THE NINTH BIENNIAL UPDATE TO THE FIVE-YEAR PLAN

For

THE DARLINGTON WATER SUPPLY SERVICE DISTRICT

HARFORD COUNTY, MARYLAND

Prepared by

MARYLAND ENVIRONMENTAL SERVICE

October 2022

I. BACKGROUND

A. The Darlington Water System

The Darlington Water Supply System (the System) serves the community of Darlington, located in northeastern Harford County, Maryland. The System consists of a water treatment plant and distribution system that was upgraded in 2003 to replace an outdated system that had been operating since the early 1950s. The system provides potable water to parts of the Darlington community that were serviced by the old system as well as some new users. In 1997, the Company's owners, at the request of Harford County, approached the Maryland Environmental Service (MES) and asked MES to form a Service District to provide continuing operation of the System. In 1997 MES formed the Darlington Water Supply Service District (the Service District). The Service District is discussed below in Section II.

The System presently has 105 customer connections including residential units, a school, churches, businesses, a fire station, and a post office. The System's main infrastructure includes two wells; one pump house, one hydropneumatic tank, several thousand linear feet of pipe, and water meters for each connection.

The System is described in the Harford County Water and Sewerage Master Plan (the Master Plan) as a community water system lying outside of the Harford County Development Envelope. As such, the Master Plan states that the Darlington water system is "expected to maintain economically viable and physically reliable resources to serve the existing customers," and that "extensive expansion of these systems is not encouraged; however, minor additions to the customer base may be logical and appropriate." The Master Plan also notes that the System does not provide fire flow protection.

B. The Maryland Environmental Service

The Maryland Environmental Service (MES) is an Independent State agency created by the Maryland General Assembly to provide, among other things, dependable, effective, and efficient water supply services to public and private instrumentalities in compliance with state laws, regulations, and policies governing air, land, and water pollution. The Act giving MES its powers is outlined in the Annotated Code of Maryland, Natural Resources Article, Section 3-101, and subsequent sections.

II. THE SERVICE DISTRICT

On October 23, 1997, MES created the Service District pursuant to its legal authority set forth in the Annotated Code of Maryland, Natural Resources Article, Section 3-106 (see Attachment A) and MES Board of Directors Resolution No. 97-10-1R (see Attachment B). Pursuant to its authority and the Resolution, MES purchased the assets of the Darlington Water Company.

The physical boundaries of the Service District include all properties that were served by the original water system and any individual piece of property, which is within 50 feet of an existing water main. The Service District may over time be modified and enlarged with the appropriate review and approval, but no alteration to the Service District may diminish the level of service rendered to the Service District. MES' goal in establishing the Service District was to maintain the current distribution system configuration and make necessary improvements to allow providing reliable water service to the system customers.

III. THE FIVE-YEAR PLAN

Integral to the establishment of the Service District was the preparation of a Five-Year Plan. The original Five-Year Plan prepared in September 1997 is available for review at the Darlington branch of the Harford County Library and at MES headquarters in Millersville, Maryland. MES is required to review, update, and readopt the Five-Year Plan for the Service District biennially. The Five-Year Plan may be updated and readopted by MES only after at least one public hearing, at which time MES shall take the actions necessary to implement the revised Plan.

This document is the Ninth Biennial Revision of the Five-Year Plan (the Revised Plan) for the Service District. The Revised Plan describes the current status along with any proposed changes needed to continue providing potable water within the Service District while maintaining consistency with Harford County's Water and Sewer Master Plan.

Specifically, the Present Plan updates the current financial status of the System and reiterates the proposed user fee and special assessment, the Capital Improvement Reserve Fund, and the connection fee for new customers, which

were all addressed in the 6th Biennial Update and Revision.

