

ELIZABETH TOWNSHIP

Sewage Rate Study
January 2023

DRAFT

KLH

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ELIZABETH TOWNSHIP

Sewage Rate Study

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**ELIZABETH TOWNSHIP
SEWER SYSTEM RATE STUDY
JANUARY 2023**

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1.0 INTRODUCTION

Elizabeth Township is in the midst of a series of large sanitary sewer projects via a PENNVEST loan and previously issued bonds. The sanitary sewer system, including collection and conveyance lines, pump stations, and a treatment plant, is in need of ongoing maintenance and replacements. Hence, the purpose of this sewer system rate study is to identify the costs associated with both the construction and operation of the sanitary sewer system as a whole, including but not limited to operating and maintenance costs, supplies, repairs and replacements, debt service and reserves, and to provide recommendations on the user rates necessary to support the long-term financial needs of the system.

1.1 BACKGROUND

Elizabeth Township, Allegheny County, Pennsylvania is located approximately 20 miles southeast of the City of Pittsburgh. The Township encompasses a land area of 23 square miles, serving a 2020 U.S. Census population of 12,972 people. Elizabeth Township is a first class Township and is governed by a seven member Board of Commissioners, with day-to-day operations overseen by a Township Manager.

Elizabeth Township Commissioners voted to dissolve the Elizabeth Township Sanitary Authority in April 2013 and took over operations of the sanitary sewer system in January 2014. The Township absorbed the debts associated with the erstwhile Sanitary Authority.

In October 2020, the Township received \$17,300,000 of new monies from PENNVEST via a 30-year loan. These funds were to construct the upsizing of Boston Pump Station and the conversion of the Buena Vista Treatment Plant to a pump station with equalization basin. A series of Bonds were issued in 2019 to construct the 10-mile long forcemain from Buena Vista to the City of McKeesport that would eventually take the pumped flows from the converted treatment plant.

These projects were vital to meeting the Consent Decree that Elizabeth Township is under from the Pennsylvania Department of Environmental Protection (PADEP) due to continual hydraulic overloading into the Youghiogheny River from the Buena Vista Treatment Plant. This consent decree was entered into between the Township and PADEP in May 2016. The original deadline was December 2022 for all of the above projects to be completed. However, due to COVID-19 related issues with both funding streams and supply chain issues, PADEP extended the deadline until December 2023.

Once that deadline is met, the Township must remove all Sanitary Sewer Overflows (SSOs) from receiving streams by December 2025 (under the revised deadline). The Township is currently evaluation various projects to meet those goals.

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2.0 REVIEW OF TOWNSHIP'S EXISTING SYSTEM & FINANCIAL CONDITION

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2.1 GENERAL

Elizabeth Township's sanitary sewer system includes collection and conveyance sewers, pump stations and one (1) treatment plant – the Buena Vista WWTP. The Buena Vista WWTP is operated under NPDES Permit No. PA0024732 and has a hydraulic capacity of 1.4 million gallons per day (MGD) and an organic capacity of 2000 lbs BOD per day. According to the Township's Chapter 94 - Municipal Wasteload Management Report for Operating Year 2021, the average monthly flow treated at the WWTP is 1.208 MGD. It is currently part of the consent decree with PADEP for discharging untreated flows into the Youghiogheny River as part of its chronic hydraulic overloading. The Buena Vista Treatment Plant and pump stations are maintained by Veolia through an annual contract.

The Township also maintains five (5) pump stations – Duncan Station, Lovedale, Simpson-Howell, Wylie, and Boston.

2.2 EXISTING CUSTOMER BASE

According to Township billing records through December 2021, the breakdown of customers provided service over time is illustrated in Table 1.

TABLE 1

Elizabeth Township
Historical Customer Breakdown

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Residential	4,944	4,949	4,947	4,930	4,930	4,926	5,091	5,096	5,120	5,134
Commercial	216	215	215	218	218	217	216	220	199	201
TOTAL	5,160	5,164	5,162	5,148	5,148	5,143	5,307	5,316	5,319	5,335

In addition to these customers, service is provided to 45 customers in Forward Township and 504 in Sutersville/Sewickley.

While Table 1 illustrates the number of active accounts, it is important to note that higher use customers are billed as multiple Equivalent Dwelling Units (EDUs). According to Township ordinance, any account utilizing more than 270 GPD can be assessed as multiple EDUs. Therefore, Table 2 illustrates the current breakdown of total EDUs.

