water operations. The Company included an adjustment removing
16 the meter reading expense for Fairfield Mountain and Connestee Falls
17 water systems. The meter reading expenses for these water systems
18 were removed due to the installation of AMR meters that do not require
19 an operator to read each meter individually. The Public Staff agrees
20 with the Company's expenses of \$175,422 for uniform rate water
21 operations and \$30,753 for TC/BF/FH water operations.

1 **MAINTENANCE AND REPAIR EXPENSE**

2 The Public Staff reviewed CWSNC's expenses for Maintenance and
3 Repair (M&R) expenses for its water and sewer operations. The
4 Company provided requested invoices and verification for expenses in
5 the following M&R account categories: Maintenance Supplies,
6 Maintenance Repairs, Main Breaks, Electric Equipment Repair,
7 Permits, Other Maintenance Expenses, Sewer Rodding, and Sludge
8 Hauling. The Public Staff agrees with the Company's expenses for
9 Maintenance Supplies, Maintenance Repairs, Main Breaks, Electric
10 Equipment Repair, Permits, and Sewer Rodding. The Public Staff
11 recommends adjustments to the Other Maintenance Expense for
12 Uniform water operations and Sludge Hauling for Uniform and BF/FH
13 sewer operations.

14 Incorporating the Public Staff's recommended adjustments for Other
15 Maintenance Expense and Sludge Hauling that are detailed below, for
16 CWSNC's uniform rate systems, the Public Staff recommends M&R
17 expenses of \$936,594 for water operations and \$1,721,565 for sewer
18 operations. For TC/BF/FH water operations, the Public Staff
19 recommends M&R expenses of \$69,588, and for BF/FH sewer
20 operations, the Public Staff recommends M&R expenses of
21 \$216,983.

1 Other Maintenance Expense

2 CWSNC expensed \$237,279 for other maintenance expenses
3 associated with Uniform water operations. The Public Staff removed
4 \$13,719 from other maintenance expenses associated with purchased
5 water invoices from the City of Winston Salem. The invoices were
6 included in the Purchased Water expense for the Yorktown
7 Subdivision purchase water system.

8 Sludge Hauling

9 The Public Staff has reviewed the historical sludge hauling quantities
10 and expenses provided by CWSNC. Sludge hauling can vary from
11 year to year, depending on operational changes or system
12 maintenance requirements needed in addition to routine sludge
13 hauling. For example, system maintenance requirements could
14 include a digester, clarifier, or equalization tank requiring to be
15 pumped out or pond cleaning. Due to the variations, to determine a
16 representative level for sludge hauling, the Public Staff based the
17 sludge hauling recommendation based on a three-year average of
18 2016, 2017, and the current test year data. The 2016 and 2017 data
19 was provided in previous rate cases, W-354, Sub 356 and Sub 360,
20 respectively.

1 CWSNC confirmed that there were no operational changes that
2 occurred for sludge hauling in any system since the last rate case,
3 W-354, Sub 360. The Company did clarify that operational changes
4 may be necessary in the future for the Nags Head WWTP due to the
5 improvements at the plant.

6 CWSNC clarified in their response to EDR No. 60 that the sludge
7 hauling expense for Sapphire Valley WWTP included sewer pond
8 cleaning expense for three ponds during the test year. CWSNC
9 stated that each pond is expected to be cleaned every two to three
10 years in the normal course of operations. The total cost of the pond
11 cleaning during the test year for three ponds was \$31,050. The
12 Public Staff annualized this cost over 2.5 years based on CWSNC's
13 stated projected cleaning schedule. With the annualized pond
14 cleaning expense, Sapphire Valley WWTP sludge expense during
15 the Test Year was reduced from \$39,506 to \$20,876.

16 For CWSNC's uniform sewer operations, the Public Staff
17 recommends sludge hauling expenses of \$487,086. For BF/FH
18 sewer operations, the Public Staff recommends sludge hauling
19 expenses of \$68,749.

20 The calculations for sludge hauling are shown in **Darden Exhibit No.**
21 **3.**

PURCHASED WATER EXPENSE

The Public Staff has reviewed the purchased water expenses filed in CWSNC's application. CWSNC provided all the invoices for the full and partial purchase water systems. The pro forma adjustment to the Purchase Water Expense that the Company proposed included updating rate changes for Johnston County, Public Works Commission – City of Fayetteville, City of Asheville, City of Gastonia, City of Winston-Salem, Lancaster City Water & Sewer District, City of Charlotte, and the Town of Franklin. Johnston County was updated for rates effective October 1, 2019. Public Works Commission – City of Fayetteville was updated for rates effective May 1, 2019. Hendersonville Water & Sewer District was updated for rates effective August 2, 2018. The other purchase water suppliers were updated for rates effective July 1, 2018.

The Public Staff recommends updating all the purchase water suppliers' rates to the most recent effective rates. In addition to the suppliers included in the Company's pro forma adjustment, the Public Staff also included rate updates for Town of Mooresville, City of Concord, Town of Southern Pines, Montgomery County, and City of Sanford. All the rates were updated to the most recent effective rates as of September 2019, except for Johnston County rates that were

1 updated to the October 1, 2019 rates that the Company provided. The
 2 Public Staff's purchased water expense recommendation was
 3 calculated using the total gallons purchased (adjusted for water loss if
 4 applicable) from the invoices provided and the most current rates to
 5 project an annualized cost.

6 Water loss adjustments were made to the following systems: Zemosa
 7 Acres, Whispering Pines, Carolina Forest, Woodrun, and High Vista
 8 Estates. The Public Staff recommends an allowable water loss of 15%
 9 for most purchase water systems and 20% for purchase water systems
 10 that are located in the mountain regions of North Carolina. Due to
 11 challenges with terrain, the mountain areas are expected to have more
 12 issues with managing water loss than water systems in other areas of
 13 North Carolina. The table below lists the purchase water systems that
 14 were adjusted for water loss, the actual water loss percentage, and the
 15 Public Staff's recommended allowable water loss percentage.

Purchase Water System	Supplier	Actual Water Loss (%)	PS Adjusted Water Loss (%)
Zemosa Acres	City of Concord	37%	15%
Whispering Pines	Town of Southern Pines	25%	15%
Carolina Forest	Montgomery County	51%	15%
Woodrun	Montgomery County	27%	15%
High Vista Estates	City of Hendersonville	29%	20%

1 After incorporating the adjustments described above, the updated
2 rates, and water loss adjustments, for CWSNC's uniform rate
3 systems, the Public Staff recommends purchased water expenses of
4 \$1,445,302. TC/BF/FH water operations do not currently have any
5 purchased water expenses.

6 The calculations are shown in **Darden Exhibit No. 4.**

7 **PURCHASED SEWER TREATMENT EXPENSE**

8 The Public Staff has reviewed the purchased sewer treatment
9 expenses filed in CWSNC's application. CWSNC provided all the
10 invoices for the purchase sewer systems. The pro forma adjustment
11 to the Purchased Sewer Treatment Expense that the Company
12 proposed included updating rate changes for Johnston County,
13 Metropolitan Sewage District of Buncombe County, and City of
14 Gastonia. Johnston County was updated for rates effective October 1,
15 2019. Metropolitan Sewage District of Buncombe County and City of
16 Gastonia were updated for rates effective July 1, 2018.

17 The Public Staff recommends updating all the purchase sewer
18 suppliers' rates to the most recent effective rates. In addition to the
19 suppliers included in the Company's pro forma adjustment, the Public
20 Staff also included rate updates for the Town of Dallas. All the rates
21 were updated to the most recent effective rates as of September 2019,

1 except for Johnston County rates that were updated to the October 1,
2 2019 rates that the Company provided.

3 The purchase sewer systems Fairfield Mountain and Ridges at
4 Mountain Harbor are supplied by the Town of Lake Lure and Clay
5 County Water and Sewer District, respectively. These two purchase
6 sewer systems are billed a flat-rate on a bi-monthly schedule.

7 The Public Staff's purchased sewer treatment expense
8 recommendation was calculated using the total gallons purchased
9 based on the invoices provided and the most current rates to project
10 an annualized cost. The flat-rate annual amounts for Fairfield
11 Mountain and Ridges at Mountain Harbor were also included. For
12 CWSNC's uniform rate systems, the Public Staff recommends
13 purchased sewer treatment expenses of \$740,741. BF/FH sewer
14 operations do not currently have any purchased sewer treatment
15 expenses.