IV. IMPROVEMENTS

A. Completed Improvements to the System

Upon establishment of the Service District in 1997, MES commenced necessary capital improvements to the System as outlined in the original Five-Year Plan. The initial improvements that were completed in 1998 and 1999 increased the overall reliability and performance of the system and included, but were not limited to, the following items:

1. The elimination of confined-space entryways at two well houses to allow safe access to subsurface confined areas.
2. The installation of an emergency alarm system for 24-hour notification to reduce operator response time.
3. Installation of mechanical and electrical equipment, such as an emergency generator, compressors, motors, pressure switches, and flow meters.
4. The relocation of a curbside shut-off valve that was located in an abandoned pit.

In addition to making needed repairs, the routine operation and maintenance of the System involves servicing equipment, checking the System components, keeping records and field logs, sampling and analyzing the water, and generating reports for submission to the Maryland Department of the Environment (MDE).

B. Distribution System Replacement

The water system was originally constructed in the 1950s and as a result, was experiencing frequent water main breaks and equipment malfunctions. Utilizing funding from the Maryland Department of the Environment, the entire water system was replaced with new pipes, valves, and other appurtenances in 2003.

The new distribution system provides improved water pressure and supply and eliminated the problem of “red water” stains caused by deteriorated old distribution system piping. Control and flushing valves were installed to allow isolating sections during flushing operations or when repairs have to be made. Air-relief and pressure-reducing valves were also installed to better regulate the pressure throughout the System.

A hydropneumatic tank was installed that holds a full day supply of water along with an emergency generator to provide backup power during outages. Each customer has a water meter and curb-stop valve.

The total capital cost for the 2003 water treatment plant and distribution system improvements was $1.5 million.

V. EXPENDITURES, REVENUES, AND CHARGES

The Maryland Environmental Service (MES) purchased the assets of the Darlington Water Company in 1997. The system was established as a separate enterprise fund of the Service, with the acquisition cost being funded through a loan of $74,500 from other MES resources. The loan was to be repaid in semi-annual installments over twenty years at an interest rate of 6.85%. The revenues from the project were insufficient to repay the loan and as a result, by December 31, 2010 ,the principal balance of the loan remained at $74,500 with over $50,000 in accrued interest.

In addition to the original loan debt, the Darlington Water System operated at a loss since its acquisition by MES in 1997 for several years. The revenue from user fees had been insufficient to pay for operating expenses. Despite MES' best efforts, the cumulative cash loss had grown and was projected to reach $220,000 by end of June 2011. Combining the cumulative cash debt of $220,000 plus the original $74,500 loan brought the total debt amount to $295,000. As part of a special assessment, a rate increase was needed to pay for these debts. The total debt amount has been reduced to $150,000 as a result of MES forgiving the original loan of $74,500 and through a Harford County Community Development Block Grant of $75,000. This is shown in Table I.

TABLE I

Summary of Outstanding Debt and Proposed Actions

Item		Amount	Proposed Action
1.	Original Purchase Debt	$ 74,500	MES to forgive $74,500 debt
2.	Cumulative Operating Loss (recovered via a Special Assessment)	$220,500	$75,000 paid by Harford Co.
3.	Depreciation Charges	NA	Payments to start in year 2025
	Total	**$295,000**	
	Less	**$ 74,500**	
	Less	**$ 75,000**	
	Reduced Total	**$150,000 (rounded)**	

In 2011 MES revised the rate structure for the customers of the Darlington water system. These new rates were introduced in the last update of this document. These new rates took effect in 2012. Since the new rates were put in place the

system is no longer operating at a loss and as of June 30, 2022, the debt has been reduced by $107,500.

The total invoice billed to the customer each quarter also includes $2.00 for the Sinking Fund reserve which pays for needed repairs or replacement of equipment, wells, water lines, and meters. The fund is not intended to be used for larger capital improvement projects. As of June 30, 2022, there was $13,744 in the Sinking Fund reserve account.