TABLE 2
Current EDU Breakdown

	EDUs
Elizabeth Township	
Residential	5,185
Commercial	771
Forward Township	45
Suttersville / Sewickley	504
TOTAL	6,505

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The top ten (10) highest billed customers from the Year 2021 are as follows.

TABLE 3
Ten Largest Sewer Customers by Revenue

Billing Rank	Customer	EDUs	One Year Billing
1	Mick's Properties (Formerly Virginia Manor Inc)	122	\$ 61,525.50
2	Elizabeth Forward School	26	\$ 33,523.70
3	Five Star Quality Care	33	\$ 32,074.50
4	Mt Vernon Joint Venture	32	\$ 18,245.25
5	Mt Vernon Joint Venture	32	\$ 17,382.75
6	Mt Vernon Joint Venture	32	\$ 17,076.75
7	Mt Vernon Joint Venture	32	\$ 17,067.00
8	Healing Hearts Managements	17	\$ 16,982.93
9	Elizabeth Township Self Storage	18	\$ 15,422.48
10	Mt Vernon Joint Venture	19	\$ 12,726.75
	TOTAL	363	\$ 242,028

2.3 CURRENT SEWER USE CHARGES

Sewer rates were adjusted in 2009, 2010 and 2012 to cover the sewer system expenditures and long term debt service. A listing of rate adjustments from 2009 to 2012 is shown in the table below.

TABLE 4
Historic Sewer System Rates

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	Effective Date	Charge Per Month	Monthly Fee	Charge Per Quarter	Gallons Allowed Minimum Per Month	Gallons Allowed Minimum Per Quarter	Cost Per Additional 1,000 Gallons
Residential	1/1/2012	\$ 42.00			2,000	6,000	\$ 7.50
Commercial	1/1/2012	\$ 42.00			2,000	6,000	\$ 7.50
Residential	1/1/2010	\$ 33.75			2,000	6,000	\$ 6.00
Commercial	1/1/2010	\$ 33.75			2,000	6,000	\$ 6.00
Residential	1/1/2009	\$ 27.00			2,000	6,000	\$ 4.95
Commercial	1/1/2009	\$ 27.00			2,000	6,000	\$ 4.95

The following is a list of the Township's current schedule of charges:

- Sewer Tap-In Fee = \$6,000
- Base Rate Monthly Charge = \$48.00 / EDU
- Consumption Monthly Charge = 0 – 1,000 gallons no charge
 - 1,000 to 2,000 gallons \$8/1000 gallons
 - 2,000 to 4,000 gallons \$9/1000 gallons
 - 4,000 gallons and up \$10/1000 gallons

The Township set these rates in 2022 to adequately cover all debt service obligations. In December 2022, PA American announced their new bulk rate would increase significantly to \$16.68/1000 gallons, an increase of nearly \$6.00/1000 gallons. It was in response to this increase that the Township proposed their current 2023 rate structure.

2.4 OUTSTANDING DEBT OBLIGATIONS

The Township's long-term debt includes debt service on the 2003, 2008 and 2009, 2011, and 2012 bond issues and is discussed in the following sections:

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1. Revenue Bonds Series 2003

The Elizabeth Township Sanitary Authority (ETSA) issued a Sewer Revenue Bond series of 2003 in the amount of \$9,165,000. The bond issue was used for the following:

1. Retiring the General Obligation Bonds issued by Elizabeth Township in 1996. The Authority had not assumed the obligation of those Bonds through the new bond issue.
2. Completion of the Belsar-High Street sewer extension in 2005.
3. Purchase of the building which had been previously rented for the Authority office.
4. Construction of the Boyd's Hollow interceptor in 2008 to eliminate a pump station.
5. Provide the local share of the Turkeyfoot-Hankins sewer project in 2007.

The 2003 Bonds funds were fully expended in 2008 and the remaining debt was refinanced in a 2012 bond issue.

2. Revenue Bonds Series 2008

In December 2008, the ETSA issued a Sewer Revenue Bond Series of 2008 in the amount of \$5,000,000. This bond issue provided funds to finance capital improvements to the sewer system including, but not limited to, expansion of sewer lines and construction of pump stations to send flows to the Municipal Authority of City of McKeesport (MACM) wastewater treatment facility. The 2008 Bond funds were fully expended in 2008 and the remaining debt was refinanced in a 2012 bond issue.

