

Village of Pinckney Water & Sewer Rate Review

September 23, 2022

The WoodHill Group



**Village of Pinckney
Water & Sewer Rate Review**

Introduction

The Woodhill Group has been retained to provide the Village with a comprehensive rate structure review and to provide recommendations that will allow for eventual full cost recovery and a self-sustaining utility management program. The foundation for this structure would be a versatile rate model to examine various impacts of executable decisions on a go-forward basis.

Our goal is to develop a fiscally responsible rate structure that provides sufficient funds for the proper operation of the village's water and sewer system to ensure the health, safety, and welfare of all customers.

We approach our review and resulting recommendations using the following processes:

- Review of billing history of all accounts for the past several years
- Trend review of the water and sewer system
- Review of cost recovery methods, current rate structure and current costs
- Review of current water and sewer rates to ensure full cost recovery of operational and debt service costs for the coming rate period.
- Review of water and sewer funds
- Comparison of current vs. needed rate structure for the average residential customer;
- Determine rate setting policy(s) and supporting rate setting model(s).
- Review of asset improvement capital needs and determine determination

Executive Summary

The Village of Pinckney's water and sewer system has been operating at a deficit for the past three years. Recent major improvements to the village's wastewater treatment plant and sewer system have been financed by debt that is now due. Projected capital improvement plans will require significant investments that cannot be paid for through the current rate structure. The Village will likely not be able to reach full cost recovery all at once as the increase would be dramatic on its customers.

The Village has three distinct cash flow needs:

- Annual operational expenses
- Existing debt service
- Creating a recurring source of funding for capital improvement projects

WoodHill recommends prioritizing the rate adjustments, customer billing practices and accounting changes as follows:

1. Calculate the Base/Ready To Serve charges based on a consistent application of a Meter Equivalent Unit (MEU) factor based on equivalent meter size.
2. Eliminate number of bedroom schema for flat rate sewer customers. Apply standard MEU factor of 1 for single family residential home, 2.5 for multi-family (formerly SEWER10). Use this factor as a multiplier for calculating charges.
3. Based on the established MEU factors, add a separate debt service charge equal to the customer's portion of the actual debt service obligations for upgrades to the wastewater treatment plant and other sewer improvements.
4. Each year transfer funds equal to a proportion of the system depreciation expense to the Capital Fund.
5. Based on the established MEU factors, utilize the same rate methodology for both the water and sewer systems which includes a combination of:
 - a. A fixed charge for each customer, based on the determined rate multiplied by their MEU factor, to recover a portion of the operational expenses.
 - b. A commodity charge to recover a portion of the operational expenses.
6. Redesign the billing program setup so the various billing components are tracked separately on the financial statements and billing registers.
7. Identify residential "second meters" as irrigation or sprinkler meters, and track that usage separate from the primary residential water usage for analysis purposes.

The Village is in the planning stages for multiple upcoming capital improvement projects. Current reserves can cover near term improvements, but water and sewer funds are not sufficient to pay for all planned improvements. While reserves will cover some costs, the available funds will be depleted quickly and projects will be delayed, cancelled, or require some other financing method to complete.

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To finance capital improvements, the village should incorporate into the rate structure revenues to fund these future capital improvements, with the goal of using cash reserves (pay-as-you-go), rather than long-term financing where possible.

Conclusions and Recommendations

- Review and adjust rates each year to ensure that expenses of the system are covered by the revenues generated from rates. It also keeps increases to more manageable levels.
- Incorporate debt service costs into the rates being set to provide the cash flow necessary to retire debt principal and interest.
- Incorporate depreciation expense as a factor in setting rates and, at the end of the year, set that amount aside, each year, in a Water and Sewer Capital Fund to help fund future Water and Sewer CIP projects (reduce need for debt to finance projects).
- Set aside *Net* tap fee revenue for Capital Improvements and transfer that money to the Capital Fund.
- Review the Utility Ordinance so that management has the flexibility to do what it needs to do each year to ensure that costs are being covered by their corresponding revenue source.
- Consider updating customer bill format so the invoice is more readable.