A separate fee of $15.00 is charged quarterly for the Bay Restoration Fund. The Bay Restoration Fund fee is a mandatory State imposed fee paid by all Maryland residents that are connected to a sewer system or served by a septic system. The fee was raised by the State of Maryland from $7.50 to $15.00 in July 2012

The rate increase put in place by MES in 2011 should pay off the $150,000 debt in 15 years. This increase or special assessment was phased in at $6 per quarter ($24 each year). The increase continued until 2016, bringing the fixed amount to $80.10 per quarter per user. The new rate will continue to pay for the annual operating costs and should retire the debt in 2026. The 15-year debt retirement schedule and payment plan out to the year 2026 are shown in Table II.

The rate increase was applied to the “Fixed Base” component of the user rate and is paid by all users. However, the user fee also has a variable charge component which is the amount charged per 1000 gallons of water used. Table II shows the estimated user fee amount based on an “average” amount of water used. Those users that use less water will see user fees lower than what is shown in Table II. This is illustrated in Tables IIIA and IIIB which show the user fees for customers with minimum water use and for those with an average amount of use, respectively. As shown in the tables, customers with minimal water use saw their monthly bill go from $22 up to $32 in five years. The customers that use an average amount of water had their monthly bill go from $35 to $45 in five years. It should be noted that the $ amounts used in Table II for future years are estimates. Dollar amounts have been inserted into the table for years past, where MES has actual data.

TABLE II

Darlington Water System

Debt Retirement Plan with Five Year Phase-In and Reduced Debt*

Year	Year [1]	Actual and Estimated Net Debt Amount at end of Year [2] **	No. of Users	Total Debt Payment per Year	Debt Payment per User per Year	Debt Payment per User per Quarter	Total User Fee per Quarter [3]	Actual and Estimated Total Annual Revenue**
0	2011	$150,000	105	0	$0	$0	$107	$46,400
1	2012	$147,500	105	$2,500	$24	$6	$113	$46,000
2	2013	$145,000	105	$2,500	$24	$6	$113	$48,500
3	2014	$140,000	105	$5,000	$48	$12	$119	$50,400
4	2015	$127,000	105	$10,000	$95	$24	$131	$54,000
5	2016	$117,500	105	$12,500	$119	$30	$137	$50,256
6	2017	$105,000	105	$12,500	$119	$30	$137	$54,488
7	2018	$92,500	105	$12,500	$119	$30	$137	$55,934
8	2019	$80,000	105	$12,500	$119	$30	$137	$53,632
9	2020	$67,500	105	$12,500	$119	$30	$137	$50,465
10	2021	$55,000	105	$12,500	$119	$30	$137	$51,225
11	2022	$42,500	105	$12,500	$119	$30	$137	$57,758
12	2023	$30,000	105	$12,500	$119	$30	$137	$57,500
13	2024	$17,500	105	$12,500	$119	$30	$137	$57,500
14	2025	$5,000	105	$12,500	$119	$30	$137	$57,500
15	2026	$0	105	$5,000	$48	$12	$119	$50,000
(see note 4)								
	TOTAL			$150,000				

*The increase in user fee was be applied to the Quarterly Fixed Charge. This analysis assumes the debt is reduced as per notes below.

**Years 2011 through 2022 are based on actual revenues/expenses. Years 2023 through 2026 are estimates

Notes:

1. Debt retirement period based on paying off debt in 15 years.
2. Total debt amount equals the June 2011 projected $220,500 cash loss plus the $74,500 used to purchase the water system for a total debt of $300,000 less $150,000 contributions from MES and Harford County to bring the net amount of debt to retire of **$150,000**. This amount does not include the additional debt incurred due to uncollected system depreciation charges.
3. The initial average quarterly user fee is obtained by taking average annual revenues of $45,000 and dividing by 105 users and 4 to express as per quarter which equals = $107
4. After the $150,000 debt is fully retired, the debt payments will be put into an escrow account and used to recover the depreciation costs and fund the CIP Reserve Fund.
   This amount ($12,500 per year) after 20 years (2045) will amount to $250,000 which is still far less than the actual amount needed for system replacement but is sufficient for significant repairs.