16 The calculations are shown in **Darden Exhibit No. 5.**

17 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

18 A. Yes, it does.

Water Testing Summary for Current Rates

Drinking Water Testing

Carolina Water Service Areas (less Riverbend Estates, Fairfield Harbour & Bradfield - see separate tables below)

Water Analysis	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Laboratory	Public Staff Adj. (See Notes)
Bacteriological	49	Monthly	588.00	\$20.00	\$11,760		
Bacteriological	12	Monthly	144.00	\$21.00	\$3,024		
Bacteriological	2	Monthly	24.00	\$25.00	\$600		1
Bacteriological	28	Monthly	336.00	\$25.00	\$8,400		
Bacteriological	17	Monthly	204.00	\$26.25	\$5,355		
Bacteriological	7	Monthly	84.00	\$30.00	\$2,520		
Bacteriological	7	Monthly	84.00	\$35.00	\$2,940		
Bacteriological	0	Monthly	0.00	\$45.00	\$0		
Bacteriological	7	Monthly	84.00	\$50.00	\$4,200		
Bacteriological	0	Quarterly	0.00	\$25.00	\$0		
HPC	5	Monthly	60.00	\$25.00	\$1,500		
DBP stage 2	33	Every 3 yrs	11.00	\$153.61	\$1,690	E1	
DBP stage 2	21	Every 3 yrs	7.00	\$112.00	\$784	ENCO	
DBP stage 2	33	Annual	33.00	\$153.61	\$5,069	E1	
DBP stage 2	14	Annual	14.00	\$112.00	\$1,568	ENCO	
DBP stage 2	13	Quarterly	52.00	\$153.61	\$7,988	E1	
DBP stage 2	13	Quarterly	52.00	\$112.00	\$5,824	ENCO	
Lead/Copper	385	Every 3 yrs	128.33	\$24.25	\$3,112	E1	
Lead/Copper	235	Every 3 yrs	78.33	\$20.00	\$1,567	ENCO	
Lead/Copper	95	Every 3 yrs	31.67	\$28.00	\$887	Water Quality Lab	
Lead/Copper	20	6 months	40.00	\$20.00	\$800	ENCO	
Asbestos	50	Every 9 yrs	5.56	\$148.00	\$822	EMSL	1
Inorganics	161	Every 3 yrs	53.67	\$202.13	\$10,848	E1	2
Inorganics	52	Every 3 yrs	17.33	\$150.00	\$2,600	ENCO	2
Chloride	2	Annual	2.00	\$16.15	\$32	E1	2
Nitrate	159	Annual	159.00	\$13.00	\$2,067	E1	
Nitrate	45	Annual	45.00	\$15.00	\$675	ENCO	
Nitrate	2	Quarterly	8.00	\$13.00	\$104	E1	
Nitrate	7	Quarterly	28.00	\$15.00	\$420	ENCO	
VOC	139	Every 3 yrs	46.33	\$105.10	\$4,870	E1	
VOC	43	Every 3 yrs	14.33	\$67.00	\$960	ENCO	
VOC	15	Annually	15.00	\$105.10	\$1,577	E1	
VOC	5	Annually	5.00	\$67.00	\$335	ENCO	
VOC	7	Quarterly	28.00	\$105.10	\$2,943	E1	
VOC	4	Quarterly	16.00	\$67.00	\$1,072	ENCO	
SOC - Complete	181	Every 3 yrs	60.33	\$613.72	\$37,028	E1	
SOC - Complete	52	Every 3 yrs	17.33	\$505.00	\$8,753	ENCO	
SOC (505, 506 & 550)	3	Annually	3.00	\$86.73	\$260	E1	
SOC (505, 506 & 550)	2	Annually	2.00	\$76.00	\$152	ENCO	
SOC 515	1	Annually	1.00	\$93.34	\$93	E1	
SOC (505, 506 & 550)	1	Quarterly	4.00	\$86.73	\$347	E1	
Rads-Gross Alpha	132	Every 9 yrs	14.67	\$55.00	\$807	E1	
Rads-Gross Alpha	27	Every 9 yrs	3.00	\$25.00	\$75	ENCO	2
Rads-Gross Alpha	25	Every 6 yrs	4.17	\$55.00	\$229	E1	
Rads-Gross Alpha	16	Every 6 yrs	2.67	\$25.00	\$67	ENCO	2
Rads-Gross Alpha	3	Every 3 yrs	1.00	\$55.00	\$55	E1	
Rads-Gross Alpha	3	Every 3 yrs	1.00	\$25.00	\$25	ENCO	2
Rads-Gross Alpha	0	Annually	0.00	\$55.00	\$0	E1	
Rads-Gross Alpha	4	Annually	4.00	\$25.00	\$100	ENCO	2
Rads-Gross Alpha	1	Quarterly	4.00	\$55.00	\$220	E1	
Rads-Gross Alpha	2	Quarterly	8.00	\$25.00	\$200	ENCO	2
Rads-Uranium	112	Every 9 yrs	12.44	\$50.00	\$622	E1	
Rads-Uranium	25	Every 9 yrs	2.78	\$15.00	\$42	ENCO	
Rads-Uranium	40	Every 6 yrs	6.67	\$50.00	\$333	E1	
Rads-Uranium	15	Every 6 yrs	2.50	\$15.00	\$38	ENCO	
Rads-Uranium	6	Every 3 yrs	2.00	\$50.00	\$100	E1	
Rads-Uranium	4	Every 3 yrs	1.33	\$15.00	\$20	ENCO	
Rads-Uranium	1	Annually	1.00	\$50.00	\$50	E1	
Rads-Uranium	4	Annually	4.00	\$15.00	\$60	ENCO	
Rads-Uranium	2	Quarterly	8.00	\$50.00	\$400	E1	
Rads-Uranium	4	Quarterly	16.00	\$15.00	\$240	ENCO	
Combined Rad (228 & 226)	132	Every 9 yrs	14.67	\$170.00	\$2,493	E1	
Combined Rad (228 & 226)	24	Every 9 yrs	2.67	\$132.00	\$352	ENCO	
Combined Rad (228 & 226)	21	Every 6 yrs	3.50	\$170.00	\$595	E1	
Combined Rad (228 & 226)	10	Every 6 yrs	1.67	\$132.00	\$220	ENCO	
Combined Rad (228 & 226)	5	Every 3 yrs	1.67	\$170.00	\$283	E1	
Combined Rad (228 & 226)	6	Every 3 yrs	2.00	\$132.00	\$264	ENCO	
Combined Rad (228 & 226)	0	Annually	0.00	\$170.00	\$0	E1	
Combined Rad (228 & 226)	8	Annually	8.00	\$132.00	\$1,056	ENCO	
Combined Rad (228 & 226)	3	Quarterly	12.00	\$170.00	\$2,040	E1	
Combined Rad (228 & 226)	4	Quarterly	16.00	\$132.00	\$2,112	ENCO	

Total: \$158,643

Water Testing Summary for Current Rates

Riverbend Estates

Water Analysis	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Laboratory	Public Staff Adj. (See Notes)
Bacteriological	1	Monthly	12.00	\$20.00	\$240	E1	
DBP stage 2	2	Annual	2.00	\$153.61	\$307	E1	
Lead/Copper	5	Every 3 yrs	1.67	\$24.25	\$40	E1	
Asbestos	1	Every 9 yrs	0.11	\$141.00	\$16	E1	

Total Riverbend Estates: **\$603**

Total Uniform Water: **\$159,246**

Treasure Cove

Water Analysis	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Laboratory	Public Staff Adj. (See Notes)
Bacteriological	1	Monthly	12.00	\$25.00	\$300	E1	
DBP stage 2	1	Annual	1.00	\$153.61	\$154	E1	
Lead/Copper	10	Every 3 yrs	3.33	\$24.25	\$81	E1	
Asbestos	1	Every 9 yrs	0.11	\$141.00	\$16	E1	
Inorganics	2	Every 3 yrs	0.67	\$202.13	\$135	E1	2
Nitrate	2	Annual	2.00	\$13.00	\$26	E1	
VOC	2	Every 3 yrs	0.67	\$105.10	\$70	E1	
SOC - Complete	2	Every 3 yrs	0.67	\$613.72	\$409	E1	
Rads-Gross Alpha	2	Every 9 yrs	0.22	\$55.00	\$12	E1	
Rads-Uranium	2	Every 9 yrs	0.22	\$50.00	\$11	E1	
Combined Rad (228 & 226)	2	Every 9 yrs	0.22	\$170.00	\$38	E1	