3. Revenue Bonds Series 2009

In December 2009, the ETSA issued a Sewer Revenue Bond Series of 2009 in the amount of \$8,000,000. This bond issue provided funds to finance capital improvements to the sewer system, including but not limited to, expansion of sewer lines and construction of pump stations to send flows to the City of McKeesport wastewater treatment facility.

4. Revenue Bond Series 2011

In December 2011, the ETSA issued a Sewer Revenue Bond Series of 2011 in the amount of \$8,000,000. This bond issue provided funds to finance capital improvements to the sewer system, including but not limited to, expansion of sewer lines and construction of pump stations to send flows to the City of McKeesport wastewater treatment facility.

5. Revenue Bonds Series 2012

In July 2012, the ETSA issued a Sewer Revenue Bond series of 2012 in the amount of \$15,925,000. This bond issue provided funds to advance refund outstanding Series 2003 and Series 2008 bonds and to finance capital improvements to the sewer system, including but not limited to, expansion of sewer lines and construction of pump stations to send flows to the City of McKeesport wastewater treatment facility. The debt service for this bond series in 2023 is \$882,000.00.

6. **Revenue Bond Series A&B of 2019**

In May 2019, the 2009 and 2011 bonds were refunded through 2019A and 2019B funds, respectively. These bonds were issued to Elizabeth Township. The aggregate refund amount of the bonds was \$16,145,000. The debt service on these bonds for 2023 is for \$920,000.00.

7. **PENNVEST Loan**

In October 2020, a low-interest PENNVEST 30-year loan for \$17,300,000 was awarded to Elizabeth Township for the Boston Pump Station and Buena Vista Treatment Plant projects. The payment for this loan in 2023 is \$350,000.00.

The combined debt service on the 2012 Series of Bonds, the 2019A and B Series of Bonds, and the 2020 PENNVEST loan is \$2,152,000.00 in 2023.

2.5 STATUS OF FUNDS

The Township maintains a capital reserve account for supplemental funding of sanitary sewer projects. As of December 2022, the balance of that fund is \$292,616.59. It is the intent of the Township to bolster that fund with any future surpluses in yearly budgets.

2.6 REVENUES AND EXPENSES

The following is a summary of the financial operations of the Township's sanitary sewer system for 2022, both budgeted and actual, and the 2023 Budget. The Township's fiscal year is January 1st thru December 31st.

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TABLE 5
SUMMARY OF TOWNSHIP 2022 AND 2023 BUDGETS

	FY 2022 Actual	FY 2022 Budget	FY 2023 Budget
Revenues			
Sewer Charges	\$4,656,897.19	\$5,159,180.00	\$6,287,180.00
Tap-In Fees	\$17,992.49	\$48,000.00	\$48,000.00
Interest/Dividend Income	\$23,766.77	\$1,500.00	\$5,000.00
Conveyance Fees Received	\$45,921.55	\$50,000.00	\$55,000.00
Misc. Revenue	\$21,688.58	\$11,000.00	\$23,500.00
TOTAL REVENUES	\$4,766,266.58	\$5,269,680.00	\$6,418,680.00
Expenses			
General Administration	\$120,710.24	\$109,210.00	\$118,710.00
Permit Fees	\$3,900.00	\$2,000.00	\$4,000.00
Law/Legal Fees	\$122,197.85	\$25,000.00	\$50,000.00
Engineering Fees	\$12,250.50	\$15,000.00	\$8,000.00
Sewage Treatment Plant	\$538,724.34	\$532,400.00	\$326,100.00
Flow & SSO Monitoring	\$71,422.80	\$75,000.00	\$150,000.00
Treatment/Transport Fees	\$1,390,150.81	\$1,305,000.00	\$1,985,320.00
Sludge Disposal	\$133,212.88	\$80,000.00	\$145,000.00
Sanitary Sewer Lines	\$436,621.04	\$260,500.00	\$660,500.00
Pump Stations	\$22,919.30	\$49,850.00	\$28,900.00
Sanitary Auth Vehicles	\$7,579.17	\$14,724.44	\$4,700.00
Payroll & Labor	\$341.00	\$306.00	\$264.00
Debt Service Long Term	\$1,781,757.50	\$1,772,000.00	\$2,152,000.00
Refunds/Reimburse	\$53,931.08	\$300.00	\$300.00
Penalties	\$10,000.00	\$12,000.00	\$12,000.00
TOTAL EXPENSES	\$4,705,718.51	\$4,253,290.44	\$5,645,794.00
SURPLUS	\$60,548.07	\$1,016,389.56	\$772,886.00