MODELS

Three models are presented for review. Each model incorporates a factor to cover an amount equivalent to the depreciation expense, but in varying percentages. Each model generates a different amount of funds that can be reserved for these critical capital improvements.

Base model requirements:

- All operational costs are covered through the customer rates
- A fixed charge based on a MEU factor based on meter size or equivalent
- A variable commodity charge based on usage
- Debt service is covered through a fixed charge based on meter equivalent size

For example purposes, a residential customer using 12,500 gallons of water/sewer during a quarter is used. This is a “typical” water customer based on historical data.

The three models are:

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Utility Bill
SMITH, JOHN
12345 MAIN ST
PINCKNEY, MI 48169

Model 030A
MEU 1

Code Desc	MEU	Usage	Model		Current		Change	
			Rate	Charge	Rates	Charge	Quarterly	Monthly
PB				\$0.00				
WA Wtr Usage		12,500	\$4.24	\$53.00	\$3.70	\$46.25	\$6.75	\$2.25
WB Wtr Base	1		\$31.80	\$31.80	\$25.40	\$25.40	\$6.40	\$2.13
SW Swr Usage		12,500	\$7.14	\$89.25	\$7.48	\$93.50	-\$4.25	-\$1.42
SB Swr Base	1		\$50.43	\$50.43	\$32.75	\$32.75	\$17.68	\$5.89
SD Swr Debt	1		\$38.72	\$38.72	\$0.00	\$0.00	\$38.72	\$12.91
TOTALS				\$263.20		\$197.90	\$65.30	\$21.77

EXAMPLE BILL

30% Depreciation Recapture (030A)

Depreciation Recaptured \$135,000

Residential customer 12,500 Gallons



Utility Bill
SMITH, JOHN
12345 MAIN ST
PINCKNEY, MI 48169

Model 050A
MEU 1

Code Desc	MEU	Usage	Model		Current		Change	
			Rate	Charge	Rates	Charge	Quarterly	Monthly
PB				\$0.00				
WA Wtr Usage		12,500	\$4.69	\$58.63	\$3.70	\$46.25	\$12.38	\$4.13
WB Wtr Base	1		\$35.14	\$35.14	\$25.40	\$25.40	\$9.74	\$3.25
SW Swr Usage		12,500	\$7.88	\$98.50	\$7.48	\$93.50	\$5.00	\$1.67
SB Swr Base	1		\$55.67	\$55.67	\$32.75	\$32.75	\$22.92	\$7.64
SD Swr Debt	1		\$38.72	\$38.72	\$0.00	\$0.00	\$38.72	\$12.91
TOTALS				\$286.66		\$197.90	\$88.76	\$29.59

EXAMPLE BILL

50% Depreciation Recapture (050A)

Depreciation Recaptured \$225,000

Residential customer 12,500 Gallons



Utility Bill
SMITH, JOHN
12345 MAIN ST
PINCKNEY, MI 48169

Model 100A
MEU 1

Code Desc	MEU	Usage	Model		Current		Change	
			Rate	Charge	Rates	Charge	Quarterly	Monthly
PB				\$0.00				
WA Wtr Usage		12,500	\$5.80	\$72.50	\$3.70	\$46.25	\$26.25	\$8.75
WB Wtr Base	1		\$43.49	\$43.49	\$25.40	\$25.40	\$18.09	\$6.03
SW Swr Usage		12,500	\$9.74	\$121.75	\$7.48	\$93.50	\$28.25	\$9.42
SB Swr Base	1		\$68.76	\$68.76	\$32.75	\$32.75	\$36.01	\$12.00
SD Swr Debt	1		\$38.72	\$38.72	\$0.00	\$0.00	\$38.72	\$12.91
TOTALS				\$345.22		\$197.90	\$147.32	\$49.11

EXAMPLE BILL

100% Depreciation Recapture (100A)