Total Treasure Cove **\$1,251**

Fairfield Harbour

Water Analysis	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Laboratory	Public Staff Adj. (See Notes)
Bacteriological	5	Monthly	60.00	\$22.00	\$1,320	E1	
DBP stage 2	2	Quarterly	8.00	\$153.61	\$1,229	E1	
Lead/Copper	20	Every 3 yrs	6.67	\$24.25	\$162	E1	
Asbestos	1	Every 9 yrs	0.11	\$141.00	\$16	E1	
Inorganics	1	Every 3 yrs	0.33	\$202.13	\$67	E1	2
Chloride	3	Annual	3.00	\$13.00	\$39	E1	
Nitrate	1	Annual	1.00	\$13.00	\$13	E1	
VOC	1	Every 3 yrs	0.33	\$105.10	\$35	E1	
SOC - Complete	2	Every 3 yrs	0.67	\$613.72	\$409	E1	
Rads-Gross Alpha	1	Every 9 yrs	0.11	\$55.00	\$6	E1	
Rads-Uranium	1	Every 9 yrs	0.11	\$50.00	\$6	E1	
Combined Rad (228 & 226)	1	Every 9 yrs	0.11	\$170.00	\$19	E1	

Total Fairfield Harbour: **\$3,320**

Bradfield Farms

Water Analysis	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Laboratory	Public Staff Adj. (See Notes)
Bacteriological	3	Monthly	36.00	\$21.00	\$756	K&W	
DBP stage 2	1	Annual	1.00	\$153.61	\$154	E1	
Lead/Copper	10	Every 3 yrs	3.33	\$24.25	\$81	E1	
Asbestos	1	Every 9 yrs	0.11	\$141.00	\$16	E1	
Inorganics	6	Every 3 yrs	2.00	\$202.13	\$404	E1	2
Nitrate	6	Annual	6.00	\$13.00	\$78	E1	
VOC	6	Every 3 yrs	2.00	\$105.10	\$210	E1	
SOC - Complete	6	Every 3 yrs	2.00	\$613.72	\$1,227	E1	
Rads-Gross Alpha	3	Every 9 yrs	0.33	\$55.00	\$18	E1	
Rads-Gross Alpha	3	Every 6 yrs	0.50	\$55.00	\$28	E1	
Rads-Uranium	3	Every 9 yrs	0.33	\$50.00	\$17	E1	
Rads-Uranium	3	Every 6 yrs	0.50	\$50.00	\$25	E1	
Combined Rad (228 & 226)	4	Every 9 yrs	0.44	\$170.00	\$76	E1	
Combined Rad (228 & 226)	2	Every 6 yrs	0.33	\$170.00	\$57	E1	

Total Bradfield Farms: **\$3,146**

Total BF/FH/TC Water: **\$7,717**

Notes:

1. Cost per Test updated per documentation provided by Company Staff.
2. Cost per Test updated per most recent Price Sheet for the laboratory provided by the Company.
3. Exhibit adapted from W-10, Schedule 27 provided by the Company.

Sewer Testing Summary for Current Rates

Sewer Testing							
	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
Abington	BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.00	\$ 780	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 15.00	\$ 780	
	Fecal Coliform	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4	\$ 40.00	\$ 160	
	Total Phosphorus (Qtrly)	4	Annually	4	\$ 16.00	\$ 64	1
Amherst	BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.00	\$ 780	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Nitrogen (NN/TKN)	2	Monthly	24	\$ 41.00	\$ 984	
	Total Phosphorus	2	Monthly	24	\$ 19.00	\$ 456	
Ashley Hills 2019: No longer collecting Plant BOD samples 2017: No longer collecting influent samples.	Sludge Testing (for land application)	1	Annually	1	\$ 1,953.34	\$ 1,953	
	BOD (3/week effluent)	3	Weekly	156	\$ 25.00	\$ 3,900	
	<i>BOD (1 @ each of 3 plants once per month)</i>	0	Monthly	0	\$ 22.31	\$ -	
	<i>BOD (influent)</i>	0	Monthly	0	\$ 22.31	\$ -	
	Total Suspended Solids (TSS)	3	Weekly	156	\$ 15.00	\$ 2,340	
	<i>Total Suspended Solids (TSS) (Influent)</i>	0	Monthly	0	\$ 12.61	\$ -	
	Ammonia Nitrogen (NH₃ as N)	3	Weekly	156	\$ 19.00	\$ 2,964	
	<i>Ammonia Nitrogen (NH₃ as N) (Influent)</i>	0	Monthly	0	\$ 17.46	\$ -	
	Fecal Coliform	3	Weekly	156	\$ 25.00	\$ 3,900	
	Total Nitrogen (NN/TKN)	1	Weekly	52	\$ 41.00	\$ 2,132	
	<i>Total Nitrogen (NN/TKN) (Influent)</i>	0	Monthly	0	\$ 33.95	\$ -	
	Total Phosphorus	2	Monthly	24	\$ 19.00	\$ 456	
	<i>Total Phosphorus (Influent)</i>	0	Monthly	0	\$ 17.46	\$ -	
	Sludge Testing (for land application)	1	Annually	1	\$ 1,953.34	\$ 1,953	
	2019: resumed sludge testing						
Bear Paw	BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.00	\$ 780	
	Ammonia Nitrogen (NH ₃ as N)	2	Monthly	24	\$ 20.00	\$ 480	
	Total Nitrogen (NN/TKN)	2	Annually	2	\$ 50.00	\$ 100	
	Total Phosphorus	2	Annually	2	\$ 30.00	\$ 60	
Belvedere 2018: No longer collecting influent samples	WWTF Effluent: BOD (2/wk)	2	Weekly	104	\$ 25.00	\$ 2,600	
	WWTF Effluent: Fecal Coliform (2/wk)	2	Weekly	104	\$ 25.00	\$ 2,600	
	WWTF Effluent: Ammonia Nitrogen (2/wk)	2	Weekly	104	\$ 20.00	\$ 2,080	
	WWTF Effluent: Total Nitrogen (NN/TKN) (2/wk)	2	Weekly	104	\$ 55.00	\$ 5,720	
	WWTF Effluent: Total Phosphorus (2/wk)	2	Weekly	104	\$ 25.00	\$ 2,600	
	WWTF Effluent: TSS (2/wk)	2	Weekly	104	\$ 20.00	\$ 2,080	
	WWTF Effluent: Chloride (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	WWTF Effluent: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	GWLS Eff: BOD (1/wk)	1	Weekly	52	\$ 25.00	\$ 1,300	
	GWLS Eff: Fecal Coliform (1/wk)	1	Weekly	52	\$ 25.00	\$ 1,300	
	GWLS Eff: Ammonia Nitrogen (1/wk)	1	Weekly	52	\$ 20.00	\$ 1,040	
	GWLS Eff: Total Nitrogen (NN/TKN) (1/wk)	1	Weekly	52	\$ 55.00	\$ 2,860	
	GWLS Eff: Total Phosphorus (1/wk)	1	Weekly	52	\$ 20.00	\$ 1,040	
	GWLS Eff: Chloride (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	GWLS Eff: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	<i>Influent: BOD (3/yr)</i>	0	Annually	0	\$ 25.00	\$ -	
	<i>Influent: Ammonia Nitrogen (3/yr)</i>	0	Annually	0	\$ 20.00	\$ -	
	<i>Influent: Total Nitrogen (NN/TKN) (3/yr)</i>	0	Annually	0	\$ 55.00	\$ -	
	<i>Influent: Total Phosphorus (3/yr)</i>	0	Annually	0	\$ 20.00	\$ -	
	<i>Influent: Chloride (3/yr)</i>	0	Annually	0	\$ 20.00	\$ -	

