

Schwenksville Borough Authority Water & Sewer Rate Study

Prepared for

The Schwenksville Borough Authority

Prepared by

Howard J. Woods, Jr. & Associates, L.L.C.
East Brunswick, New Jersey

August 11, 2021



Table of Contents

1.	EXECUTIVE SUMMARY & RECOMMENDATIONS	2
2.	CUSTOMER AND SALES VOLUME ANALYSIS.....	4
3.	CAPITAL IMPROVEMENT PLAN.....	10
4.	REVENUE REQUIREMENT	12
5.	RATE COMPARISON	34

1. Executive Summary & Recommendations

The Schwenksville Borough Authority commissioned this study to review the present water and sewer rates. The Authority last adjusted its rates in 2018 and at that time increased the volume used charge and fixed service charges by 7% across all categories. The Borough's quarterly fixed service charge for water service stands at \$9.63 per month and the volume used charge is \$6.96 per thousand gallons. Sewer rates vary by customer class (e.g., residential, commercial, etc.) and now stand at \$52.43 per month for a residential customer. The cost of providing water service has and will continue to grow. The Authority has been able to manage increases in costs through close control of its expenses and they have benefited from modest customer growth and favorable weather patterns. This study evaluates the likely cost of providing water and sewer service over the coming five years and develops the rates that would be required to recover the full cost of service through water and sewer billings.

Since the mid-1990's water use throughout the United States has been declining. While there are many factors contributing to this, the principal reasons are related to changes in plumbing codes and conservation-oriented manufacturing standards for water-using appliances. In short, new dish washers, clothes washers, toilets and shower heads use less water than their historical counterparts. As homes are renovated and appliances are replaced, typical average residential water use declines. From a rate setting perspective, while the cost of service is increasing, the number of gallons sold over which that cost can be recovered is declining on a per customer basis. This decline is partially offset through the addition of new water customers. This study reviews recent trends in declining use in the Authority's service area to quantify the expected usage likely to occur during the period rates recommended by this study are to be in effect. Sewer rates are not volume based but instead are structured around the concept of an equivalent dwelling unit. While declining water use also impacts the volume returned to the wastewater system, the Authority's tariff design mitigates the impact by billing a fixed rate per customer unit.

Historical actual costs have been evaluated on a budget line-item basis. Actual expenses for 2017 through the budgeted expenses for 2021 were reviewed. Each line item was reviewed to determine linear growth trends, median values and average values for this historical period. Compound rates of growth (or decline) were also identified for each account group. This analysis was used to forecast water utility expenses under current operating procedures for 2022 through 2026. The forecast for each line item is based on either an inflation adjusted change to the average historical expense or by the linear trend represented by the historical data. The total of these line-item expenses represents the revenue requirement for the water utility and, separately for the sewer utility, and this is the amount that should be recovered in rates.

The study also reviewed the Authority's capital improvement plan. Recommendations are made in this study to cover routine and recurring capital expenses from current cash. This minimizes the need to issue new debt and results in a lower cost of service than that which would result if the Authority used debt exclusively to fund improvements. The Authority's current practice of allocating revenues from connection fees and from antennae leases to the capital fund has been maintained in this study's recommendations. In addition, various tests of the economic strength of the Authority were considered to make certain that any change in antennae revenues, particularly a loss in such revenues, would not prevent the Authority from continuing to provide the safe, adequate and proper service expected of a modern utility.

This study recommends increases in the fixed service charges and volumetric rates. An across-the-board increase of 5% effective January 1, 2022 and an additional 5% increase effective January 1, 2025 are recommended. Current and proposed Authority rates for a typical residential customer have been compared to peer utilities throughout the region. The Authority's current rates result in charges that are above the median value for peer utilities but are also significantly lower than the charges typical of large investor-owned utilities. The recommended rate increases contained in this study are modest and result in little change in the comparison to peer utility current rates. It is certain that peer utilities will implement increases to their current rates and these increases are generally unknown and not reflected in the comparisons.

2. Customer and Sales Volume Analysis

The way in which customers use water is becoming more efficient, particularly for indoor residential water use. There are many reasons for this. Generally, in the United States, average use per residential customer tended to increase in the years following World War II and that increasing trend continued until about the mid-1990's. At this point in time, average use per customer tended to level out and a general decline began that continues today.

In 1992, Congress passed the Energy Policy Act, which, among other things set energy efficiency standards for household appliances like dish washers and clothes washers. As a result of these standards, appliance manufacturers found that reducing the amount of hot water used in their appliances helped achieve compliance with the energy efficiency standards. Significant improvements in water efficiency have been realized as high-efficiency dish washers and clothes washers came to market. In addition to the impact of the Energy Policy Act, several plumbing code changes have been implemented and the US Environmental Protection Agency has launched the WaterSense program applicable to a host of plumbing fixtures like shower heads, toilets and faucets. All of these initiatives have resulted in indoor plumbing devices that use less water. The trends resulting from these changes are meaningful and must be understood to properly anticipate water sales volumes for budgeting and rate design. While customer use is generally gaining in efficiency, the addition of new customers to the service area tends to offset the decline in sales volume that would otherwise manifest itself in a static service area.

Table 1 shows the actual and forecast population data for the communities in the Authority's service area. The historical data are US Census population data and the forecast is that compiled by the Delaware Valley Regional Planning Commission. These data were used to develop a composite rate of population growth for the planning period. Inter-period compound growth rates for each community for 2020 through 2025 and 2030 were calculated and the average of these growth rates was determined to be 0.41% per year.

Table 1: Development of Composite Growth Rate					
Local Unit Population Data	2000 Census	2010 Census	2020 Census Estimate*	2025 Forecast	2030 Forecast
Schwenksville Borough	1,395	1,385	1,422	1,445	1,469
Lower Frederick Township	4,795	4,840	4,985	5,078	5,171
Perkiomen Township	7,095	9,139	9,140	9,726	9,969
Compound Annual Growth Rates					
Schwenksville Borough		-0.07%	0.26%	0.32%	0.33%
Lower Frederick Township		0.09%	0.30%	0.37%	0.36%
Perkiomen Township		2.56%	0.00%	1.25%	0.49%
Composite Planning Period Growth Rate				0.41%	
(1) Historical and forecast population data from Analytical Data Report, County and Municipal Level Population Forecasts 2015-2045, Delaware Valley Regional Planning Commission, ADR 022, July 2016, Appendix A Page 6					
(2) * 2019 Census Estimates from https://www.census.gov/quickfacts/fact/table/perkiomentownshipmontgomerycountypennsylvania,US# for Perkiomen Township. Schwenksville and Lower Frederick Values are DVRPC estimates.					

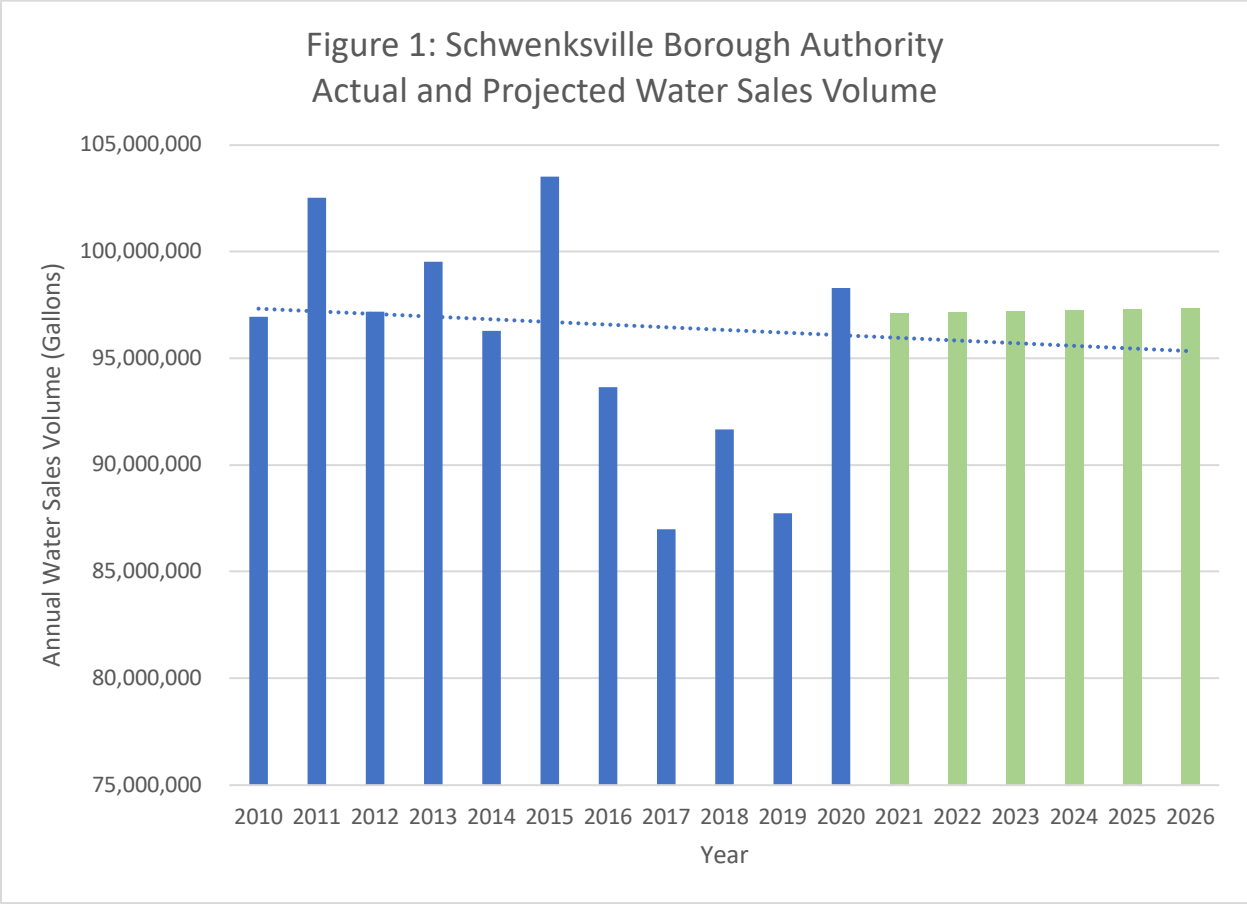
The composite growth rate was used to estimate the likely number of customers to be served through the planning period addressed by this Study. Starting with the actual customer count for 2020, customer additions at 0.41% per year are anticipated through 2026. For the water system, this results in a modest additional eight (8) customers being served each year. This is reflected in Table 2 under the column heading “Accounts.”