Depreciation Recaptured \$450,000

Residential customer 12,500 Gallons

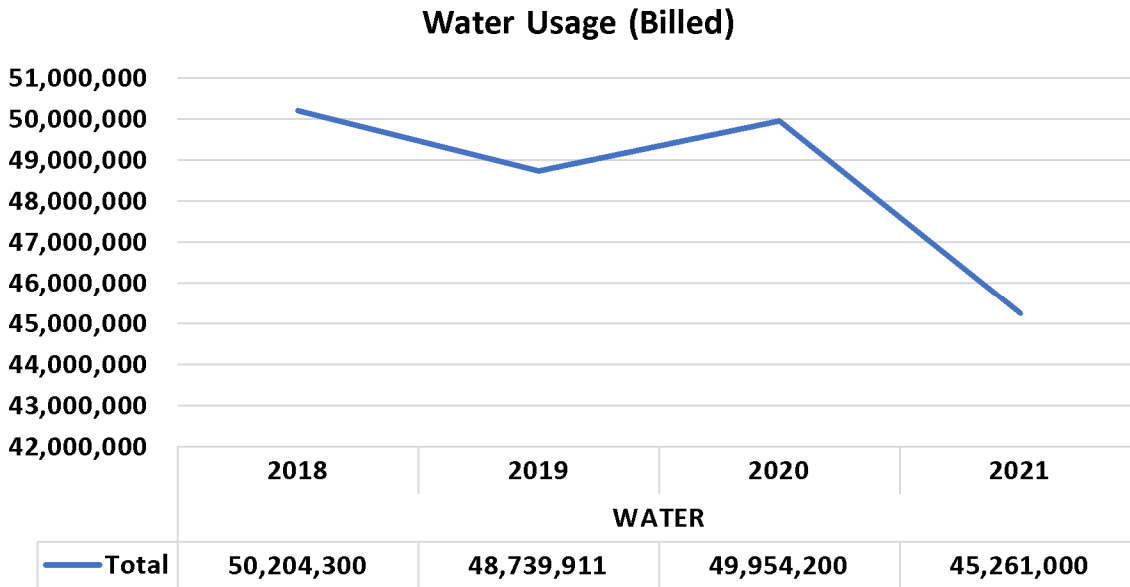
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Trend Review

The village, by operating its own water production, storage, and wastewater treatment operations, is responsible for all costs related to operations, debt service, and capital improvements. These costs are largely fixed, in that the costs remain regardless of actual usage volumes. When forecasting rates, it is necessary to take into account usage trends to ensure that the adopted rates are conservative and account for potential decreases in volume and sales.

Water Usage

A review of the last four years of water usage was conducted. What the review revealed was that the Village, (with the exception of 2020, a COVID year) has been selling less water, on average, during that period. The chart shows that sales have been moving downward over the last four years. This implies that future water sale estimates and resulting rates should be based on lower future water sales. 2021 water sales were -9.8% lower than 2016 sales.