Table III A- 2011 to 2016 Phased Increase User Fee - Minimum Use

Assumes $150,000 in Reduced Debt - Showing **Minimum** Use Amount

Bill Component	Initial Year	Five-Year Phase-in Period				
		Year 1	Year 2	Year 3	Year 4	Year 5
(Amounts per Quarter)	2011	2012	2013	2014	2015	2016
Fixed Base Amount	$50.10	$56.10	$62.10	$68.10	$74.10	$80.10
Average User Variable Charge Amount (per 1000 gallons)[1]	$6.78	$6.78	$6.78	$6.78	$6.78	$6.78
Sinking Fund	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00
Bay Restoration Fee[2]	$7.50	$15.00	$15.00	$15.00	$15.00	$15.00
Quarterly Total	$66.38	$79.88	$85.88	$91.88	$97.88	$103.88
Monthly Amount	$22.13	$26.63	$28.63	$30.63	$32.63	$34.63
Annual % Increase	-	20.3%	7.5%	7.0%	6.5%	6.1%

Table III B- 2011 to 2016 Phased Increase User Fee - Average Use

Assumes $150,000 in Reduced Debt - Showing **Average** Use Amount

Bill Component	Initial Year	Five-Year Phase-in Period				
		Year 1	Year 2	Year 3	Year 4	Year 5
(Amounts per Quarter)	2011	2012	2013	2014	2015	2016
Fixed Base Amount	$50.10	$56.10	$62.10	$68.10	$74.10	$80.10
Average User Variable Charge Amount (per 1000 gallons)[3]	$47.10	$47.10	$47.10	$47.10	$47.10	$47.10
Sinking Fund	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00
Bay Restoration Fee[2]	$7.50	$15.00	$15.00	$15.00	$15.00	$15.00
Quarterly Total	$106.70	$120.20	$126.20	$124.70	$130.70	$136.70
Monthly Amount	$35.57	$40.07	$42.07	$44.07	$46.07	$48.07
Annual % Increase	-	12.7%	5.0%	4.8%	4.5%	4.3%

After the cash debt is paid off in year 15 (see Table II), the increased fee amount of $30 per quarter will be placed into a Capital Improvement Reserve Fund. This reserve fund will be used to pay for major capital improvements that will be needed in the next 20 to 50 years. The cost to replace the existing system is estimated to be $2.0 to $2.5 million. By applying the $30 per user per quarter fee, it will accrue $12,500 per year, $250,000 in 20 years, and $625,000 in 50 years. This amount is still inadequate to allow complete replacement of the System in 50 years but should allow all or partial replacement of the most critical System components.

The previously described user rate increase was instituted to pay off the current debt. However, the largest part of the user rate is the "base amount" which pays for the annual operations and maintenance costs. Since these costs increase over time due to inflation and consumer price increases, it is also proposed that the user rate be adjusted annually to account for such increases. The rate will be increased each July in accordance with the change in the Consumer Price Index (CPI)* from July of the previous year to July of the current year. For example, in the last 10 years, the CPI has increased annually between 0.0% to 5.2%. The increase will be applied to the "Fixed Base Amount" component of the user rate.

Table III C shows the adjustment in the fixed base amount based on the CPI from 2017 to 2023.

Table III C- 2017 to 2023 Consumer Price Index Adjusted User Fee- <u>Average</u> use

Year	2017	2018	2019	2020	2021	2022	2023
Fixed Base Amount	$86.93	$87.96	$90.16	$90.16	$91.97	$96.75	$105.52
Average User Variable Charge Amount (per 1000 gallons)[3]	$47.40	$47.40	$47.40	$47.40	$47.40	$47.40	$47.40
Sinking Fund	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00	$2.00
Bay Restoration Fee[2]	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00
Quarterly Total	$151.33	$152.36	$154.56	$154.56	$156.37	$161.15	$169.92
Monthly Amount	$50.44	$50.79	$51.52	$51.52	$52.12	$53.72	$56.64
Annual % Increase	1.2%	0.7%	1.4%	0.0%	1.2%	3.0%	5.2%

[1] This is the minimal amount of usage of 1000 gallons per quarter.