Table 2 also shows the actual number of water accounts along with the annual precipitation for Montgomery County and the actual Authority water sales volume for 2010 through 2020. Water use is weather sensitive, and these data were used to develop a mathematical relationship between the number of accounts served, the weather conditions for the year represented by total precipitation and the volume of water sold in gallons. While weather is difficult to predict, the median value of precipitation in inches for 2010 through 2020

was used to forecast water demand. This value, 49.59 inches, happens to equal the actual value for 2020.

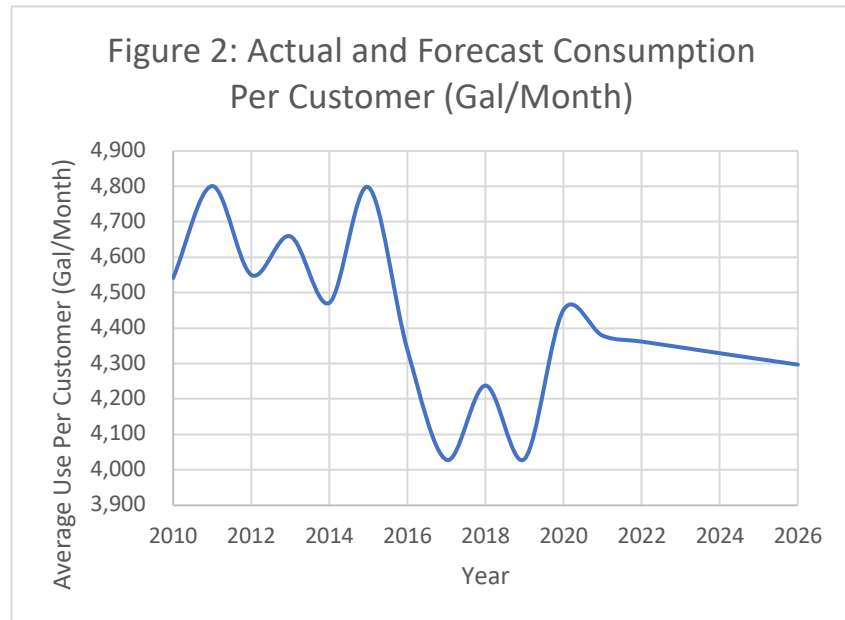
Table 2: Actual and Projected Water Sales			
Year Ending	Accounts	Precipitation (In) Mont Co	Billed Volume (Gal)
31-Dec-10	1,779	50.65	96,950,000
31-Dec-11	1,780	71.76	102,544,900
31-Dec-12	1,780	41.06	97,188,500
31-Dec-13	1,780	46.00	99,519,699
31-Dec-14	1,795	44.73	96,308,101
31-Dec-15	1,798	40.54	103,513,153
31-Dec-16	1,799	36.84	93,664,700
31-Dec-17	1,800	50.19	87,005,200
31-Dec-18	1,803	66.99	91,685,900
31-Dec-19	1,814	60.69	87,734,700
31-Dec-20	1,840	49.59	98,291,500
31-Dec-21	1,848	49.59	97,097,236
31-Dec-22	1,856	49.59	97,148,731
31-Dec-23	1,864	49.59	97,200,225
31-Dec-24	1,872	49.59	97,245,054
31-Dec-25	1,880	49.59	97,296,548
31-Dec-26	1,888	49.59	97,348,042
Linear Regression Statistics			
-32948.22943	310,567	-6665.872945	-178159183.4
130284.4307	189,095	2877.38096	235119998.7
0.495557009	4,590,256	#N/A	#N/A
2.292230655	7	#N/A	#N/A
1.44895E+14	147,493,182,691,227	#N/A	#N/A

The anticipated level of water sales is projected to be less than the sales volume recorded for 2020 and remain within a narrow range of approximately 97.1 million gallons to 97.3 million gallons per year. The actual and projected water sales volumes are shown in Figure 1.



The anticipated customer additions result in the slight increase in total water sales volume shown in Table 2 and Figure 1. Nevertheless, there is a slight downward trend in use on a per customer basis in the actual data and this is reflected in the forecast. Table 3 shows the historical and forecast average monthly use per customer and this is represented graphically in Figure 2

Table 3: Average Water Use Per Customer	
Year	Per Customer Consumption (Gal/Month)
2010	4,541
2011	4,801
2012	4,550
2013	4,659
2014	4,471
2015	4,798
2016	4,339
2017	4,028
2018	4,238
2019	4,030
2020	4,452
2021	4,378
2022	4,362
2023	4,346
2024	4,329
2025	4,313
2026	4,297



For the sewer system, the same compound annual population growth rate was used to forecast the number of customers by class. The actual number of accounts and the projected number of accounts for the sewer system are shown in Table 4. For purposes of anticipating future billing units in this Study, the number of Laundry, Gas Station and Restaurant accounts was held constant at the current number and calculated numbers of Residential and general Commercial accounts were rounded to the nearest whole number. The result is an anticipated addition of four or five customers per year with most being Residential.

The billing units used to determine the sales revenues at current and proposed rates represent the number of water accounts and the volume sold shown in Table 2 and the number of wastewater accounts by customer class shown in Table 4.

Table 4: Actual and Projected Sewer Accounts								
Year	Public	Residential	Commercial	Laundry	Gas Station	Restaurant	All Commercial	Total # of Accts
2013	10	886	102	1	2	2	107	1003
2014	10	887	102	1	2	2	107	1,004
2015	10	887	102	1	2	2	107	1,004
2016	10	887	102	1	2	2	107	1,004
2017	10	890	102	1	2	2	107	1,007
2018	10	890	102	1	2	2	107	1,007
2019	10	890	102	1	2	2	107	1,007
2020	10	891	102	1	2	2	107	1,008
2021	10	895	102	1	2	2	107	1,012
2022	10	899	102	1	2	2	107	1,016
2023	10	903	103	1	2	2	108	1,021
2024	10	907	103	1	2	2	108	1,025
2025	10	911	104	1	2	2	109	1,030
2026	10	915	104	1	2	2	109	1,034

3. Capital Improvement Plan

Like all well managed water and sewer utilities, the Authority has anticipated the need to improve and renew its facilities to maintain safe, adequate and proper service. As water and sewer utility systems age, some assets will need to be renewed or replaced. With respect to the Authority's water system, some of its assets were originally constructed by others to standards that may no longer be reflected in current regulatory agency requirements or standard and accepted utility practice. With To address this, the Authority has identified several small diameter mains and scheduled these for replacement in the Study planning period. In addition, the Authority has anticipated the need to renovate one of its wells and to replace arsenic removal media. For the sewer system, the Authority plans to continue its ongoing Inflow & Infiltration control programs, improve odor control and improve flood protection at its facilities. The capital plan is summarized in Table 5.

Table 5: Projected Capital Improvements								
Water								
Project	Description	Total	2022	2023	2024	2025	2026	After 2026
1	Evergreen Lane – Extend Six Inch Main	\$ 120,000			\$ 120,000			
2	Fourth Avenue – Replace Two Inch with Six Inch	\$ 105,000			\$ 105,000			
3	Perkiomen Ave – Replace Four Inch with Six Inch	\$ 465,000				\$ 465,000		
4	Woodland Avenue – Replace Two Inch with Four Inch	\$ 215,000		\$ 215,000				
5	Summit Avenue – Replace Two Inch with Four Inch	\$ 155,000			\$ 155,000			
6	Boulevard Avenue – Replace ¾ Inch with Six Inch	\$ 215,000				\$ 215,000		
7	Walnut Street – Replace Four Inch with Four Inch	\$ 187,000		\$ 187,000				
8	Well No. 7 Iron Issues (Chemical and Cleaning)	\$ 50,000	\$ 50,000					
9	Arsenic Media Replacement	\$ 20,000			\$ 20,000			
Subtotal Water		\$ 1,532,000	\$ 50,000	\$ 402,000	\$ 400,000	\$ 680,000	\$ -	\$ -
Sewer								
Project	Description	Total	2022	2023	2024	2025	2026	After 2026
1	2022 Annual I/I Work (Lining and Laterals 750 lf)	\$ 75,000	\$ 75,000					
2	2023 Annual I/I Work (Manholes and Spot Liners)	\$ 50,000		\$ 50,000				
3	2024 Annual I/I Work (Lining and Laterals 750 lf)	\$ 75,000			\$ 75,000			
4	2025 Annual I/I Work (Manholes and Spot Liners)	\$ 50,000				\$ 50,000		
5	2026 Annual I/I Work (Lining and Laterals 750 lf)	\$ 75,000					\$ 75,000	
6	Structural Repairs to Mechanical Tanks	\$ 365,000					\$ 365,000	
7	Tank Painting	\$ 465,000						\$ 465,000
8	Odor Control (Inf Pump Station or Anaerobic Tank)	\$ 65,000	\$ 65,000					
9	Berm Stabilization (Flood Control)	\$ 45,000	\$ 45,000					
Subtotal Sewer		\$ 1,265,000	\$ 185,000	\$ 50,000	\$ 75,000	\$ 50,000	\$ 440,000	\$ 465,000
Total Capital Needs		\$ 2,797,000	\$ 235,000	\$ 452,000	\$ 475,000	\$ 730,000	\$ 440,000	\$ 465,000

Many of the Authority's planned capital improvements are routine and recurring in nature. These efforts, like the Inflow & Infiltration control efforts and small main replacement programs are truly ongoing efforts that will continue long beyond the period addressed by this Study. Programs of this nature should be funded with current cash to the extent possible. By addressing routine and recurring improvements with current rate revenues and funds collected through connection fees and antennae revenues, the impact of pyramiding long-term debt and interest charges is avoided. While funding any single year's routine and recurring construction with debt will result in an immediate savings in revenue requirement, at current interest rates the compounding impact of funding multiple years of such ongoing programs is a higher revenue requirement generally occurring in the sixth year of the ongoing program and beyond. This happens because the cumulative impact of interest charges and principal repayment requirements reaches a point where the amount that must be repaid annually exceeds the cost of a single year's work.