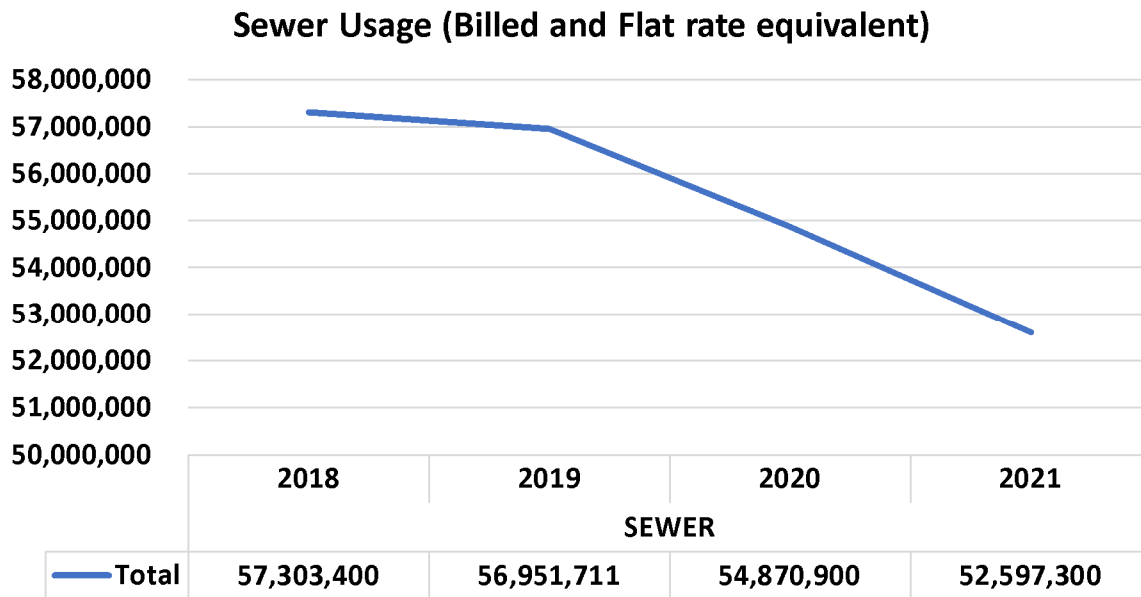


For rate setting purposes, we recommend that the Village set commodity rates for 2022-2023 based on the assumption that 5% less water than the average of 2020-2021 will be sold in the coming year.

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Sewer Usage

A review of the last four (4) years of sewer usage was also conducted. An equivalent usage amount was derived for the flat rate sewer customers, resulting in a “equivalent gallons” sold metric. The review concluded that the Village has also seen less sewer usage, on average, during that four (4) year period. As the chart shows below, sewer usage/sales are down 8% over the period of 2018 to 2021. We would expect sewer usage to follow a pattern similar to water usage since sewer usage is based on water usage. i.e. water in, generally, equals sewer out.



For rate setting purposes, we would recommend that the Village set its rates on the assumption that 5% less sewer usage will be sold in the coming year. The Village should continue using the 5% less figure until such a time that sewer usage stabilizes and reaches its new normal usage level. This will allow for variability of water usage and

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Water Budget Analysis

Budgeted water related expenditures for 2022-23 have increased 19.3% over 2021-22 for a total of \$69,497. These expenses that will continue into the future and do not reflect one-time projects or capital outlays.

WATER			2022-23	2021-22	2020-21
	Change from 2021		PRES APPROVED BUDGET	ACTIVITY THRU 06/30/22	ACTIVITY
Revenue					
Rate Revenue	(10,829.00)		260,000	249,124	270,829
Non Rate Revenue Recurring	539.00		11,000	9,867	10,461
Non Rate Revenue Non Recurring			0	3,043	8,555
	-3.6%	(10,290.00)	271,000	262,034	289,845
Expenditures					
Recurring O&M Expenditures	58,479.00		248,793	184,558	190,314
Non-Recurring Expenditures			0	0	0
Depreciation	11,018.00		155,000	132,132	143,982
Debt Interest	-		0	0	0
Capital Outlay			1	0	25,969
	19.3%	69,497.00	403,794	316,690	360,265
Net					
Recurring	(68,769.00)		22,207.00	74,433.00	90,976.00
Non Recurring	-		-	3,043.00	8,555.00
Depreciation	(11,018.00)		(155,000.00)	(132,132.00)	(143,982.00)
Debt Interest	-		-	-	-
Cap Outlay	0		-1	0	-25969
	-13.3%	(79,787.00)	(132,794.00)	(54,656.00)	(70,420.00)

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Sewer Budget Analysis

Budgeted sewer related expenditures for 2022-23 have increased 29.5% over 2021-22 for a total increase of \$219,433, much of it due to additional debt service and depreciation expense. These expenses that will continue into the future and do not reflect one-time projects or capital outlays.