3.0 SANITARY SEWER RATE STUDY

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3.1 RATE STRUCTURE MODIFICATION

The Township's current sanitary sewer rate structure is based on water consumption and consists of a minimum monthly charge which includes a water use allowance. A consumption fee is charged for water consumption beyond the water use allowance. The sewer rates are at present uniform across the Township's entire customer base.

The 2022 rate was:

\$48 minimum monthly charge

0-1000 gallons used = free

1000-2000 gallons used = \$8/1000 gallons

2000-4000 gallons used = \$9/1000 gallons

4000 gallons and over = \$10/1000 gallons

The 2022 rate was enacted per the behest of PENNVEST in order to properly service their debts. Then in December 2022, after the budget for 2023 was already completed, PA American informed the Township that the new bulk rate would increase nearly \$6.00/1000 gallons to \$16.68/1000 gallons. This forced the Township to consider a new rate structure.

In January 2023, the Township is proposing to increase sewer rates, both in terms of the minimum quarterly charge and also the consumption charge. The Township is also proposing to eliminate the baseline water use allowance.

The proposed 2023 rate is:

\$51 minimum monthly charge

\$10.70/1000 gallons, no minimum gallons

It is presumed that an average residential equivalent dwelling unit (EDU) is 3000 gallons per month (100 gallons used per day).

Under the 2022 rate structure, the typical bill for 3000 gallons of usage would be:

$\$48 + (\text{free } 1000 \text{ gallons}) + (\$8 \text{ for } 1000 \text{ to } 2000 \text{ gallons}) + (\$9 \text{ for } 1000 \text{ gallons between } 2000 \text{ and } 3000 \text{ gallons}) = \65

Utilizing the 2023 rate structure, the typical bill for 3000 gallons of usage would be:

$\$51 + (\$10.70 * 3 \text{ for the } 3000 \text{ gallons}) = \83.10

For each EDU in the Township's system, an additional \$18.10 can be forecast for 2023. Using the EDU counts from Section 2.2, there are 6,505 EDUs in the Township system. Extrapolating out the additional forecast revenue:

$\$18.10/\text{EDU} * 6,505 \text{ EDU} * 12 \text{ months} = \$1,412,886 \text{ additional revenue}$

3.1.1 OPERATING AND MAINTENANCE COSTS

Following completion of the Buena Vista project to convert it from a treatment plant to a pump station, the Township will no longer treat sewage. All sewage flows will be conveyed to the PA American McKeesport plant.

Once the Buena Vista plant is decommissioned, the Township has two years from the end of the consent decree to eliminate Sanitary Sewer Overflows (SSOs) in their system. With the extension of the consent decree to December 31, 2023, this means the SSO elimination deadline is December 31, 2025.

To that end, the Township is already starting to proactively work towards that goal. The Duncan Station Pump Station does not have a generator, which leads to overflows during power outages. The Township is procuring a 100 kW natural gas generator through CoStars to solve that issue. The Township is also starting flow monitoring at the Lovedale Pump Station in order to accurately size the necessary pump upgrades. The Wylie Pump Station is the most problematic pump station, but the Township is developing a list of potential inflow/infiltration removal projects.

3.1.2 CONVEYANCE & TREATMENT COSTS

Upon completion of the Buena Vista conversion project, all flows will be conveyed to PA American Water's McKeesport plant. PA American Water will be setting the rate in 2023 for Elizabeth Township to convey and treat flows at a bulk rate of:

Conveyance/Treatment Cost = \$16.68/1,000 gallons

For 3,000 gallons of a typical EDU, the Conveyance/Treatment Cost would be **\$50.04/EDU**

3.1.3 DEBT SERVICE

The annual debt service required to service the 2012 Series of Bonds, 2019A & B Series of Bonds, and the 2020 PENNVEST loan is projected to be \$2,152,000.00, or \$179,333.00 per month. The total number of EDUs within the Authority's system is as calculated as follows:

TABLE 6
FY 2021 CUSTOMER BASE

Customer Type	Total EDUs
Residential (Existing)	5,185
Residential (New)	10
Commercial	771
Forward Township	45
Sutersville/Sewickley	504
Total	6,505

The Authority's monthly debt service per EDU is calculated as follows:

$$\text{Debt Service} = \$179,333 / 6,505 \text{ EDUs} = \$27.57/\text{EDU}$$

3.1.4 SUMMARY OF PROPOSED SEWER USE CHARGES

Considering the above EDU counts in Table 6, Table 7 provides a summary of the proposed sewer use charges for each customer type, presuming 3,000 gallons used per month for a residential EDU and 11,400 gallons per month for a commercial EDU (771 EDU/201 accounts * 3,000 gallons/EDU).

The current rate is \$48/month for base charge with a complementary 1,000 gallons per month. The cost is \$8.00/1000 gallons for the 1,000 to 2,000 gallons range, \$9.00/1000 gallons for 2,000 to 4,000 gallons, then \$10.00/1000 gallons for all gallons over 4,000. Again, assuming 3,000 gallons per month, the current residential EDU is \$65/month (\$48 + \$8 + \$9). The commercial EDU, assuming 11,400 gallons per month is \$148/month (\$48 + \$8 + \$18 + \$74).

**TABLE 7
EXISTING SEWER USE CHARGES - MONTHLY**

Customer Type	Minimum Monthly Base	Consumption Charge Per EDU (3,000 res/11,400 comm)	Number of EDUs	Total
Residential	\$48.00	\$17.00	5,195	\$337,675.00
Commercial	\$48.00	\$100.00	771	\$114,108.00
Forward Twp	\$48.00	\$17.00	45	\$2,925.00
Sutersville/Sewickley	\$48.00	\$17.00	504	\$32,760.00

This yields an estimated monthly revenue of \$487,468.00.

The Township is proposing to increase the rates to a \$51/month base charge with a flat rate consumption charge of \$10.70/1000 gallons, with no minimum gallons. The sensitivity analysis is shown below, keeping in mind that now all 3,000 estimated gallons per month will be charged for a residential EDU and 11,400 gallons per month for a commercial EDU.

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**TABLE 8
PROPOSED SEWER USE CHARGES - MONTHLY**

Customer Type	Minimum Monthly Base	Consumption Charge No Minimum	Number of EDUs	Total
Residential	\$51.00	\$10.70/1000	5,195	\$431,704.50
Commercial	\$51.00	\$10.70/1000	771	\$133,367.58
Forward Twp	\$51.00	\$10.70/1000	45	\$3,739.50
Sutersville/Sewickley	\$51.00	\$10.70/1000	504	\$41,882.40

This yields an estimated monthly revenue of \$610,693.98. Each EDU would yield \$93.88/EDU in this scenario. This proposed rate increase could potentially generate an additional \$123,225.98 per month or an increase of \$1,478,711.76, presuming that customers do not adjust their usages downward as is typically the trend. This sensitivity analysis figure of increased revenue is relatively in line with the estimate solely done by EDU count in Section 3.

4.0 CONCLUSION

As shown in previous areas of Section 3, the proposed 2023 rate increase equates to \$93.88/EDU in revenue. Subtracting off the eventual conveyance/treatment cost of \$50.04/EDU when all flows are conveyed to PA American and the \$27.57/EDU of debt service, the Township is left with \$16.27/EDU of monies to use in the system of projects, utilities, and other expenses.

Utilizing the 6,505 current EDUs in the system, that is \$1,270,036.20 per year. This is only revenue from consumption and does not include any miscellaneous income from tap fees, outside sources, or legal settlements.

In the opinion of KLH Engineers, Inc., the proposed 2023 rate structure of \$51 base charge + \$10.70/1000 gallons of consumption is sufficient for Elizabeth Township to operate and maintain its system, while servicing all debts appropriately.

2023 will be a transitional year for the Township, as the Buena Vista Treatment Plant is expected to be taken offline in April 2023. From that point forward, all flows will be conveyed to PA American and Elizabeth Borough, which is in discussions to be purchased by PA American. The Township should use the period of 2023 after Buena Vista is decommissioned as an evaluation year of how their budget fares moving forward.