The total capital needs of the Authority over the planning period amount to \$2,332,000.¹ In developing the rates recommended here, we have assumed that the Authority will fund its 2022 program (a total of \$235,000) from cash reserves already accumulated and thereafter the Authority will fund \$200,000 per year from current cash.

4. Revenue Requirement

The Authority's operating budget represents the principal portion of the total water and sewer revenue requirement. A Comparative Income Statement for 2017 through the current 2021 Budget is shown in Table 6. In this table, the actual and budgeted water and sewer revenues are shown as are the actual and budgeted water and sewer expenses. In addition, Administrative Expenses, which are common to both water and sewer operations and Other Revenues and Other Expenses are also shown.

¹ The total capital needs identified in Table 5 amounts to \$2,797,000 and of this amount \$465,000 will occur after the period addressed by this rate Study in 2026 or later. The net amount required in this planning period is \$2,332,000.

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
WATER Revenues						
4000-06	Sales	821,353.39	871,004.73	874,274.77	971,172.28	910,000.00
4010-06	Hydrant Rentals	13,680.00	13,680.00	13,680.00	13,680.00	13,680.00
4200-06	Penalty & Interest Charges	18,155.08	17,785.07	15,945.28	3,526.27	15,000.00
4350-06	Water Meter Charge	738.00	738.00	1,705.00	4,000.00	0.00
4400-06	Misc. Parts Sold	516.41	1,261.94	281.67	1,494.56	0.00
	Total Water Revenue	854,442.88	904,469.74	905,886.72	993,873.11	938,680.00
WATER Expenses						
5310-06	Legal Services	20,350.22	13,287.07	3,521.20	2,508.20	18,000.00
5312-06	Engineering Services	20,686.36	3,813.58	6,350.02	7,310.77	15,000.00
5405-06	Governmental Permits/fees	3,076.60	2,330.00	10,662.00	16,538.00	15,000.00
5500-06	Heating Fuel, Garage	357.15	483.63	454.31	302.86	600.00
5512-06	Bldg. Maintenance	7,899.24	3,827.77	5,138.28	24,201.83	10,000.00
5520-06	Propane delivered-Wtr	566.62	885.51	801.00	(1,312.57)	1,200.00
5600-06	Salaries Bldg/Grounds	107,303.87	125,967.48	109,282.46	107,304.64	112,000.00
5620-06	Vehicle fuel	4,069.68	6,534.95	6,058.08	4,408.92	6,500.00
5626-06	Vehicle Rep/Main	8,429.29	6,563.49	8,045.73	5,746.25	8,000.00
5629-06	Small Tools/Minor Eqpt.	2,003.87	611.45	1,468.80	1,447.29	1,500.00
5650-06	Chemicals	8,834.66	14,612.74	11,821.45	12,281.22	15,000.00

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
5655-06	Lab Analysis, Fees	8,502.00	11,920.00	6,372.50	24,802.33	18,000.00
5701-06	Distribution Sys.-Interconnect	213,870.12	123,949.78	115,606.42	141,728.56	145,000.00
5703-06	Distribution Sys.-Mains	32,775.88	9,308.52	11,969.47	30,743.14	35,000.00
5704-06	Distribution Sys.-Tanks	4,438.52	1,327.96	260.00	704.97	2,000.00
5705-06	Distribution Sys.-Lines, Meter	6,845.86	9,372.66	10,419.20	14,831.21	8,000.00
5714-06	Electric-Well #3, Summit	5,246.87	5,638.08	5,666.98	4,809.66	6,600.00
5715-06	Electric, Well #4-Minehill	1,467.48	6,546.16	6,777.33	5,361.72	7,000.00
5716-06	Electric, Well #5-657 Main	2,069.30	7,832.89	8,167.71	7,830.52	10,000.00
5718-06	Electric, Well #7-Zieglerville	8,786.05	6,178.90	4,466.96	4,167.76	6,500.00
5720-06	Pumps-Repairs/Maintenance	3,930.59	3,988.77	5,226.39	3,457.03	5,000.00
5723-06	Electric, Well#9-PVMS	5,499.45	5,898.20	6,272.85	4,859.75	6,800.00
5726-06	Electric, Interconnect NPWA	356.40	359.31	332.50	334.38	450.00
5727-06	Interconnect - NPWA	6,360.95	728.00	3,590.81	653.93	5,000.00
5803-06	Water Rev Note 2015-Principal	6,360.95	85,000.00	37,380.00	38,310.00	38,313.26
5804-06	Water Rev Note 2015-Interest	35,580.00	36,184.04	17,684.25	16,749.75	16,751.18
5805-06	PennVest Loan 2018- Principal	0.00	0.00	39,123.85	53,011.40	53,015.92
5806-06	PennVest Loan 2018- Interest	0.00	2,127.23	4,545.77	4,583.44	4,583.83
	New Debt Service - Water					
5850-06	Hospitalization-Water	21,482.04	27,803.59	35,313.31	28,129.82	35,000.00
5860-06	Defined Pension Expense-Water	0.00	0.00	0.00	0.00	2,500.00
5861-06	Payroll Taxes-Water	8,648.33	10,137.07	8,699.63	8,244.74	8,000.00
5865-06	Unemployment Expense Tax-Water	853.74	874.80	1,037.30	874.80	1,000.00
5875-06	Insurance, Vehicle -W	8,647.80	3,479.62	2,050.94	2,961.63	3,000.00
5880-06	Insurance, Comp/Gen Liab - W	9,487.20	20,052.73	16,053.36	21,118.19	18,500.00
5886-06	Workers Compensation/Water	3,353.82	4,174.72	3,254.55	4,031.08	4,100.00
5888-06	Insurance, Life - Water	2,078.07	2,132.52	2,542.13	2,808.34	3,000.00
5891-06	Training/Seminars/Lic. fees -W	1,383.00	1,036.00	1,793.40	856.00	2,000.00

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
5920-06	Uniform Rental - Water	781.77	1,297.43	1,507.90	2,064.57	2,000.00
6000-06	Miscellaneous Expense Water	1,522.04	771.82	383.60	564.51	1,000.00
	Total Water Expenses	583,905.79	567,038.47	520,102.44	609,330.64	650,914.19
	Net Income (Loss) - Water	270,537.09	337,431.27	385,784.28	384,542.47	287,765.81
SEWER Revenues						
4000-08	Sales - Sewer	589,377.51	626,670.44	631,985.14	629,938.71	630,000.00
4200-08	Penalty & Interest Charges	10,710.63	11,289.90	8,031.09	1,563.63	8,000.00
4400-08	Misc. Parts Sold-Sewer	329.12	590.62	130.32	413.04	0.00
	Total Sewer Revenue	600,417.26	638,550.96	640,146.55	631,915.38	638,000.00
SEWER Expenses						
5310-08	Legal Services-Sewer	7,069.26	7,444.42	4,843.80	1,348.80	7,000.00
5312-08	Engineering Services, Sewer	6,294.37	5,886.20	8,954.49	1,495.63	18,000.00
5405-08	Permits Fees-Swr CO&A	3,789.25	1,618.00	1,226.00	1,138.00	5,000.00
5500-08	Heating Fuel, Gar.-Sewer	357.14	483.61	454.29	302.86	1,000.00
5512-08	Bldg. Maintenance-Sewer	2,679.84	2,837.46	3,305.17	2,741.28	3,500.00
5520-08	Propane delivered-Swr	377.74	1,014.51	275.55	(875.04)	900.00
5600-08	Salaries Bldg/Grnds-Sewer	108,938.83	124,610.87	136,042.40	151,606.65	149,000.00
5620-08	Vehicle fuel-Sewer	2,633.13	2,885.17	4,035.81	2,893.42	3,500.00
5626-08	Vehicle Rep/Main-Sewer	5,618.78	4,741.36	3,851.11	3,837.99	5,000.00
5629-08	Small Tools/Minor Eqpt.-Swr	589.90	2,831.11	468.29	608.55	1,000.00
5650-08	Chemicals-Sewer	25,183.24	37,354.46	28,465.47	30,415.31	35,000.00