[2] This is a fee assessed by the State of Maryland and not under MES control.

[3] This amount is the average across all users. The amount is estimated by taking 2010's total revenues of $46,279 and dividing by 105 users and then 4 to express as per quarter. This gives $107 per user per quarter. Subtracted from this figure is $59.60 (sum of base amounts 50.10 +2 + 7.50) which gives the average variable charge per user per quarter of $47.40.

VI. ADDITIONAL CONSIDERATIONS

A. <u>Fire Suppression Service</u>

The existing System does not include enough storage or large enough pipes to provide for fire protection.

B. Responsibilities of the Customer

The System customers receive quarterly invoices based on water usage. Each customer is responsible for the remittance of invoice payment within 30 calendar days of the invoice date. Late payment charges will be assessed in accordance with Maryland Law. It should also be noted that failure to pay water bills could result in service being shut off to the delinquent account, pending receipt of the payment. As stated in the Annotated Code of Maryland, Natural Resources Article, Section 3-108, if a customer has not paid an invoice in full within 60 days of the due date of the invoice, the unpaid bill becomes a lien against the property served. Each customer is responsible for the maintenance of the lateral water line serving his or her property. This lateral line includes the length of pipe immediately following the water meter vault up to and entering, the property being served.

C. New Service Connections

All requested and proposed connections to the System must be approved by MES. If a property owner wishes to be connected to the System, the owner will be responsible for paying, (1) purchase and installation of a lateral line, shut-off (curb stop) valve, and all appurtenances necessary for connection to the main line including a water meter vault and meter, (2) the cost of having an MES Construction Inspector present during the installation of the lateral line and the actual connection to the water system, and (3) a service connection fee for each connection.

MES has increased the connection charge to $2,000. This connection fee is in line with current service connection fees charged by other county and municipal jurisdictions. The connection fee will be used to pay off existing debt and/or to pay into the sinking fund.

Requests for connections will be reviewed based on the location of the property with respect to the System, the additional demand on the System, and the ability of the System (piping size and capacity) to deliver the requested amount of water.

A request for connection to the Water System may be made by submission of a written request to MES at the following address:

Water and Wastewater Group
Maryland Environmental Service
259 Najoles Road
Millersville, Maryland 21108

Attn: Northern Regional Manager, Harford County
Darlington Water System connection request

D. Water Quality

The plant continues to produce water that complies with all State and Federal water quality regulations. In 2009 in response to customer complaints related to water hardness, MES installed a chemical feed system to add ortho-polyphosphate to the water to prevent scaling and related problems associated with hardness. This has alleviated most of the complaints. A more effective strategy could be implemented but it was determined that the costs were too great. It is important to note that since the Darlington Water System only has 105 customers, it does not allow spreading the cost of improvements over a large customer base. Therefore, as a result, MES is trying to be more aggressive with future planning and generating revenue to cover needed improvements before the systems break down.

E. Water Audit

The MES performed a rudimentary water audit for calendar 2014 to verify the integrity of the new distribution system. A water audit simply compares the amount of water produced at the plant to the amount of water used as recorded by the individual water meters that are located at each customer connection. The results of the audit indicated that there was one major leak, at one specific address, which didn't cause any problems at the water plant. This leak has since been repaired by the customer. When the very high meter readings from the leaking service connection were omitted from the audit calculation it was determined that there was little leaking in the rest of the Darlington water distribution system.

F. Setting Customer Rates and the Appeal Process

The current user rates were adopted in 2011. Sections 3-108 and 3-128 of the Annotated Code of Maryland, Natural Resources Article, outlines the procedure for setting customer rates and the opportunity for appeal. Section 3-108 (a) specifically discusses the determination of charges and costs and states that before establishing or adjusting charges in a service district, MES shall publish a notice of the proposed changes and hold a public hearing on the proposed changes. Therefore, customers will receive advance notice of the proposed rate increase and an opportunity to voice their opinions and concerns.

Section 3-128 describes the appeal process which entails arbitration provided by the Public Service Commission.