Sewer Testing Summary for Current Rates

	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
	Influent: TDS (3/yr)	0	Annually	0	\$ 20.00	\$ -	
	Lab (Env Chemists) Sample Pick up fee (2/wk)	2	Weekly	104	\$ 10.00	\$ 1,040	
	Monitoring Wells (9 total - 3/yr) Depth, Ammonia Nitrogen, Gallons, Odor, TDS, Temp, Chloride, pH, Total Phosphorus, Fecal Coliform, Nitrate Nitrogen	27	Annually	27	\$ 230.00	\$ 6,210	
	Sludge Testing	1	Annually	1	\$ 375.00	\$ 375	
	BOD	1	Weekly	52	\$ 16.00	\$ 832	
Bent Creek	Total Suspended Solids (TSS)	1	Weekly	52	\$ 9.00	\$ 468	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 16.00	\$ 832	
	Fecal Coliform	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Nitrogen (NN/TKN)	2	Annually	2	\$ 45.00	\$ 90	
	Total Phosphorus	2	Annually	2	\$ 22.00	\$ 44	
Brandywine Bay	Effluent: BOD (2/mth)	2	Monthly	24	\$ 26.60	\$ 638	
	Effluent: Fecal Coliform (2/mth)	2	Monthly	24	\$ 20.90	\$ 502	
	Effluent: Ammonia Nitrogen (2/mth)	2	Monthly	24	\$ 19.00	\$ 456	
	Effluent: Nitrate Nitrogen (2/mth)	2	Monthly	24	\$ 19.00	\$ 456	
	Effluent: TSS (2/mth)	2	Monthly	24	\$ 15.20	\$ 365	
	Effluent: Chloride (3/yr)	3	Annually	3	\$ 16.15	\$ 48	
	Effluent: TOC (3/yr)	3	Annually	3	\$ 38.95	\$ 117	
	Effluent: TDS (3/yr)	3	Annually	3	\$ 19.00	\$ 57	
	Influent: Chloride (3/yr)	3	Annually	3	\$ 16.15	\$ 48	
	Influent: TOC (3/yr)	3	Annually	3	\$ 38.95	\$ 117	
	Influent: TDS (3/yr)	3	Annually	3	\$ 19.00	\$ 57	
	Monitoring Wells (6 total - 3/yr) TOC, Chloride, Fecal Coliform, Nitrate Nitrogen, pH, Total Phosphorus, TDS, Static Water Level, Gallons Bailed, Well Depth	18	Annually	18	\$ 142.50	\$ 2,565	
	VOC (Monitoring Wells; 6 total - 1/yr)	6	Annually	6	\$ 105.11	\$ 631	2
	E1 Monitoring Well Sample Collection Fee (3/yr)	3	Annually	3	\$ 360.00	\$ 1,080	1
	Lab (Env Chemists) Sample Pick up fee	2	Monthly	24		\$ -	
	Field Lab Certification Testing (July)	1	Annually	1	\$ 683.29	\$ 683	
	Field Lab Certification Testing (Sept) Low level TRC only	1	Annually	1	\$ 170.10	\$ 170	
	Sludge Testing (for land application)	1	Annually	1	\$ 375.00	\$ 375	
Carolina Pines	BOD	1	Weekly	52	\$ 26.60	\$ 1,383	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.20	\$ 790	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Total Nitrogen (NN/TKN)	1	Weekly	52	\$ 42.75	\$ 2,223	
	Total Phosphorus	1	Weekly	52	\$ 23.75	\$ 1,235	
	Enterococci	1	Weekly	52	\$ 33.25	\$ 1,729	
	Sludge Testing (for land application)	1	Annually	1	\$ 375.00	\$ 375	
	BOD	1	Weekly	52	\$ 28.00	\$ 1,456	2
Danby/Lamplighter South Prism lab used instead of K&W (New requirement with permit issued May 2016)	Total Suspended Solids (TSS)	1	Weekly	52	\$ 11.00	\$ 572	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 28.00	\$ 1,456	
	Fecal Coliform	0	Weekly	0	\$ 25.00	\$ -	
	E. Coli	2	Weekly	104	\$ 55.00	\$ 5,720	
	Total Phosphorus (permit change from 1/wk to 1/mth)	1	Monthly	12	\$ 28.00	\$ 336	
	Lab (Prism) Environmental Fee for Sample Disposal	1	Weekly	52	\$ 3.00	\$ 156	
	Field Lab Certification (SC)	1	Annually	1	\$ 395.64	\$ 396	
	Instream Biological Assessment	1	Every 5 yrs	0.2	\$ 1,680.00	\$ 336	
	BOD	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 12.00	\$ 624	
Hemby	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform (Effluent, Upstream & Downstream)	3	Weekly	156	\$ 20.00	\$ 3,120	
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4	\$ 52.00	\$ 208	

Sewer Testing Summary for Current Rates

	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
Sludge testing no longer required.	Total Phosphorus (Qtrly)	4	Annually	4	\$ 26.00	\$ 104	
	Sludge Testing (for land application)	0	Every 3 yrs	0.00	\$ 704.00	\$ -	
	Field Lab Certification Testing	1	Annually	1	\$ 395.64	\$ 396	
Hestron Park	Effluent: BOD (1/mth)	1	Monthly	12	\$ 26.60	\$ 319	
	Effluent: Fecal Coliform (1/mth)	1	Monthly	12	\$ 20.90	\$ 251	
	Effluent: Ammonia Nitrogen (1/mth)	1	Monthly	12	\$ 19.00	\$ 228	
	Effluent: Nitrate Nitrogen (1/mth)	1	Monthly	12	\$ 19.00	\$ 228	
	Effluent: TSS (1/mth)	1	Monthly	12	\$ 15.20	\$ 182	
	Effluent: TDS (3/yr)	3	Annually	36	\$ 19.00	\$ 684	
	Effluent: Chloride (3/yr)	3	Annually	36	\$ 16.15	\$ 581	
	Influent: TDS (3/yr)	3	Annually	3	\$ 19.00	\$ 57	
	Influent: Chloride (3/yr)	3	Annually	3	\$ 16.15	\$ 48	
	Monitoring Wells (5 total - 3/yr) TOC, Chloride, Fecal Coliform, Nitrate Nitrogen, pH, Total Phosphorus, TDS, Static Water Level, Gallons Bailed, Well Depth, Ammonia Nitrogen (Mar, Jul, Nov)	15	Annually	15	\$ 161.50	\$ 2,423	
	VOC (Monitoring wells; 5 total - 1/yr November)	5	Annually	5	\$ 105.11	\$ 526	2
	E1 Monitoring Well Sample Collection Fee (3/yr)	3	Annually	3	\$ 360.00	\$ 1,080	1
	Sludge Testing (for land application)	1	Annually	1	\$ 375.00	\$ 375	
	Lab (Env Chemists) Sample Pick up fee	1	Monthly	12		\$ -	
Hound Ears	BOD	1	Weekly	52	\$ 16.00	\$ 832	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 9.60	\$ 499	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 14.40	\$ 749	
	Fecal Coliform	1	Weekly	52	\$ 13.60	\$ 707	
	Oil and Grease (2/mth)	2	Monthly	24	\$ 35.00	\$ 840	
	Total Kjeldahl Nitrogen (TKN)	2	Annually	2	\$ 44.00	\$ 88	
	Total Phosphorus	2	Annually	2	\$ 35.00	\$ 70	
Kings Grant (Raleigh)	BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.00	\$ 780	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform	1	Weekly	52	\$ 25.00	\$ 1,300	
	Total Nitrogen (NN/TKN)	1	Weekly	52	\$ 41.00	\$ 2,132	
	Total Phosphorus	2	Monthly	24	\$ 19.00	\$ 456	
	Chronic Toxicity (Qtrly)	4	Annually	4	\$ 385.00	\$ 1,540	1
Olde Point	Sludge Testing (for land application)	1	Annually	1	\$ 1,953.34	\$ 1,953	
	Effluent: BOD (2/mth Apr-Oct)	2	Monthly	14	\$ 25.00	\$ 350	
	Effluent: BOD (1/mth Nov-Mar)	1	Monthly	5	\$ 25.00	\$ 125	
	Effluent: TSS (2/mth Apr-Oct)	2	Monthly	14	\$ 20.00	\$ 280	
	Effluent: TSS (1/mth Nov-Mar)	1	Monthly	5	\$ 20.00	\$ 100	
	Effluent: Ammonia Nitrogen (2/mth Apr-Oct)	2	Monthly	14	\$ 20.00	\$ 280	
	Effluent: Ammonia Nitrogen (1/mth Nov-Mar)	1	Monthly	5	\$ 20.00	\$ 100	
	Effluent: Fecal Coliform (2/mth Apr-Oct)	2	Monthly	14	\$ 25.00	\$ 350	
	Effluent: Fecal Coliform (1/mth Nov-Mar)	1	Monthly	5	\$ 25.00	\$ 125	
	Effluent: Chloride (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Effluent: Nitrate Nitrogen (3/yr)	3	Annually	3	\$ 25.00	\$ 75	
	Effluent: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Effluent: TOC (3/yr)	3	Annually	3	\$ 35.00	\$ 105	
	Influent: Chloride (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Influent: Nitrate Nitrogen (3/yr)	3	Annually	3	\$ 25.00	\$ 75	
	Influent: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Influent: TOC (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Influent: Enterococci (3/yr)	3	Annually	3	\$ 40.00	\$ 120	