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
5655-08	Lab Analysis, Fees	6,504.00	7,553.00	8,038.00	8,931.00	8,500.00
5661-08	Coll. Sys - Supply/Services	143.88	863.87	162.01	908.12	1,500.00
5665-08	Coll. Sys - Rep/Maint. Expense	6,581.80	5,303.26	(219.36)	2,187.23	5,000.00
5673-08	Treatment Plnt-Lab Mat/Sup	1,499.16	2,502.82	882.55	2,241.81	3,000.00
5674-08	Treatment Plnt-Matrls & Sup.	1,997.45	2,053.18	1,287.36	388.54	2,500.00
5675-08	Treatment Plnt-Repair/Maint	22,099.80	17,847.71	20,122.38	9,893.45	25,000.00
5676-08	Electric, Treatment Plant	19,593.30	21,403.55	17,923.78	16,906.01	23,000.00
5677-08	Electric, Pump Stations	1,197.20	1,259.27	1,151.94	1,115.68	1,500.00
5678-08	Sludge Contract	44,942.20	44,175.55	36,358.18	37,793.85	42,000.00
5803-08	Water Rev Note 2015-Principal	83,020.00	36,600.00	87,220.00	89,390.00	89,403.96
5804-08	Water Rev Note 2015-Interest	36,518.37	24,122.69	41,241.94	39,060.76	39,066.86
	New Debt Service - Sewer					
5850-08	Hospitalization-Sewer	30,295.98	38,457.98	21,426.99	28,715.40	45,000.00
5860-08	Defined Pension Expense-Sewer	0.00	0.00	0.00	0.00	1,500.00
5861-08	Payroll Taxes-Sewer	8,362.50	9,537.83	10,348.09	11,863.90	10,500.00
5865-08	Unemployment Exp.-Sewer	568.62	583.20	663.71	583.20	1,000.00
5875-08	Insurance, Vehicle-Sewer	5,765.20	2,319.61	1,368.57	920.60	2,700.00
5880-08	Ins. Compreh. Gen Liab/Sewer	6,324.80	13,370.29	10,702.35	13,711.02	12,000.00
5886-08	Workers Compensation/Sewer	2,315.28	2,783.15	2,169.68	2,727.00	2,800.00
5888-08	Ins.-Life, ADD - Sewer	1,392.93	1,421.64	1,698.63	1,881.68	2,000.00
5891-08	Training/Seminars/License fees	1,132.00	1,959.00	653.60	2,284.00	2,500.00
5920-08	Uniform Rental - Sewer	521.21	765.91	1,004.68	1,443.12	1,500.00
6000-08	Miscellaneous Expense-Swr	3,666.96	514.57	255.73	346.67	1,200.00
	Total Sewer Expense	447,974.12	427,105.25	456,383.19	468,806.49	552,070.81
	Net Income (Loss) - Sewer	152,443.14	211,445.71	183,763.36	163,108.89	85,929.19

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
ADMIN Expenses						
5010-02	Salaries-Administration	90,213.18	85,839.91	94,049.05	96,099.86	99,000.00
5200-02	Office Supplies/Expense	12,568.29	12,513.69	13,045.86	11,871.25	11,000.00
5250-02	Office Equipment Rent	708.72	924.92	741.12	853.12	750.00
5255-02	Computer Tech Support	7,000.17	6,363.99	6,938.56	6,981.89	7,200.00
5300-02	Auditing Services	14,800.00	13,000.00	13,000.00	13,000.00	13,500.00
5305-02	Acctg/Actuarial Services	18,255.00	20,855.00	21,570.00	16,760.00	18,500.00
5315-02	Management Consultant	64,710.00	60,603.75	52,805.00	36,505.00	45,000.00
5410-02	Dues/Subscriptions/Memberships	2,315.90	2,337.00	1,607.13	2,812.87	2,500.00
5420-02	Travel/Entertainment/Meals	2,664.17	598.68	1,477.64	487.01	1,500.00
5425-02	Advertising	49.60	471.10	506.66	1,026.02	500.00
5430-02	Printing/Postage	11,888.58	10,431.39	13,252.06	11,293.72	12,000.00
5510-02	Office Cleaning	3,925.00	2,900.00	2,400.00	1,500.00	3,500.00
5610-02	Telephone Expense	7,109.71	9,103.90	7,947.10	8,793.48	7,800.00
5611-02	Answering Service	1,009.33	1,185.09	1,092.92	1,155.84	1,300.00
5614-02	Electric Service-Office	2,196.63	2,654.65	2,151.17	1,878.43	2,500.00
5615-02	Trash Removal	922.32	872.40	1,057.50	1,175.00	1,200.00
5850-02	Hospitalization-Admin.	11,714.19	6,813.96	7,060.62	7,656.44	12,000.00
5859-02	457 Pension Exp - Admin	10,813.12	10,300.47	10,322.71	10,861.48	14,000.00
5861-02	Social Security Exp-Admin.	7,119.63	6,670.89	7,644.54	7,263.27	7,800.00
5865-02	Unemployment Comp. Tax-Admin	157.95	162.00	189.00	162.00	200.00
5886-02	Workers Compensation-Admin.	629.90	1,060.63	619.27	746.72	800.00
5888-02	Life Insurance-Admin.	2,561.52	2,561.52	2,685.54	3,200.58	3,100.00
	Total Administrative Expenses	273,332.91	258,224.94	262,163.45	242,083.98	265,650.00

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
OTHER Revenues						
4015-04	Insurance Reimbursement	1,800.00	0.00	329.96	0.00	0.00
4100-04	Interest Earnings	2,088.15	5,338.13	3,593.11	1,932.72	4,000.00
4550-04	Reimbursement RE Tax	753.90	11,133.91	502.60	3,039.10	1,000.00
4800-04	Borough Contract Income	14,944.54	30,974.19	29,659.33	12,040.98	23,000.00
	Total Other Revenues	19,586.59	47,446.23	34,085.00	17,012.80	28,000.00
OTHER Expenses						
5790-04	Real Estate Tax-Summit Ave.	6,952.90	6,392.61	7,071.60	6,580.77	6,600.00
5902-04	Salaries-Boro Snow Plowing	3,102.90	6,870.73	4,326.23	1,969.13	8,000.00
5904-04	Salaries-Other Boro Labor	205.30	558.61	3,764.56	2,978.67	3,000.00
5905-04	Materials Purchased-Boro	4,285.03	7,498.37	6,822.43	3,851.82	10,600.00
	Total Other Expenses	14,546.13	21,320.32	21,984.82	15,380.39	28,200.00
	Net Income (Loss) - Other	5,040.46	26,125.91	12,100.18	1,632.41	(200.00)
	Total Net Income (Loss)	154,687.78	316,777.95	319,484.37	307,199.79	107,845.00

Table 6: Comparative Income Statement		Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2021
		Actual	Actual	Actual	Actual	BUDGET
CAPITAL RESERVE ACCOUNT						
Tapping Fees						
4012-06	EDU/Water Tap fee	8,745.00	54,115.50	12,885.00	4,612.58	9,600.00
4012-08	EDU/Sewer Tap fee	3,764.00	0.00	12,370.00	0.00	7,500.00
	Total Tapping Fees	12,509.00	54,115.50	25,255.00	4,612.58	17,100.00
Tower Rental Income						
4500-04	Tower Rental Income	135,959.11	126,851.60	139,338.57	144,911.09	140,000.00
	Total Other Revenues	148,468.11	180,967.10	164,593.57	149,523.67	157,100.00
	Adjusted Net Income (Loss)	303,155.89	497,745.05	484,077.94	456,723.46	264,945.00

The historical and current budget periods shown in Table 6 were analyzed to develop a forecast of the revenue requirement for the Authority. On average, operations and maintenance expense, including administration averaged \$1.1 million per year in these test periods. The compound rate of growth has been limited to 1.783% from 2017 through the Budget period. This is only marginally greater than the rate of increase in the Consumer Price Index (CPI-U) for the region, which has grown at a compound annual rate of growth of 1.66% over the same period. Generally, water and sewer rates nationally have been growing at a rate in excess of inflation and have been on the order of 3% to 4% per year.

Each expense line item in Table 6 was reviewed individually to estimate the level of expense that should be anticipated in the planning period. If a definable trend could not be seen in the test period data, an average for the test period was calculated and that average was increased at the annual rate of inflation for the 2001 through 2020 period. This rate of growth was calculated to be 1.798% per year. In Table 6, this is indicated by as Forecast Method “1.” If there was a definable trend to the test period data, the linear trend was used to estimate the study period expense level. This was done by calculating the slope of the change in the expense level and applying that slope to forecast the study period expenses. Debt service expenses for existing debt issues are known and the actual expense was used in this analysis. Similarly, new debt needed to fully fund the Authority’s capital improvement plan was anticipated and the estimated debt service requirements for the plan years was included in Table 7.

By trial, rate adjustments were considered and tested to provide sufficient water and sewer revenues to cover the anticipated expenses including the expense of pay-as-you-go capital improvements and new debt service. The impact of the recommended rate adjustments on revenues are also shown in Table 7.

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
WATER Revenues							
4000-06		Sales	935,000.00	937,000.00	938,000.00	987,000.00	988,000.00
4010-06		Hydrant Rentals	13,680.00	13,680.00	13,680.00	13,680.00	13,680.00
4200-06		Penalty & Interest Charges	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00
4350-06		Water Meter Charge	0.00	0.00	0.00	0.00	0.00
4400-06		Misc. Parts Sold	0.00	0.00	0.00	0.00	0.00
		Total Water Revenue	963,680.00	965,680.00	966,680.00	1,015,680.00	1,016,680.00
WATER Expenses							
5310-06	1	Legal Services	12,000.00	12,000.00	12,000.00	12,000.00	13,000.00
5312-06	1	Engineering Services	11,000.00	11,000.00	11,000.00	11,000.00	12,000.00
5405-06	2	Governmental Permits/fees	21,000.00	25,000.00	29,000.00	32,000.00	36,000.00
5500-06	2	Heating Fuel, Garage	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5512-06	1	Bldg. Maintenance	10,000.00	11,000.00	11,000.00	11,000.00	11,000.00
5520-06	1	Propane delivered-Wtr	400.00	400.00	500.00	500.00	500.00
5600-06	1	Salaries Bldg/Grounds	114,000.00	116,000.00	119,000.00	121,000.00	123,000.00
5620-06	2	Vehicle fuel	6,000.00	7,000.00	7,000.00	7,000.00	7,000.00
5626-06	1	Vehicle Rep/Main	7,000.00	8,000.00	8,000.00	8,000.00	8,000.00
5629-06	2	Small Tools/Minor Eqpt.	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5650-06	2	Chemicals	16,000.00	17,000.00	18,000.00	19,000.00	20,000.00
5655-06	1	Lab Analysis, Fees	14,000.00	14,000.00	15,000.00	15,000.00	15,000.00
5701-06	1	Distribution Sys.-Interconnect	151,000.00	153,000.00	156,000.00	159,000.00	162,000.00