SEWER	Change from 2021	2022-23	2021-22	2020-21
		PRES APPROVED BUDGET	ACTIVITY THRU 06/30/22	ACTIVITY
Revenue				
Rate Revenue	(6,396)	518,277	520,714	524,673
Non Rate Revenue Recurring	8,014	23,000	21,783	14,986
Non Rate Revenue Non Recurring		0	47,373	110,554
	0.2%	1,618	541,277	650,213
Expenditures				
Recurring O&M Expenditures	96,042	466,965	364,341	370,923
Non-Recurring Expenditures		0	66,059	117,339
Depreciation	101,367	295,000	187,387	193,633
Debt Interest	22,024	79,880	73,538	57,856
Capital Outlay		12,501	879	3,123
	29.5%	219,433	854,346	742,874
Net				
Recurring	(94,424)	74,312.00	178,156.00	168,736.00
Non Recurring	-	-	(18,686.00)	(6,785.00)
Depreciation	(101,367)	(295,000.00)	(187,387.00)	(193,633.00)
Debt Interest	(22,024)	(79,880.00)	(73,538.00)	(57,856.00)
Cap Outlay	-	(12,501.00)	(879.00)	(3,123.00)
	-135.1%	(217,815)	(313,069.00)	(92,661.00)

Water and Sewer Debt Service

Recently the village has completed several significant projects that were funded by debt through the USDA. These payments are now due and must be paid for through the rate structure, rather than using reserves and capacity charges to make these payments.

It is not unusual for water and sewer systems to take on debt for improvements to their systems. But what we found that is unusual, is that the full debt service is not reflected in current village sewer rates. Without reflecting the full amount needed to service the debt in the Village's rate structure, at some point the sewer fund will not have enough cash on hand to pay its debt obligations. Continuing the use of use reserves for debt principal payments is unsustainable and will reduce available funds for future capital improvement projects.

Cost Recovery Methods, Current Rate Structure and Current Costs

Cost Recovery Methods

The goal of any rate structure is to ensure that it covers the costs related to the services being delivered. Therefore; the goal in setting water and sewer rates is to set rates at a level high enough to cover the costs associated with the system i.e. *Breakeven*.

Several items need to be considered as they directly influence the rate setting process:

- Estimate of the volume of water and sewer service (usage) to be sold;
- Revenue necessary to recover all operating costs
- Revenue necessary to cover debt service obligations
- Revenue necessary to fund capital improvement projects

Estimating the volume of water or sewer that will be sold in the next rate period is probably the most challenging of the rate influences to estimate. The best approach is to look to the past to help determine what future volumes might look like.

For rate setting purposes and based on a review of average volume sales for 2020 & 2021, we assumed 5% less sales than that average of water and sewer services should be used in setting future rates until such a time that a year 5 year history of average sales for both water and sewer services shows signs of stabilization.

Methods of allocating water and sewer costs among users typically include a combination of the following:

1. Factor Based Cost Recovery (Capacity), which is based on pipe or meter size factoring;
2. Usage Based (Commodity) Cost Recovery; and
3. Customer Based Cost Recovery for Debt Service and other related Fixed Costs
4. Specific service direct cost fees – e.g. water turn on/off fees

In most cases you generally see one, two, or all of these methods employed. Once the system determines which method is the best for them to employ that method should logically be used for both the water and sewer systems. Consistent rate methodologies between water and sewer allows for better communication with the customers.

1. Factor Based Cost Recovery (Capacity)

The goal of factor-based cost recovery is to bill customers their fair share of costs related to the Capacity of the system that was built to accommodate their draw needs. For example, a customer with a 5/8" meter draws substantially less water than a customer with an 8" meter. However, the water system is built to be able to supply water to both customers at the same

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pressure levels. Therefore, factoring is a method that helps identify this Capacity difference and share costs based on draw needs or Capacity requirements.

To address this Capacity issue the American Water Works Association (AWWA) has developed an “Meter Equivalent Unit” or “MEU” factoring method. This method estimates the Capacity for each different meter size and their related water or sewage draw or usage and compares that draw to that required or generated by a normal single-family residential user. This MEU method is universally accepted and used by many utility systems throughout the country.