Sewer Testing Summary for Current Rates

	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
Olde Point	Monitoring Wells (3 total - 3/yr) Depth, Gallons, Temp, pH, Color, Odor, TDS, Chloride, Orthophosphate, TOC, Fecal Coliform, Nitrate Nitrogen, Ammonia Nitrogen	9	Annually	9	\$ 270.00	\$ 2,430	
	VOC (Monitoring wells; 3 total - 1/yr)	3	Annually	3	\$ 110.00	\$ 330	
	Lab (Env Chemists) Sample Pick up fee (2/mth Apr-Oct)	2	Monthly	14	\$ 10.00	\$ 140	
	Lab (Env Chemists) Sample Pick up fee (1/mth Nov-Mar)	1	Monthly	5	\$ 10.00	\$ 50	
	Sludge Testing (for land application)	1	Annually	1	\$ 500.00	\$ 500	
The Harbour/The Point (3 Drinking water discharges)	Chloride (1/mth per discharge)	3	Monthly	36	\$ 19.80	\$ 713	
	Lead (1/mth per discharge)	3	Monthly	36	\$ 11.00	\$ 396	
Sep 2017: Lab analyzed sampling for Salinity and Conductivity in accordance with permit requirements Lab courier fee for Salinity & Conductivity	Manganese (1/mth per discharge)	3	Monthly	36	\$ 11.00	\$ 396	
	Turbidity (1/mth per discharge)	3	Monthly	36	\$ 19.80	\$ 713	
	Salinity (1/mth per discharge)	3	Monthly	36	\$ 19.00	\$ 684	
	Conductivity (1/mth per discharge)	3	Monthly	36	\$ 18.00	\$ 648	
	Courier fee (1/mth per discharge)	3	Monthly	36	\$ 15.00	\$ 540	
	TDS (2/mth per discharge)	6	Monthly	72	\$ 11.00	\$ 792	
	TSS (2/mth per discharge)	6	Monthly	72	\$ 11.00	\$ 792	
	Processing & Disposal Fee (2/month per discharge)	6	Monthly	72	\$ 3.00	\$ 216	
	Copper (1/qtr per discharge)	12	Annually	12	\$ 22.00	\$ 264	
	Iron (1/qtr per discharge)	12	Annually	12	\$ 22.00	\$ 264	
	Zinc (1/qtr per discharge)	12	Annually	12	\$ 11.00	\$ 132	
	Chronic Toxicity (1/qtr per discharge) (cost includes \$50/sample courier fee)	12	Annually	12	\$ 484.50	\$ 5,814	
	Hardness (1/mth per discharge)	3	Monthly	36	\$ 14.30	\$ 515	
	Ammonia (1/mth Well #1&2 discharge only)	1	Monthly	12	\$ 28.00	\$ 336	
Nov 2018 permit change Nov 2018 permit change Queens Harbor	BOD	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 12.00	\$ 624	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4	\$ 52.00	\$ 208	
	Total Phosphorus (Qtrly)	4	Annually	4	\$ 26.00	\$ 104	
	Sample Pick-up Fee (Weekly)	1	Weekly	52	\$ 15.00	\$ 780	
Regalwood	BOD	3	Weekly	156	\$ 1,300.00	\$ 15,600	
	Total Suspended Solids (TSS)	3	Weekly	156			
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52			
	Enterococci	3	Weekly	156			
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4			
	Total Phosphorus	1	Weekly	52			
	Sludge Testing (for land application)	1	Annually	1	\$ 375.00	\$ 375	
River Pointe Estates	BOD	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 12.00	\$ 624	
	Ammonia Nitrogen (NH ₃ as N)	2	Monthly	24	\$ 19.00	\$ 456	
	Fecal Coliform	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4	\$ 52.00	\$ 208	
	Total Phosphorus (Qtrly)	4	Annually	4	\$ 26.00	\$ 104	
	Sample Pick-up Fee (Weekly)	0	Weekly	0	\$ 15.00	\$ -	
See Queens Harbor Saddlewood	BOD	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 12.00	\$ 624	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform	1	Weekly	52	\$ 20.00	\$ 1,040	
	Sample Pick-up Fee (Weekly)	0	Weekly	0	\$ 15.00	\$ -	
See Queens Harbor Sugar Mountain	BOD	3	Weekly	156	\$ 16.00	\$ 2,496	
	Total Suspended Solids (TSS)	3	Weekly	156	\$ 9.60	\$ 1,498	
	Ammonia Nitrogen (NH ₃ as N)	3	Weekly	156	\$ 14.40	\$ 2,246	