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
5703-06	2	Distribution Sys.-Mains	32,000.00	34,000.00	37,000.00	40,000.00	42,000.00
5704-06	1	Distribution Sys.-Tanks	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5705-06	1	Distribution Sys.-Lines, Meter	10,000.00	10,000.00	10,000.00	11,000.00	11,000.00
5714-06	2	Electric-Well #3, Summit	6,000.00	6,000.00	7,000.00	7,000.00	7,000.00
5715-06	2	Electric, Well #4-Minehill	8,000.00	9,000.00	10,000.00	11,000.00	12,000.00
5716-06	2	Electric, Well #5-657 Main	12,000.00	14,000.00	15,000.00	17,000.00	18,000.00
5718-06	2	Electric, Well #7-Zieglerville	4,000.00	3,000.00	3,000.00	2,000.00	1,000.00
5720-06	1	Pumps-Repairs/Maintenance	4,000.00	4,000.00	5,000.00	5,000.00	5,000.00
5723-06	2	Electric, Well#9-PVMS	6,000.00	6,000.00	7,000.00	7,000.00	7,000.00
5726-06	2	Electric, Interconnect NPA	400.00	400.00	400.00	500.00	500.00
5727-06	1	Interconnect - NPA	3,000.00	3,000.00	3,000.00	4,000.00	4,000.00
5803-06	DS	Water Rev Note 2015-Principal	38,316.12	38,320.71	38,315.85	38,313.74	38,316.32
5804-06	DS	Water Rev Note 2015-Interest	16,752.43	16,754.43	16,752.31	16,751.38	16,752.52
5805-06	DS	PennVest Loan 2018- Principal	53,019.87	53,026.22	53,019.49	53,016.57	53,020.15
5806-06	DS	PennVest Loan 2018- Interest	4,584.17	4,584.72	4,584.14	4,583.89	4,584.20
	DS	New Debt Service - Water	0.00	49,274.72	49,274.72	49,274.72	49,274.72
5850-06	2	Hospitalization-Water	38,000.00	40,000.00	43,000.00	46,000.00	49,000.00
5860-06	2	Defined Pension Expense-Water	2,000.00	2,000.00	3,000.00	3,000.00	4,000.00
5861-06	1	Payroll Taxes-Water	9,000.00	9,000.00	9,000.00	9,000.00	10,000.00
5865-06	1	Unemployment Expense Tax-Water	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5875-06	1	Insurance, Vehicle -W	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
5880-06	2	Insurance, Comp/Gen Liab - W	23,000.00	25,000.00	27,000.00	28,000.00	30,000.00
5886-06	1	Workers Compensation/Water	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
5888-06	1	Insurance, Life - Water	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
5891-06	2	Training/Seminars/Lic. fees -W	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5920-06	1	Uniform Rental - Water	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
6000-06	1	Miscellaneous Expense Water	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
		Total Water Expenses	653,472.59	722,760.81	748,846.50	768,940.30	790,947.90
		Net Income (Loss) - Water	310,207.41	242,919.19	217,833.50	246,739.70	225,732.10
SEWER							
Revenues							
4000-08		Sales - Sewer	680,000.00	683,000.00	686,000.00	723,000.00	726,000.00
4200-08		Penalty & Interest Charges	8,000.00	8,000.00	8,000.00	8,000.00	8,000.00
4400-08		Misc. Parts Sold-Sewer	0.00	0.00	0.00	0.00	0.00
		Total Sewer Revenue	688,000.00	691,000.00	694,000.00	731,000.00	734,000.00
SEWER							
Expenses							
5310-08	1	Legal Services-Sewer	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00
5312-08	1	Engineering Services, Sewer	8,000.00	8,000.00	9,000.00	9,000.00	9,000.00
5405-08	2	Permits Fees-Swr CO&A	3,000.00	3,000.00	4,000.00	4,000.00	4,000.00
5500-08	2	Heating Fuel, Gar.-Sewer	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5512-08	1	Bldg. Maintenance-Sewer	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
5520-08	1	Propane delivered-Swr	300.00	400.00	400.00	400.00	400.00
5600-08	1	Salaries Bldg/Grnds-Sewer	136,000.00	139,000.00	141,000.00	144,000.00	147,000.00
5620-08	2	Vehicle fuel-Sewer	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
5626-08	1	Vehicle Rep/Main-Sewer	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00
5629-08	1	Small Tools/Minor Eqpt.-Swr	1,100.00	1,100.00	1,200.00	1,200.00	1,200.00
5650-08	2	Chemicals-Sewer	35,000.00	36,000.00	38,000.00	39,000.00	40,000.00

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
5655-08	1	Lab Analysis, Fees	8,000.00	8,000.00	8,000.00	8,000.00	9,000.00
5661-08	1	Coll. Sys - Supply/Services	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5665-08	1	Coll. Sys - Rep/Maint. Expense	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
5673-08	2	Treatment Plnt-Lab Mat/Sup	3,000.00	3,000.00	3,000.00	4,000.00	4,000.00
5674-08	1	Treatment Plnt-Matrls & Sup.	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5675-08	1	Treatment Plnt-Repair/Maint	19,000.00	20,000.00	20,000.00	20,000.00	21,000.00
5676-08	2	Electric, Treatment Plant	20,000.00	21,000.00	21,000.00	21,000.00	21,000.00
5677-08	2	Electric, Pump Stations	1,000.00	1,000.00	1,000.00	2,000.00	2,000.00
5678-08	1	Sludge Contract	42,000.00	43,000.00	43,000.00	44,000.00	45,000.00
5803-08	DS	Water Rev Note 2015-Principal	89,417.59	89,439.51	89,419.54	89,407.85	89,418.57
5804-08	DS	Water Rev Note 2015-Interest	39,072.82	39,082.40	39,073.67	39,068.56	39,073.24
	DS	New Debt Service - Sewer	0.00	25,730.92	25,730.92	25,730.92	25,730.92
5850-08	2	Hospitalization-Sewer	39,000.00	41,000.00	43,000.00	45,000.00	47,000.00
5860-08	2	Defined Pension Expense-Sewer	1,000.00	1,000.00	2,000.00	2,000.00	2,000.00
5861-08	1	Payroll Taxes-Sewer	10,000.00	10,000.00	11,000.00	11,000.00	11,000.00
5865-08	1	Unemployment Exp.-Sewer	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5875-08	1	Insurance, Vehicle-Sewer	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
5880-08	2	Ins. Compreh. Gen Liab/Sewer	15,000.00	16,000.00	17,000.00	18,000.00	19,000.00
5886-08	1	Workers Compensation/Sewer	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
5888-08	1	Ins.-Life, ADD - Sewer	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5891-08	2	Training/Seminars/License fees	3,000.00	3,000.00	3,000.00	4,000.00	4,000.00
5920-08	1	Uniform Rental - Sewer	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
6000-08	1	Miscellaneous Expense-Swr	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
		Total Sewer Expense	509,890.41	545,752.83	556,824.13	567,807.34	577,822.74
		Net Income (Loss) - Sewer	178,109.59	145,247.17	137,175.87	163,192.66	156,177.26

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
ADMIN Expenses							
5010-02	2	Salaries-Administration	101,000.00	104,000.00	107,000.00	110,000.00	113,000.00
5200-02	2	Office Supplies/Expense	11,000.00	11,000.00	10,000.00	10,000.00	10,000.00
5250-02	2	Office Equipment Rent	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5255-02	2	Computer Tech Support	7,000.00	7,000.00	7,000.00	8,000.00	8,000.00
5300-02	1	Auditing Services	14,000.00	14,000.00	14,000.00	14,000.00	15,000.00
5305-02	1	Acctg/Actuarial Services	20,000.00	20,000.00	20,000.00	21,000.00	21,000.00
5315-02	1	Management Consultant	53,000.00	54,000.00	55,000.00	56,000.00	57,000.00
5410-02	1	Dues/Subscriptions/Memberships	2,000.00	2,000.00	2,000.00	2,000.00	3,000.00
5420-02	1	Travel/Entertainment/Meals	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5425-02	1	Advertising	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5430-02	2	Printing/Postage	12,000.00	12,000.00	12,000.00	12,000.00	13,000.00
5510-02	1	Office Cleaning	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
5610-02	2	Telephone Expense	8,000.00	9,000.00	9,000.00	9,000.00	9,000.00
5611-02	2	Answering Service	1,000.00	1,000.00	1,000.00	1,000.00	2,000.00
5614-02	2	Electric Service-Office	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5615-02	2	Trash Removal	1,000.00	1,000.00	1,000.00	2,000.00	2,000.00
5850-02	2	Hospitalization-Admin.	9,000.00	10,000.00	10,000.00	10,000.00	10,000.00
5859-02	2	457 Pension Exp - Admin	13,000.00	14,000.00	15,000.00	15,000.00	16,000.00
5861-02	2	Social Security Exp-Admin.	8,000.00	8,000.00	8,000.00	8,000.00	9,000.00
5865-02	2	Unemployment Comp. Tax-Admin	200.00	200.00	200.00	200.00	200.00
5886-02	2	Workers Compensation-Admin.	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
5888-02	2	Life Insurance-Admin.	3,000.00	4,000.00	4,000.00	4,000.00	4,000.00
		Total Administrative Expenses	272,200.00	280,200.00	284,200.00	291,200.00	301,200.00

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
OTHER Revenues							
4015-04	1	Insurance Reimbursement	-	-	-	-	-
4100-04	1	Interest Earnings	3,000.00	4,000.00	4,000.00	4,000.00	4,000.00
4550-04	1	Reimbursement RE Tax	3,000.00	3,000.00	3,000.00	4,000.00	4,000.00
4800-04	1	Borough Contract Income	23,000.00	23,000.00	23,000.00	24,000.00	24,000.00
		Total Other Revenues	29,000.00	30,000.00	30,000.00	32,000.00	32,000.00
OTHER Expenses							
5790-04	1	Real Estate Tax-Summit Ave.	7,000.00	7,000.00	7,000.00	7,000.00	7,000.00
5902-04	2	Salaries-Boro Snow Plowing	6,000.00	7,000.00	7,000.00	8,000.00	8,000.00
5904-04	1	Salaries-Other Boro Labor	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
5905-04	1	Materials Purchased-Boro	7,000.00	7,000.00	7,000.00	7,000.00	7,000.00
		Total Other Expenses	22,000.00	23,000.00	23,000.00	24,000.00	24,000.00
		Net Income (Loss) - Other	7,000.00	7,000.00	7,000.00	8,000.00	8,000.00
		Total Net Income (Loss)	223,117.00	114,966.36	77,809.36	126,732.36	88,709.36

Table 7: Forecast Revenues and Expenses			31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26
			Forecast	Forecast	Forecast	Forecast	Forecast
Forecast Method							
CAPITAL RESERVE ACCOUNT							
Tapping Fees							
4012-06		EDU/Water Tap fee	9,600.00	9,600.00	9,600.00	9,600.00	9,600.00
4012-08		EDU/Sewer Tap fee	7,500.00	7,500.00	7,500.00	7,500.00	7,500.00
		Total Tapping Fees	17,100.00	17,100.00	17,100.00	17,100.00	17,100.00
Tower Rental Income							
4500-04		Tower Rental Income	140,000.00	140,000.00	140,000.00	140,000.00	140,000.00
		Total Other Revenues	157,100.00	157,100.00	157,100.00	157,100.00	157,100.00
		Adjusted Net Income (Loss)	380,217.00	272,066.36	234,909.36	283,832.36	245,809.36

Total operating expenses, excluding debt service average \$1,273,000 per year and the compound rate of growth of these expenses is forecast 3.18%. This is typical of most water and sewer utilities, but we will note that the Authority's past performance has been better than this in that the rate of growth in expenses has been limited to 1.783% per year. As a result, the forecast has a degree of conservatism built into it.