AWWA’s Meter Equivalent Unit (MEU) Table

<i>Meter Capacity to MEU Conversion</i>	
<i>Meter Size (Inches)</i>	<i>AWWA</i>
<i>Meter Capacity Ratio</i>	
5/8 and 3/4	1.0
1	2.5
1-1/2	5.0
2	8.0
3	17.5
4	30.0
6	62.5

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Active Meters and Meter Equivalents

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Meter Equivalent Unit Calculation using Existing Base Rate Billing Items

Total Water MEUs by Current Base Rate Billed Item					
METERED/OTHER	Billed Item	Active Services	AWWA Factor	MEU	Share
METERED	Water Base 3/4	659.00	1.00	659.00	81.1%
METERED	Water Base 1" (Includes 1 customer at .5 MEU)	21.00	2.50	52.50	6.5%
METERED	Water Base 1 1/2"	10.00	5.00	50.00	6.2%
METERED	Water Base 2"	2.00	8.00	16.00	2.0%
METERED	Water Base 3"	2.00	17.50	35.00	4.3%
METERED	Water Base 4"	-	25.00	0.00	0.0%
FIRE LINE	2" Fire Line Rate	2.00		0.00	0.0%
FIRE LINE	4" Fire Line Rate	3.00		0.00	0.0%
FIRE LINE	6" Fire Line Rate	3.00		0.00	0.0%
FIRE LINE	8" Fire Line Rate	1.00		0.00	0.0%
Total Water Services/MEU		703.00		812.50	100.0%

From the table, we see that the Village water system's customers equal 812.5 MEUs, or the equivalent of 812.5 single family homes.

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Water and Sewer Rate Study

Meter Equivalent Unit Calculation using Existing Base Rate Billing Items

Water Model MEU	812.50
Sewer Model MEU	985.50
Flat Rate Units/MEU	20,000

Total Sewer MEUs by Current Base Rate Billed Item					
METERED/FLAT	Billed Item	Active Services	AWWA Factor	MEU	Share
METERED	(METERED) Sewer Base 3/4	640.00	1.00	640.00	64.9%
METERED	(METERED) Sewer Base 1"	15.00	2.50	37.50	3.8%
METERED	(METERED) Sewer Base 1 1/2"	11.00	5.00	55.00	5.6%
METERED	(METERED) Sewer Base 2"	2.00	8.00	16.00	1.6%
METERED	(METERED) Sewer Base 3"	3.00	17.50	52.50	5.3%
METERED	(METERED) Sewer Base 4"	1.00	25.00	25.00	2.5%
FLAT	(FLAT) Sewer Base 3/4 (3BDR)	153.00	1.00	153.00	15.5%
FLAT	(FLAT) Sewer Flat SEWER4 (current base 3/4)	4.00	1.00	4.00	0.4%
FLAT	(FLAT) Sewer Flat SEWER10 (current base 3/4)	1.00	2.50	2.50	0.3%
FLAT	(FLAT) Sewer Abeyance	-	1.00	0.00	0.0%
Total Sewer Services/MEU		830.00		985.50	100.0%

We see that the Villages sewer system's customers, including 159 Flat Rate sewer customers, are 985.50 MEUs, or the equivalent of 985.50 single family homes.

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2. Usage Based (Commodity) Cost Recovery

As the name suggests, Usage Based or “Commodity” cost recovery is based on actual or usage by a customer, as measured through a metering device. A share of the total operational expenses is divided by the expected volume of water or sewer service to be sold. This calculation ($\% \text{ of total expenses} / \text{expected volume}$) = Commodity Rate per unit that is then applied to the customers actual usage.

3. Customer Based Cost Recovery for Debt Service and other related Fixed Costs

In a customer-based cost recovery scenario for debt service, the total amount of debt service expense is divided by the number of equivalent single-family homes (similar to #1). In the cast of debt service, the actual expected debt service from the debt schedule is used to calculate a rate per “MEU”. Each customer is then charged based on the per MEU rate X the number of MEUs, as defined by the American Water Works standards.

4. Customer Specific service direct cost fees

Customer specific service fees are charges that are specific to a single customer. These fees are include turn on/turn off fees, penalties, interest, connection and other fees that have are limited to a single customer’s service and often a customer’s request. An example of this would be a customer that requests their service be turned off for the winter because they will be wintering in Florida.