Sewer Testing Summary for Current Rates

	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
	Fecal Coliform	3	Weekly	156	\$ 13.60	\$ 2,122	
	Total Nitrogen (NN/TKN) (2/yr)	2	Annually	2	\$ 44.00	\$ 88	
	Total Phosphorus (2/yr)	2	Annually	2	\$ 35.00	\$ 70	
	Chronic Toxicity (Qtrly)	4	Annually	4	\$ 375.00	\$ 1,500	
	Field Lab Certification Testing	1	Annually	1	\$ 349.45	\$ 349	
White Oak Est	BOD	3	Weekly	156	\$ 1,300.00	\$ 15,600	
	Total Suspended Solids (TSS)	3	Weekly	156			
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52			
	Enterococci	3	Weekly	156			
	Total Nitrogen (NN/TKN) (Qtrly)	4	Annually	4			
	Total Phosphorus	1	Weekly	52			
	Sludge Testing (for land application)	1	Annually	1	\$ 375.00	\$ 375	
Willowbrook	BOD	1	Weekly	52	\$ 25.00	\$ 1,300	2
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 15.00	\$ 780	2
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 15.00	\$ 780	2
	Fecal Coliform	1	Weekly	52	\$ 25.00	\$ 1,300	2
	Total Nitrogen (NN/TKN)	1	Weekly	52	\$ 41.00	\$ 2,132	2
	Total Phosphorus	2	Monthly	24	\$ 19.00	\$ 456	2
	Chronic Toxicity (Qtrly)	4	Annually	4	\$ 385.00	\$ 1,540	1
	Gross Alpha (Qtrly)	4	Annually	4	\$ 25.00	\$ 100	
	Combined Radium (Qtrly)	4	Annually	4	\$ 132.00	\$ 528	
	Gross Beta (Qtrly)	4	Annually	4	\$ 25.00	\$ 100	
	Uranium (Qtrly)	4	Annually	4	\$ 15.00	\$ 60	
	Sludge Testing (for land application)	1	Annually	1	\$ 1,953.34	\$ 1,953	
Wolf Laurel	BOD	1	Weekly	52	\$ 16.00	\$ 832	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 9.60	\$ 499	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 14.40	\$ 749	
	Fecal Coliform	1	Weekly	52	\$ 13.60	\$ 707	
	Turbidity (Effluent)	1	Weekly	52	\$ 10.00	\$ 520	
	Turbidity (upstream)	1	Weekly	52	\$ 10.00	\$ 520	
Jan 2018: began upstream & downstream turbidity sampling to meet permit requirements	Turbidity (downstream)	1	Weekly	52	\$ 10.00	\$ 520	
Nags Head	Effluent: BOD (1/wk), May-Aug	1	Weekly	16	\$ 25.00	\$ 400	
	Effluent: BOD (2/mth) Sep-Apr	2	Monthly	16	\$ 25.00	\$ 400	
	Effluent: Fecal Coliform (1/wk) May-Aug	1	Weekly	16	\$ 25.00	\$ 400	
	Effluent: Fecal Coliform (2/mth) Sep-Apr	2	Monthly	16	\$ 25.00	\$ 400	
	Effluent: Ammonia Nitrogen (1/wk) May-Aug	1	Weekly	16	\$ 20.00	\$ 320	
	Effluent: Ammonia Nitrogen (2/mth) Sep-Apr	2	Monthly	16	\$ 20.00	\$ 320	
	Effluent: Total Nitrogen (NN/TKN) (1/wk) May-Aug	1	Weekly	16	\$ 55.00	\$ 880	
	Effluent: Total Nitrogen (NN/TKN) (2/mth) Sep-Apr	2	Monthly	16	\$ 55.00	\$ 880	
	Effluent: TSS (1/wk) May-Aug	1	Weekly	16	\$ 20.00	\$ 320	
	Effluent: TSS (2/mth) Sep-Apr	2	Monthly	16	\$ 20.00	\$ 320	
	Effluent: Total Phosphorus (1/wk) May-Aug	1	Weekly	16	\$ 25.00	\$ 400	
	Effluent: Total Phosphorus (2/mth) Sep-Apr	2	Monthly	16	\$ 25.00	\$ 400	
	Effluent: Chloride (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Effluent: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Effluent: TOC (3/yr)	3	Annually	3	\$ 35.00	\$ 105	
	Influent: Chlorides (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Influent: TDS (3/yr)	3	Annually	3	\$ 20.00	\$ 60	
	Influent: TOC (3/yr)	3	Annually	3	\$ 35.00	\$ 105	
	Influent: Nitrate Nitrogen (3/yr)	3	Annually	3	\$ 25.00	\$ 75	
	Monitoring Wells (4 total - 3/yr) Color, Depth, Ammonia Nitrogen, Gallons, Odor, TOC, TDS, Chloride, fecal Coliform, Nitrate Nitrogen, Temp, pH, Total Phosphorus (added 2019)	12	Annually	12	\$ 250.00	\$ 3,000	

Sewer Testing Summary for Current Rates

	Testing Costs 10	# of Samples Required	Frequency	Tests Per Year	Cost Per Test	Annual Cost	Public Staff Adj. (See Notes)
	Wastewater Analysis						
	VOC (4 Monitoring wells - 1/yr)	4	Annually	4	\$ 150.00	\$ 600	
	Sludge Testing (for land application)	1	Annually	1	\$ 1,700.00	\$ 1,700	
Corolla Light	*Plant #1 Effluent: BOD, Fecal Coliform, Ammonia Nitrogen, Total Nitrogen, Total Phosphorus, TSS (1/week May-Aug)	1	Weekly	16	\$ 165.00	\$ 2,640	
Monitoring revisions per permit issued November 2016:	**Plant #1 Effluent: BOD, Fecal Coliform, Ammonia Nitrogen, Total Nitrogen, Total Phosphorus, TSS (2/month Sept-April)	2	Monthly	16	\$ 165.00	\$ 2,640	
*From 1/wk May-Sept to 1/wk May-Aug Total Nitrogen & Total Phosphorus added.	***Plant #1 Effluent: TOC, Chlorides, TDS (3/yr)	3	Annually	3	\$ 60.00	\$ 180	
** From 1/mth Oct-Apr to 2/mth Sep-Apr Total Nitrogen & Total Phosphorus added.	Plant #1 Influent: TOC, Chlorides, Nitrate Nitrogen, TDS (3/yr) (decrease from 4/yr. Added Nitrates, dropped Total Phosphorus)	3	Annually	3	\$ 85.00	\$ 255	
*** From 4/yr to 3/yr. Less Total Phosphorus (see above)	Monitoring Wells (Plant #1) (7 total - 3/yr) Color, Depth, Gallons, TDS, Temperature, Chloride, pH, TOC, Ammonia Nitrogen, Fecal Coliform, Odor (decrease from 4/yr)	21	Annually	21	\$ 240.00	\$ 5,040	
	VOC (Monitoring wells; Plant #1; 7 total - 1/yr)	7	Annually	7	\$ 110.00	\$ 770	
	Plant #1 Sludge Testing (for land application)	1	Annually	1	\$ 500.00	\$ 500	
Plant #2 no longer in service	Plant #2 Effluent & Influent: BOD (2), TSS (2), Fecal Coliform (1), (2/month, June-Sept)	0	Annually	0	\$ 90.00	\$ -	
Plant #2 monitoring wells abandoned.	Monitoring Wells (Plant #2) (5 total - 2/yr) Color, Depth, Gallons, TDS, Temperature, Chloride, pH, TOC, Ammonia Nitrogen, Total Coliforms, Nitrate Nitrogen, Orthophosphate, TSS	0	Annually	0	\$ 225.00	\$ -	
	Monitoring Wells (Plant #2) (5 total - 1/yr November only) Color, Depth, Gallons, TDS, Temperature, Chloride, pH, TOC, Ammonia Nitrogen, Total Coliforms, Nitrate Nitrogen, Orthophosphate, TSS, TOX	0	Annually	0	\$ 335.00	\$ -	
Plant #2 no longer in service	Plant #2 Sludge Testing (for land application)	0	Annually	0	\$ 500.00	\$ -	
Monterey Shores	*Effluent: BOD, Ammonia Nitrogen, Total Nitrogen, Total Phosphorus, TSS, Fecal Coliform	1	Weekly	52	\$ -	\$ -	
	*Effluent: BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	*Effluent: Ammonia Nitrogen	1	Weekly	52	\$ 20.00	\$ 1,040	
	*Effluent: Total Nitrogen	1	Weekly	52	\$ 55.00	\$ 2,860	
	*Effluent: Total Phosphorus	1	Weekly	52	\$ 25.00	\$ 1,300	
	*Effluent: TSS	1	Weekly	52	\$ 20.00	\$ 1,040	
	*Effluent: Fecal Coliform	1	Weekly	52	\$ 25.00	\$ 1,300	
	Effluent: Chlorides, TDS	3	Annually	3	\$ -	\$ -	
	Effluent: Chlorides	3	Annually	3	\$ 20.00	\$ 60	
	Effluent: TDS	3	Annually	3	\$ 20.00	\$ 60	
May 12, 2016 Permit revision	Influent: TOC, TDS, Chlorides, Nitrate Nitrogen	3	Annually	3	\$ -	\$ -	
*Monitoring decrease from 3/wk to 1/wk (Fecal was already 1/wk)	Influent: TOC	3	Annually	3	\$ 35.00	\$ 105	
	Influent: TDS	3	Annually	3	\$ 20.00	\$ 60	
	Influent: Chlorides	3	Annually	3	\$ 20.00	\$ 60	
	Influent: Nitrate Nitrogen	3	Annually	3	\$ 25.00	\$ 75	
	GWLS Effluent: BOD, Ammonia Nitrogen, Fecal Coliform, Total Nitrogen, Total Phosphorus	1	Weekly	52	\$ -	\$ -	
	GWLS Effluent: BOD	1	Weekly	52	\$ 25.00	\$ 1,300	
	GWLS Effluent: Ammonia Nitrogen	1	Weekly	52	\$ 20.00	\$ 1,040	
	GWLS Effluent: Fecal Coliform	1	Weekly	52	\$ 25.00	\$ 1,300	
	GWLS Effluent: Total Nitrogen	1	Weekly	52	\$ 55.00	\$ 2,860	
	GWLS Effluent: Total Phosphorus	1	Weekly	52	\$ 25.00	\$ 1,300	
Monterey Shores	GWLS Effluent: TDS, Chlorides, TOC	3	Annually	3	\$ -	\$ -	
	GWLS Effluent: TDS	3	Annually	3	\$ 20.00	\$ 60	
	GWLS Effluent: Chlorides	3	Annually	3	\$ 20.00	\$ 60	
	GWLS Effluent: TOC	3	Annually	3	\$ 35.00	\$ 105	
VOC monitoring no longer required	GWLS Effluent: VOC	0	Annually	0	\$ 110.00	\$ -	