The rate adjustments used to arrive at the results in Table 7 are shown in Table 8. The rate adjustments in Table 8 are arrived at by trial. Rates should be sufficient to:

- I. Provide sufficient operating income before the collection of capital charges and antennae revenues to cover operating expenses and debt service with a minimum coverage ratio of 1.00;
- II. Result in net adjusted operating income sufficient to replenish reserves and support the Authority's pay-as-you-go capital improvements; and
- III. Provide sufficient revenue to support the overall capital improvement plan, which will in part be funded with debt.

Table 8: Recommended Rate Adjustments		
Effective Date	Water	Sewer
January 1, 2022	5%	5%
January 1, 2023	0%	0%
January 1, 2024	0%	0%
January 1, 2025	5%	5%
January 1, 2026	0%	0%

The water rate and revenue history can be seen in Table 9. Along with the historical rates and annual revenues, Table 9 also shows the projected rates and water revenues inclusive of the rate adjustments shown in Table 8.

Table 9: Rate History & Forecast Revenues - Water					
Year Ending	Fixed Charge (\$/Month)	Volume Rate (\$/ThGal)	Rate Adjustment - Fixed Charge (%)	Rate Adjustment - Volume Rate (%)	Annual Revenues
31-Dec-10	\$ 4.50	\$ 5.00			\$ 543,000
31-Dec-11	\$ 4.50	\$ 5.00	0%	0%	\$ 568,000
31-Dec-12	\$ 4.50	\$ 5.00	0%	0%	\$ 544,000
31-Dec-13	\$ 4.50	\$ 5.00	0%	0%	\$ 555,000
31-Dec-14	\$ 6.12	\$ 7.50	36%	50%	\$ 751,000
31-Dec-15	\$ 6.50	\$ 9.00	6%	20%	\$ 867,000
31-Dec-16	\$ 6.50	\$ 9.00	0%	0%	\$ 803,000
31-Dec-17	\$ 6.50	\$ 9.00	0%	0%	\$ 760,000
31-Dec-18	\$ 6.96	\$ 9.63	7%	7%	\$ 846,000
31-Dec-19	\$ 6.96	\$ 9.63	0%	0%	\$ 820,000
31-Dec-20	\$ 6.96	\$ 9.63	0%	0%	\$ 897,000
31-Dec-21	\$ 6.96	\$ 9.63	0%	0%	\$ 889,000
31-Dec-22	\$ 7.31	\$ 10.11	5%	5%	\$ 935,000
31-Dec-23	\$ 7.31	\$ 10.11	0%	0%	\$ 937,000
31-Dec-24	\$ 7.31	\$ 10.11	0%	0%	\$ 938,000
31-Dec-25	\$ 7.68	\$ 10.62	5%	5%	\$ 987,000
31-Dec-26	\$ 7.68	\$ 10.62	0%	0%	\$ 988,000

The sewer rate and revenue history is shown in Table 10 along with the recommended rates and revenues resulting from the rate adjustments shown in Table 8.

Table 10: Rate History & Forecast Revenues - Sewer								
Year	Rate Adjustment (%)	Public	Residential	Commercial	Laundry	Gas Station	Restaurant	Annual Revenues
2013		\$ 75.00	\$ 46.00	\$ 46.00	\$ 190.00	\$ 95.00	\$ 122.00	\$ 561,864
2014	0%	\$ 75.00	\$ 46.00	\$ 46.00	\$ 190.00	\$ 95.00	\$ 122.00	\$ 562,416
2015	7%	\$ 75.00	\$ 49.00	\$ 49.00	\$ 190.00	\$ 95.00	\$ 122.00	\$ 598,020
2016	0%	\$ 75.00	\$ 49.00	\$ 49.00	\$ 190.00	\$ 95.00	\$ 122.00	\$ 598,020
2017	0%	\$ 75.00	\$ 49.00	\$ 49.00	\$ 190.00	\$ 95.00	\$ 122.00	\$ 599,784
2018	7%	\$ 80.25	\$ 52.43	\$ 52.43	\$ 203.30	\$ 101.65	\$ 130.54	\$ 641,769
2019	0%	\$ 80.25	\$ 52.43	\$ 52.43	\$ 203.30	\$ 101.65	\$ 130.54	\$ 641,769
2020	0%	\$ 80.25	\$ 52.43	\$ 52.43	\$ 203.30	\$ 101.65	\$ 130.54	\$ 642,398
2021	0%	\$ 80.25	\$ 52.43	\$ 52.43	\$ 203.30	\$ 101.65	\$ 130.54	\$ 644,915
2022	5%	\$ 84.26	\$ 55.05	\$ 55.05	\$ 213.47	\$ 106.73	\$ 137.07	\$ 680,000
2023	0%	\$ 84.26	\$ 55.05	\$ 55.05	\$ 213.47	\$ 106.73	\$ 137.07	\$ 683,000
2024	0%	\$ 84.26	\$ 55.05	\$ 55.05	\$ 213.47	\$ 106.73	\$ 137.07	\$ 686,000
2025	5%	\$ 88.47	\$ 57.80	\$ 57.80	\$ 224.14	\$ 112.07	\$ 143.92	\$ 723,000
2026	0%	\$ 88.47	\$ 57.80	\$ 57.80	\$ 224.14	\$ 112.07	\$ 143.92	\$ 726,000

Table 11 shows the cash ending balance projected for the Authority given the expense projection shown in Table 7 and the capital improvement program shown in Table 5 and the rate adjustments shown in Table 8. In Table 11, the projected starting balance for the rate Study period is calculated from the actual year-end 2019 Cash Reserves. From this amount, the pay-as-you-go capital improvements are subtracted and the net adjusted operating income is added in to arrive at a new projected Cash Reserve balance at the end of 2022. This same calculation is carried forward through 2026. Note that the cash ending balance is maintained at a level consistently near \$2 million.

Table 12 shows the anticipated financing for the capital improvement plan. The financing should be arranged no later than 2022 and for purposes of this plan, it is assumed that this will be a 30-year note bearing a 4% interest rate. Repayment of the note begins in 2023.

Table 13 shows the construction reserve balance through the plan period. The proceeds of the note are deposited in this fund in 2022. Cash from current operations is used to pay for a portion of the capital improvement needs on a pay-as-you-go basis each year and the balance of the capital requirements are funded from the note. The construction reserve balance is drawn down by the end of the planning period.

Tapping fees and tower rental income accounts for a total of \$157,100 per year in annual revenues. Tapping fees are dependent on development moving ahead and as a result, the realization of these fees is dependent on the overall condition of the economy. Tower rental fees are revenues generated by leasing space to cellular communications companies. These fees are reliable to the extent that the cellular communications company continues to require the Authority's site to maintain its operations. Consolidation in the communications industry as well as changes in technology are risks to this revenue stream. As a result, the rates recommended in this Study first look at the amount of operating expenses and debt service obligations taken on by the Authority. The recommended rates will generate sufficient funds to cover these obligations of the Authority. However, the loss of the tapping fees and the antennae lease revenues could impact the pay-as-you-go portion of the Authority's capital plan and require a reassessment of the scheduling of this work or potentially, the issuance of a new note to address the capital plan.

Table 11: Ending Balance Projection		2022	2023	2024	2025	2026
Cash Reserves December 2019	\$ 1,233,730					
Net Income 2020	\$ 456,723					
Net Income 2021	\$ 264,945					
Beginning Balance	\$ 1,955,398	\$ 1,955,398	\$ 2,100,615	\$ 2,027,465	\$ 2,135,525	\$ 2,111,297
Capital Funded from Cash		\$ (235,000)	\$ (200,000)	\$ (200,000)	\$ (200,000)	\$ (200,000)
Adjusted Net Income		\$ 380,217	\$ 272,066	\$ 234,909	\$ 283,832	\$ 245,809
Ending Balance		\$ 2,100,615	\$ 2,027,465	\$ 2,135,525	\$ 2,111,297	\$ 2,181,334

Table 12: Anticipated New Debt Service		2022	2023	2024	2025	2026
Projected Financing	\$ 1,297,000					
Interest Rate	4%					
Term (Years)	30					
Principal			\$23,126	\$24,051	\$25,013	\$26,013
Interest Rate			\$51,880	\$50,955	\$49,993	\$48,992
Total New Debt Service		\$0	\$75,006	\$75,006	\$75,006	\$75,006

Table 13: Projected Construction Reserve		2022	2023	2024	2025	2026
Beginning Construction Reserve Balance		\$ -	\$ 1,297,000	\$ 1,045,000	\$ 770,000	\$ 240,000
Capital Construction Budget		\$ (235,000)	\$ (452,000)	\$ (475,000)	\$ (730,000)	\$ (440,000)
Construction Funded with Cash		\$ 235,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Proceeds from Financing		\$ 1,297,000	\$ -	\$ -	\$ -	\$ -
Ending Construction Reserve Balance		\$ 1,297,000	\$ 1,045,000	\$ 770,000	\$ 240,000	\$ -

While the Authority does not issue revenue bonds to fund its capital improvements, the concept of the “coverage ratio” typical of such financing is a useful metric to determine the overall health of the Authority along with other measures like the cash ending balance. The coverage ratio is the net operating income divided by the annual debt service. It is a measure of the Authority’s ability to fund its operating and maintenance expenses and then discharge its debt obligations. For revenue bonds, it is typical to see a minimum coverage ratio requirement of 1.10. That is, net operating income must be equal to or greater than 110% of the annual debt service requirement.