Sewer Testing Summary for Current Rates

	Testing Costs 10			Tests	Cost	Annual	Public Staff Adj.	
	Wastewater Analysis	# of Samples Required	Frequency	Per Year	Per Test	Cost	(See Notes)	
	Monitoring Wells (2 total - 3 per yr) Color, Depth, Ammonia Nitrogen, Gallons, TDS, Temp, Chloride, pH, Total Phosphorus, TOC, Nitrate Nitrogen, Fecal Coliform	6	Annually	6	\$ 250.00	\$ 1,500		
	VOC (Monitoring wells; Plant #1; 2 total - 1/yr)	2	Annually	2	\$ 110.00	\$ 220		
	Sludge testing (for land application)	1	Annually	1	\$ 500.00	\$ 500		
	BOD	1	Weekly	52	\$ 235.00			
Total Suspended Solids (TSS)	1	Weekly	52	\$ 2,820				
Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52					
Fecal Coliform	1	Weekly	52					
Fairfield Sapphire Valley	Total Nitrogen (NN/TKN)	2	Annually	2	\$ 45.00	\$ 90		
	Total Phosphorus	2	Annually	2	\$ 25.00	\$ 50		
	BOD	3	Weekly	156	\$ 25.00	\$ 3,900		
	Total Suspended Solids (TSS)	3	Weekly	156	\$ 15.00	\$ 2,340		
Carolina Trace	Ammonia Nitrogen (NH ₃ as N)	3	Weekly	156	\$ 19.00	\$ 2,964		
	Fecal Coliform (effluent)	3	Weekly	156	\$ 25.00	\$ 3,900		
	Fecal Coliform (upstream/downstream) Sampling performed by others							
	*Total Nitrogen (NN/TKN)	1	Monthly	12	\$ 41.00	\$ 492		
*1/10/19 letter from NCDWR increased monitoring from quarterly to monthly for Total Nitrogen (NN/TKN) and Total Phosphorus - from Apr 2019 through Dec 2020. Monitoring will return to quarterly Jan 2021.	*Total Phosphorus	1	Monthly	12	\$ 19.00	\$ 228		
	Chronic Toxicity (Qtrly)	4	Annually	4	\$ 385.00	\$ 1,540	1	
	Field Lab Certification Testing	1	Annually	1	\$ 506.37	\$ 506		
	Connestee Falls	Plant #1: BOD (1/wk)	1	Weekly	52	\$ 16.00	\$ 832	
	Plant #1: TSS (1/wk)	1	Weekly	52	\$ 9.00	\$ 468		
	Plant #1: Fecal Coliform (1/wk)	1	Weekly	52	\$ 20.00	\$ 1,040		
	Plant #1: Ammonia Nitrogen (2/mth)	2	Monthly	24	\$ 16.00	\$ 384		
	Plant #1: Total Phosphorus (2/yr)	2	Annually	2	\$ 22.00	\$ 44		
	Plant #1: Total Nitrogen (NN/TKN) (2/yr)	2	Annually	2	\$ 45.00	\$ 90		
	Plant #2: BOD (1/wk)	1	Weekly	52	\$ 16.00	\$ 832		
	Plant #2: TSS (1/wk)	1	Weekly	52	\$ 9.00	\$ 468		
	Plant #2: Fecal Coliform (1/wk)	1	Weekly	52	\$ 20.00	\$ 1,040		
	Plant #2: Ammonia Nitrogen (2/mth)	2	Monthly	24	\$ 16.00	\$ 384		
	Elk River	BOD	1	Weekly	52	\$ 16.00	\$ 832	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 9.60	\$ 499		
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 14.40	\$ 749		
Fecal Coliform	1	Weekly	52	\$ 13.60	\$ 707			
Total Nitrogen (NN/TKN)	2	Annually	2	\$ 44.00	\$ 88			
Total Phosphorus	2	Annually	2	\$ 35.00	\$ 70			

Total Uniform Sewer \$ 282,700

Sewer Testing Summary for Current Rates

	Testing Costs 10			Tests	Cost	Annual	Public Staff Adj.
	Wastewater Analysis	# of Samples Required	Frequency	Per Year	Per Test	Cost	(See Notes)
Fairfield Harbour	BOD	3	Weekly	156	\$ 27.16	\$ 4,237	
	Total Suspended Solids (TSS)	3	Weekly	156	\$ 15.52	\$ 2,421	
	Ammonia Nitrogen (NH ₃ as N)	3	Weekly	156	\$ 19.40	\$ 3,026	
	Enterococci	3	Weekly	156	\$ 33.95	\$ 5,296	
	Total Nitrogen (NN/TKN)	1	Weekly	52	\$ 43.65	\$ 2,270	
	Total Phosphorus (Qtrly)	1	Weekly	52	\$ 24.25	\$ 1,261	
	Sludge Testing (for land application)	1	Annual	1	\$ 375.00	\$ 375	
				Total Fairfield Harbour		\$ 18,511	
Bradfield Farms	BOD	1	Weekly	52	\$ 20.00	\$ 1,040	
	Total Suspended Solids (TSS)	1	Weekly	52	\$ 12.00	\$ 624	
	Ammonia Nitrogen (NH ₃ as N)	1	Weekly	52	\$ 19.00	\$ 988	
	Fecal Coliform (Eff, U,D)	3	Weekly	156	\$ 20.00	\$ 3,120	
	Total Nitrogen (NN/TKN)	4	Annual	4	\$ 52.00	\$ 208	
	Total Phosphorus	4	Annual	4	\$ 26.00	\$ 104	
					Total 191	\$ 6,084	

Total BF/FH/TC Sewer \$ 24,595

Notes:

1. Cost per Test updated per documentation provided by Company Staff.
2. Cost per Test updated per most recent Price Sheet for the laboratory provided by the Company.
3. Exhibit adapted from W-10, Schedule 27 provided by the Company.

Sludge Hauling

CWSNC - Uniform Sewer

		Sub 336	Sub 344		Sub 356	Sub 360	Sub 364	
Bus.		2011/12	2014	2015	2016	2017	2018/19	Adjusted
Unit	Service Area	Amount	Amount	Amount	Amount	Amount	Amount	average
182101	Kynwood Abington	15,056	15,712	24,436	14,436	22,333	24,325	20,365
102	Brandybay Wine/Spooners Cr.	10,558	13,500	14,580	9,030	28,380	9,180	15,530
107	Sugar Mountain	14,455	14,560	10,640	15,120	18,410	18,470	17,333
110	Saddlewood	1,120	1,996	432	756	5,262	1,290	2,436
115	Ashley Hills	19,273	44,013	43,446	49,313	52,643	21,393	41,116
117	Corolla Light	18,525	13,500	17,450	7,390	13,350	13,950	11,563
120	Hestron Park	6,570	3,780	4,320	3,090	4,320	5,400	4,270
123	Hounds Ear	2,240	-	-	2,800	500	1,435	1,578
126	Willowbrook	5,736	5,856	9,150	9,516	9,846	8,767	9,376
130	Wolf Laurel	720	920	3,920	3,000	1,080	9,475	4,518
136	Kings Grant - Raleigh	4,312	2,186	5,876	1,830	2,562	2,916	2,436
138	Bent Creek	9,470	12,950	12,630	30,410	14,000	13,325	19,245
149	Bear Paw Resort		-	-	200	4,500	-	1,567
155	Kings Grant Charlotte	9,572	-	-	370	-	-	123
160	College Park	2,135	1,890	-	-	-	-	-
173	Monteray Shores	27,900	35,815	32,850	28,650	51,850	50,730	43,743
176	Olde Point	1,033	1,575	1,960	875	1,575	2,205	1,552
178	Independent/Hemby	17,935	11,687	22,045	22,121	28,162	26,198	25,494
190	Danby	41,116	25,797	17,819	31,190	40,422	33,438	35,017
197	Queens harbor	2,120	16,153	4,050	6,048	3,100	1,375	3,508
209	Nags Head	22,000	29,800	40,065	46,120	15,845	32,170	31,378
217	Regalwood	20,391	9,720	10,260	9,180	9,270	7,020	8,490
218	White Oak Estates	15,450	21,450	22,680	23,250	25,380	16,200	21,610
233	Belvedere Middle Point	13,170	9,981	18,130	25,166	24,570	18,750	22,829
236	Riverpointe	4,345	9,652	3,348	5,805	5,373	7,102	6,093
241	Carolina Pines	3,922	11,340	12,960	12,960	11,430	4,170	9,520
243	Nero	6,055	6,605	5,124	3,680	4,372	6,557	4,870
2247	Ridges at Mountain Harbor		-	-	555	-	-	185
181101	Elk River	n/a	5,315	10,080	10,018	5,160	4,755	6,644
183102	Sapphire Valley (See Note 1)	n/a	10,099	4,665	5,829	17,377	20,876	14,694
183109	Fairfield Mountain	n/a	425	-	-	-	-	-
183115	Ashley Hills North	n/a	n/a	n/a	n/a	n/a	41,614	41,614
187101	Carolina Trace	n/a	47,239	38,641	44,796	41,732	34,962	40,497
188101	Transylvania	n/a	14,960	15,050	19,600	17,325	16,750	17,892
Total CWSNC - Uniform Sewer			\$398,477	\$406,607	\$443,104	\$480,129	\$454,798	\$ 487,086