In this Study, the coverage ratio was calculated independent of the revenues received from tapping fees and tower rentals. This was done to ensure that rates would be sufficient to cover operating and maintenance costs as well as to discharge the annual debt service. The ratio was then calculated with all revenue sources recognized. The results of these calculations can be seen in Tables 14 and 15.

Table 14: Comparison of Utility Operating Income and Coverage Ratio					
Year	Total Revenue (Excl Cap Reserve)	Total Expenses Less Debt Service	Utility Operating Income	Total Debt Service	Coverage Ratio
2017	\$ 1,474,447	\$ 1,158,280	\$ 316,167	\$ 161,479	1.96
2018	\$ 1,590,467	\$ 1,089,655	\$ 500,812	\$ 184,034	2.72
2019	\$ 1,580,118	\$ 1,033,438	\$ 546,680	\$ 227,196	2.41
2020	\$ 1,642,801	\$ 1,094,496	\$ 548,305	\$ 241,105	2.27
2021	\$ 1,604,680	\$ 1,255,700	\$ 348,980	\$ 241,135	1.45
2022	\$ 1,680,680	\$ 1,216,400	\$ 464,280	\$ 241,163	1.93
2023	\$ 1,686,680	\$ 1,330,506	\$ 356,174	\$ 316,214	1.13
2024	\$ 1,690,680	\$ 1,371,706	\$ 318,974	\$ 316,171	1.01
2025	\$ 1,778,680	\$ 1,410,806	\$ 367,874	\$ 316,148	1.16
2026	\$ 1,782,680	\$ 1,452,806	\$ 329,874	\$ 316,171	1.04

Table 15: Adjusted Coverage Ratio				
Year	UOI	Other Income	Total Income	Adjusted Coverage Ratio
2017	\$ 316,167	\$ 148,468	\$ 464,635	2.88
2018	\$ 500,812	\$ 180,967	\$ 681,779	3.70
2019	\$ 546,680	\$ 164,594	\$ 711,274	3.13
2020	\$ 548,305	\$ 149,524	\$ 697,829	2.89
2021	\$ 348,980	\$ 157,100	\$ 506,080	2.10
2022	\$ 464,280	\$ 157,100	\$ 621,380	2.58
2023	\$ 356,174	\$ 157,100	\$ 513,274	1.62
2024	\$ 318,974	\$ 157,100	\$ 476,074	1.51
2025	\$ 367,874	\$ 157,100	\$ 524,974	1.66
2026	\$ 329,874	\$ 157,100	\$ 486,974	1.54

With the proposed rate adjustments shown in Table 8, the Authority can maintain an Adjusted Coverage Ratio, which reflects all income, at an appropriate level through the planning period covered by this Study. In addition, Table 11 shows a projected cash ending balance of approximately \$2 million, which represents a balance equivalent to 490 days of the Authority's total water and sewer expenses, including debt service.

5. Rate Comparison

A review of the Authority's rates relative to other water and sewer service providers in the region was undertaken. While the revenue requirement and customer base of each utility are unique, it is useful to compare rates as an overall performance measure of the utility. In this Study, we accumulated the rates for 41 sewer service areas and 36 water service areas. During the planning period covered by this Study, water sales to Authority customers is projected to average 4,300 gallons per month. Using this average rate of consumption, we calculated the typical monthly bill that would be rendered by the Authority and the peer groups of regional water and sewer utilities at existing rates. The results of these calculations are shown in Tables 16 and 17 and these are shown graphically in Figures 3 and 4.

Table 16: Water Rate Comparison		
System	Monthly Charge	Percent Above or Below Median
Upper Makefield Township - Enclave	\$ 100.00	194.7%
Limerick Township (PA-American Zone 1)	\$ 72.78	114.5%
Royersford Borough (PA American Zone 1)	\$ 72.78	114.5%
Aqua Pennsylvania Zone 1	\$ 71.07	109.4%
Upper Frederick Township (Aqua Rate Zone 2)	\$ 71.07	109.4%
New Hanover Township (Aqua Rate Zone 2)	\$ 71.07	109.4%
Buckingham Water District 2	\$ 64.24	89.3%
Downingtown Municipal Water Authority	\$ 59.85	76.4%
Horsham Water & Sewer Authority	\$ 49.24	45.1%
Upper Hanover Authority	\$ 47.98	41.4%
Morrisville Municipal Authority	\$ 41.41	22.0%
Schwenksville Borough Authority	\$ 39.56	16.6%
Perkasie Regional Authority	\$ 38.93	14.7%
Northampton Bucks County Municipal Authority	\$ 37.96	11.8%
Newtown Artesian Water Company	\$ 37.20	9.6%
Warminster Township Municipal Authority	\$ 35.60	4.9%
Pottstown Borough Authority (Outside Borough)	\$ 34.92	2.9%
Pottstown Borough Authority (Inside Borough)	\$ 34.26	0.9%
North Penn Water Authority - Main System	\$ 33.61	-0.9%
Upper Southampton Municipal Authority	\$ 32.93	-3.0%
Telford Borough Authority	\$ 32.64	-3.8%
Chester Water Authority	\$ 31.92	-5.9%
Doylestown Township Municipal Authority	\$ 31.82	-6.2%
Philadelphia Water Department	\$ 31.29	-7.8%
Bedminster Municipal Authority	\$ 30.12	-11.3%
Buckingham Water District 1	\$ 29.55	-12.9%
Upper Frederick Township (Municipal)	\$ 28.93	-14.8%
BCWSA Zone 1	\$ 28.54	-15.9%
Warwick Township	\$ 25.87	-23.8%
North Penn Water Auth - Sellersville	\$ 25.86	-23.8%
Township of Falls Authority	\$ 25.41	-25.1%
Richland Township Water Authority	\$ 23.87	-29.7%
Hilltown Water & Sewer Auth	\$ 23.66	-30.3%
Doylestown Borough	\$ 20.65	-39.2%
North Wales Water Authority - Main	\$ 20.48	-39.7%
North Wales Water Authority - Warrington	\$ 20.48	-39.7%
Median Value	\$ 33.94	