Carolina Water Service, Inc. of North Carolina

Darden

Docket No. W-354, Sub 364

Exhibit No. 3

Test year Ending March 31, 2019

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Sludge Hauling

Bradfield Farms/Fairfield Harbor/Turtle Cove

Bus.	Unit	Service Area	Sub 336	Sub 344	2015	Sub 356	Sub 360	Sub 364	Adjusted average
			2011/12	2014		2016	2017	2018/19	
			Amount	Amount	Amount	Amount	Amount	Amount	
	191101	Bradfield Farms	n/a	29,014	33,122	31,037	57,935	38,299	42,424
	183106	Fairfield Harbor	n/a	19,844	24,664	25,067	22,498	31,410	26,325
Total BF/FH/TC				\$ 48,858	\$ 57,786	\$ 56,104	\$ 80,433	\$ 69,709	\$ 68,749

Notes:

- Sub 364 Sapphire Valley sludge hauling expense of \$39,506 included \$31,050 for pond cleaning. CWS states the cleaning is to occur every 2-3 years. The pond cleaning cost was annualized over 2.5 years and adjusted to \$12,420/year. This adjustment is reflected in the reduced annualized sludge hauling expense of \$20,876.

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Nov 04 2019

Purchased Water Adjustment for Current Rates

Account No.	Service Area	Bulk Provider	Type of	Total	Total	Loss (gallons)	Acutal Loss (%)	P.S. ¹	Loss	Sold Plus	Usage	Avg Annual	Current Base Rate	Annual	Annual	Total Expense	
			Purchase System	Gallons Purchased	Gallons Sold			Allowable Loss (%)	at 15% or 20% (gallons)	15% or 20% loss (gallons)	Rate (per k-gal)	Usage Rate Expense		Expense	CIP Expense		
182104	The Pointe	Town of Mooresville	Partial	47,862,300	200,327,005		-				\$3.72	\$178,048	\$1,137.60	\$13,651	\$	191,698.96	
182114	Zemosa Acres	City of Concord	Full	18,666,000	11,728,736	6,937,264	37.17	15	2,069,777	13,798,513	\$5.41	\$74,650	\$51.11	\$613	\$	75,263.28	
182125	Willow Brook	Johnston County	Partial	5,172,840	5,662,879		-				\$2.65	\$13,708	\$0.00		\$	13,708.03	
182132	Tanglewood	PWC City of Fayetteville	Partial	11,199,270	10,471,417		-				\$5.43	\$60,812	\$696.10	\$8,353	\$	69,165.24	
182133	White Oak	Johnston County	Full	29,171,420	26,283,097	2,888,323	9.90				\$2.65	\$77,304	\$0.00		\$	77,304.26	
182137	Bent Creek	City of Asheville	Partial	9,219,100	11,700,286		-				\$2.96	\$27,289	\$6.34	\$19	\$4,092	\$	31,399.56
182141	Whispering Pines	Town of Southern Pines	Full	125,703,812	94,050,995	31,652,817	25.18	15	16,597,234	110,648,229	\$3.28	\$362,926	\$0.00		\$	362,926.19	
182152	Carolina Forest	Montgomery County	Full	13,611,260	6,660,122	6,951,138	51.07	15	1,175,316	7,835,438	\$3.19	\$24,995	\$0.00	\$0	\$	24,995.05	
182153	Woodrun	Montgomery County	Full	24,908,300	18,284,751	6,623,549	26.59	15	3,226,721	21,511,472	\$3.19	\$68,622	\$0.00	\$0	\$	68,621.59	
182154	Kings Grant	City of Gastonia	Partial	1,014,700	8,385,730		-				\$6.05	\$6,139	\$149.05	\$1,789	\$	7,927.54	
182170	Yorktown	City of Winston-Salem	Full	3,643,433	3,544,045	99,388	2.73				\$5.79	\$21,095	\$226.62	\$2,719	\$	23,814.92	
182189	Danby	LCWSD Lancaster County	Partial	29,561,920	64,544,138		-				\$4.10	\$121,204	\$485.00	\$5,820	\$	127,023.87	
182214	High Vista Estates	City of Hendersonville	Full	16,006,800	11,320,518	4,686,282	29.28	20	2,830,130	14,150,648	\$3.40	\$48,112	\$47.95	\$575	\$	48,687.60	
182235	Riverpointe	City of Charlotte	Full	15,908,464	14,901,410	1,007,054	6.33				\$6.48	\$103,087	\$38.30	\$460	\$	103,546.45	
187100	Carolina Trace	City of Sanford	Full	72,286,989	65,901,224	6,385,765	8.83				\$2.21	\$159,754	\$0.00		\$	159,754.25	
196100	River Bend	Town of Franklin	Full	6,867,120	5,872,416	994,704	14.49				\$7.50	\$51,503	\$663.50	\$7,962	\$	59,465.40	
													Total Purchase Water Expense:		\$	1,445,302.16	

Notes:

1. The Public Staff determines an appropriate amount of water loss based on system specific criteria, such as geographical location, unusual circumstances, etc. For the systems shown above, the standard allowable water loss is 20% for systems located in the mountain region and 15% for systems not located in the mountain region.

Carolina Water Service, Inc. of North Carolina
Docket No. W-354, Sub 364
Test Year Ending March 31, 2019

Darden
Exhibit No. 5
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Purchased Sewer Summary

Acct #	Service Area	Bulk Provider	Total Gallons Purchased	Usage Rate (per k-gal)	Avg Annual Usage Rate Expense	Current Base Rate	Annual Base Rate Expense	Admin Fee	Annual Admin Fee	Total Expense
182160	College Park	Town of Dallas	3,371,000	\$ 7.33	\$ 24,709.43	\$ -	\$ -	\$ -	\$ -	\$ 24,709.43
182155	Kings Grant	Two Rivers Utilities	9,081,000	\$ 3.98	\$ 36,142.38	\$ 335.40	\$ 4,024.80	\$ -	\$ -	\$ 40,167.18
183109	Fairfield Mt. ¹	Town of Lake Lure								\$ 401,082.00
182140	Mt. Carmel	MSD of Buncombe Co.	15,332,781	\$ 6.18	\$ 94,756.59	\$ 7.11	\$ 33,786.72	\$ 2.40	\$ 14.40	\$ 128,557.71
182247	Ridges at Mtn. Har. ²	Clay Co. Water & Sewer Dist.								\$ 9,727.44
182134	White Oak	Johnston County	24,074,900	\$ 5.57	\$ 134,097.19	\$ 200.00	\$ 2,400.00			\$ 136,497.19
Total Purchased Sewer: \$										740,740.95

1. Fairfield Mountain has a Flat-Rate of \$66,847 billed bi-monthly
2. Ridges at Mountain Harbour has a Flat-Rate of \$1,621.24 billed bi-monthly