Figure 3: Comparison of Monthly Water Service Charges

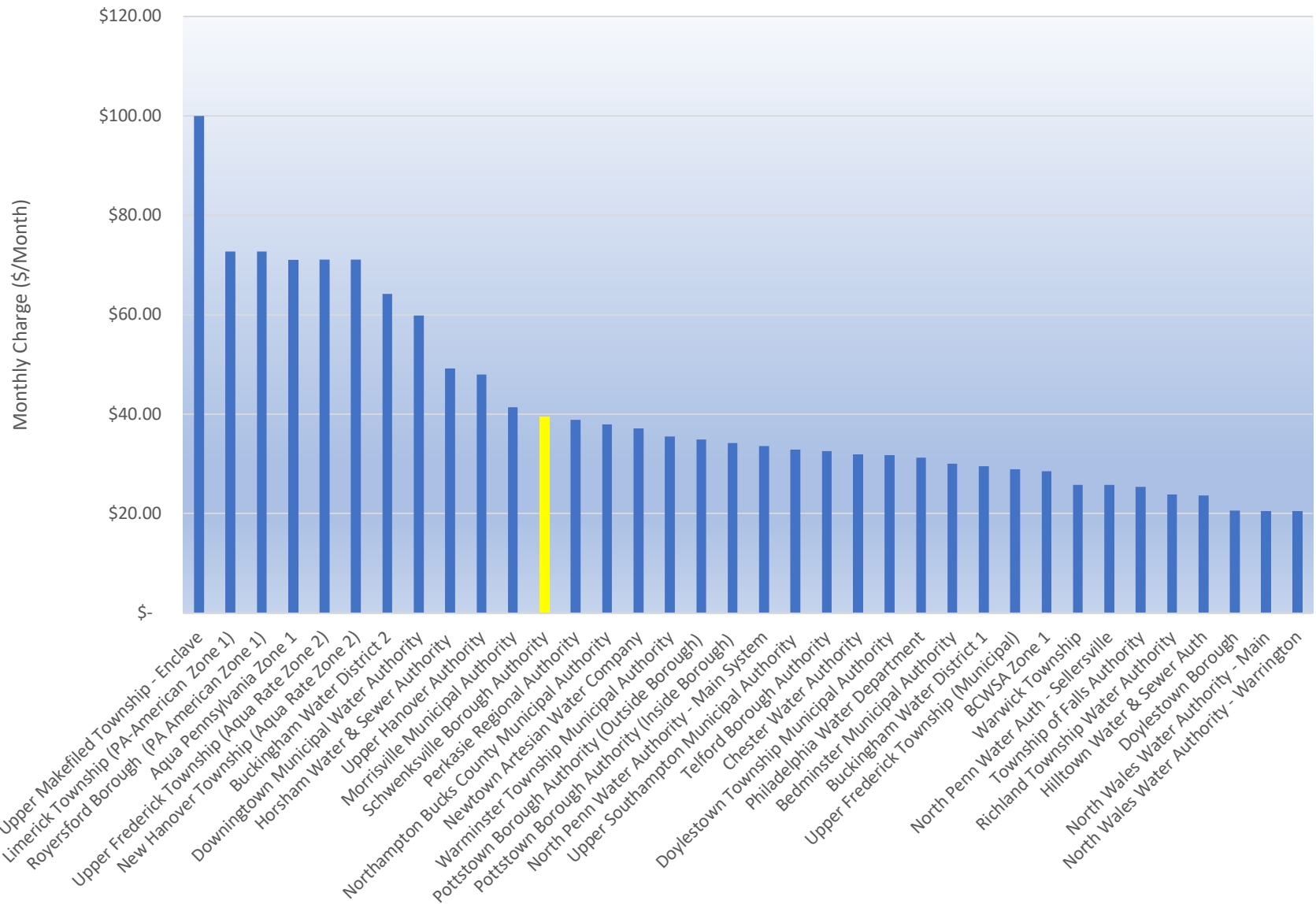
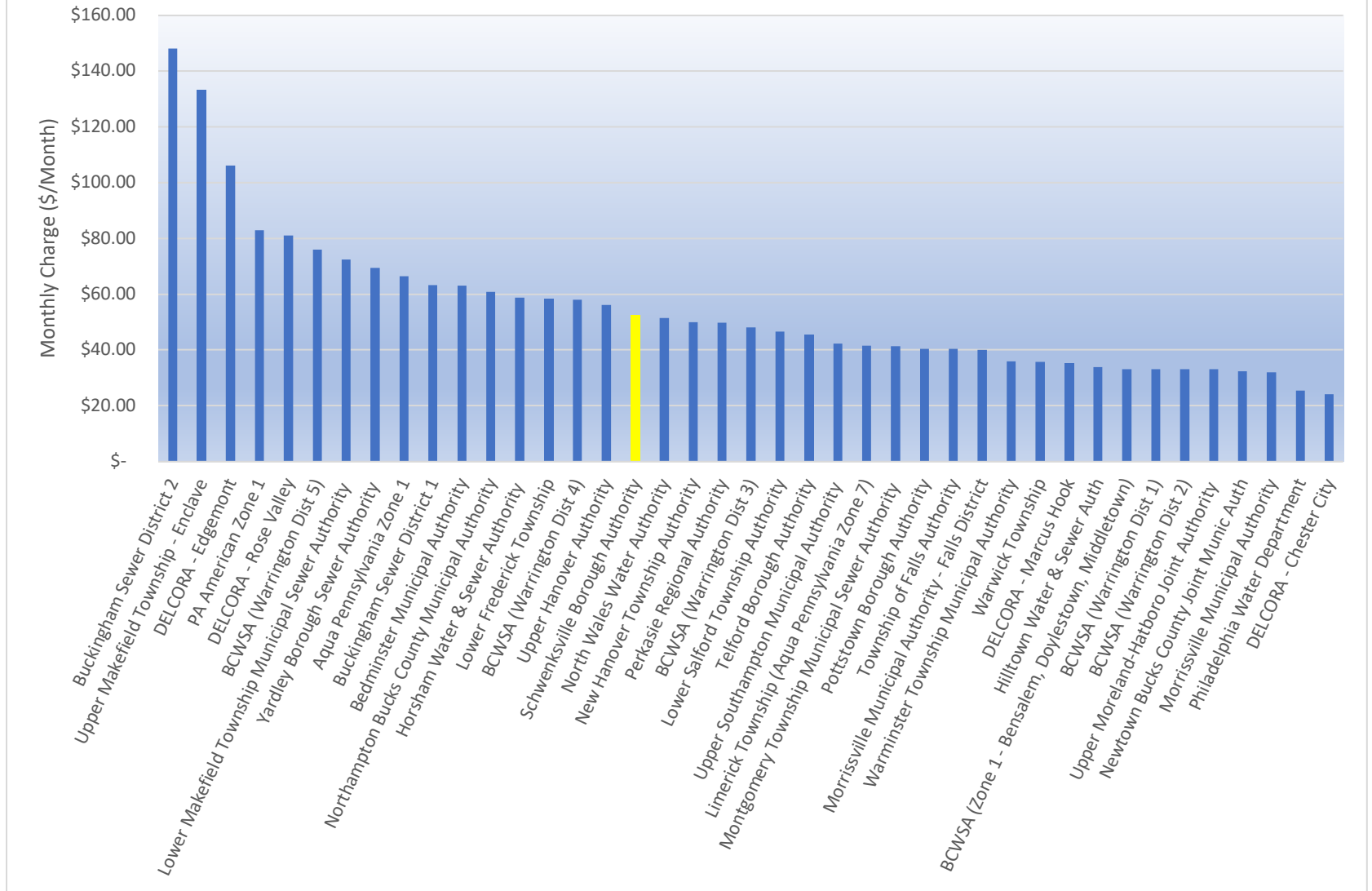


Table 17: Sewer Rate Comparison		
System	Monthly Charge	Percent Above or Below Median
Buckingham Sewer District 2	\$ 148.09	207.8%
Upper Makefield Township - Enclave	\$ 133.33	177.1%
DELCORA - Edgemont	\$ 106.25	120.8%
PA American Zone 1	\$ 82.92	72.3%
DELCORA - Rose Valley	\$ 81.00	68.3%
BCWSA (Warrington Dist 5)	\$ 75.99	57.9%
Lower Makefield Township Municipal Sewer Auth	\$ 72.51	50.7%
Yardley Borough Sewer Authority	\$ 69.50	44.4%
Aqua Pennsylvania Zone 1	\$ 66.46	38.1%
Buckingham Sewer District 1	\$ 63.21	31.4%
Bedminster Municipal Authority	\$ 63.19	31.3%
Northampton Bucks County Municipal Authority	\$ 60.95	26.7%
Horsham Water & Sewer Authority	\$ 58.85	22.3%
Lower Frederick Township	\$ 58.33	21.2%
BCWSA (Warrington Dist 4)	\$ 58.03	20.6%
Upper Hanover Authority	\$ 56.25	16.9%
Schwenksville Borough Authority	\$ 52.43	9.0%
North Wales Water Authority	\$ 51.52	7.1%
New Hanover Township Authority	\$ 50.00	3.9%
Perkasie Regional Authority	\$ 49.73	3.4%
BCWSA (Warrington Dist 3)	\$ 48.12	0.0%
Lower Salford Township Authority	\$ 46.67	-3.0%
Telford Borough Authority	\$ 45.54	-5.4%
Upper Southampton Municipal Authority	\$ 42.40	-11.9%
Limerick Township (Aqua Pennsylvania Zone 7)	\$ 41.51	-13.7%
Montgomery Township Municipal Sewer Auth	\$ 41.41	-13.9%
Pottstown Borough Authority	\$ 40.54	-15.8%
Township of Falls Authority	\$ 40.45	-15.9%
Morrisville Municipal Authority - Falls District	\$ 40.12	-16.6%
Warminster Township Municipal Authority	\$ 35.94	-25.3%
Warwick Township	\$ 35.81	-25.6%
DELCORA - Marcus Hook	\$ 35.39	-26.5%
Hilltown Water & Sewer Auth	\$ 33.82	-29.7%
BCWSA (Zone 1 - Bensalem, Doylestown, Middletown)	\$ 33.18	-31.1%
BCWSA (Warrington Dist 1)	\$ 33.11	-31.2%
BCWSA (Warrington Dist 2)	\$ 33.11	-31.2%

Table 17: Sewer Rate Comparison		
System	Monthly Charge	Percent Above or Below Median
Upper Moreland-Hatboro Joint Authority	\$ 33.11	-31.2%
Newtown Bucks County Joint Munic Auth	\$ 32.33	-32.8%
Morrisville Municipal Authority	\$ 32.08	-33.3%
Philadelphia Water Department	\$ 25.42	-47.2%
DELCORA - Chester City	\$ 24.12	-49.9%
Median Value	\$ 48.12	

Figure 4: Comparison of Monthly Sewer Service Charges



The Authority rates compare favorably with peer utilities. While the Authority's typical monthly water and sewer bills are above the calculated median value for the peer utilities, the cost of service for a typical customer is well below the cost of service billed by the region's large investor-owned utilities and regional authorities. For water service, the Authority's typical bill is 45% less than the typical bill rendered for the same service by Pennsylvania American and Aqua Pennsylvania, the Commonwealth's two largest investor-owned utilities. Similarly, for sewer service, the Authority's typical bill is 36% lower than the average bill rendered by Aqua Pennsylvania, Pennsylvania American, DELCORA and Lower Makefield.

The rates recommended by this Study will only marginally close these gaps and it is a certainty that these peer entities will also adjust rates within the planning period. The recommended rate adjustment for 2022 of 5% will increase the typical Authority water bill of \$39.56 by \$1.99 per month to a revised total of \$41.54. The additional 5% rate adjustment recommended for 2025 would add \$2.10 per month to the water bill, bringing the revised total to \$43.64. Referring to Table 16, the 2025 rates would only move the Authority up one position in the relative comparison if none of the other utilities modified their rates over this period. For sewer, the 5% increase recommended for 2022 would increase the monthly sewer bill from \$52.43 to \$55.05, a change of \$2.62 per month. The additional adjustment recommended for 2025 would increase the typical monthly bill to \$57.80, a change of \$2.75 per month. Referring to Table 17, the recommended 2025 rates would also move the Authority up one position in the ranking. This also assumes that there will be no increases in the peer utility rates during this period. We note that DELCORA and Lower Makefield have entered into agreements with Aqua to sell their sewer systems to this investor-owned utility. If the DELCORA acquisition is approved by the Pennsylvania Public Utility Commission, DELCORA rates will increase by 12.55% and Aqua Wastewater rates will increase by 14.32% according to public notices already issued by Aqua and DELCORA. Similarly, if the Lower Makefield transaction is approved by the Public Utility Commission, Lower Makefield rates will increase by 28.17% and Aqua Wastewater rates will increase by another 3.82%.

The Authority's current rates are competitive with regional peer water and sewer service providers and even with the recommended rate adjustments in 2022 and 2025, the Authority's rates will remain competitive.