

# Village of Cass City, Michigan

## User Fee Sewer Rate Calculation

### Executive Summary

December 2020

The asset management / rate calculation team consisted of the following people

<u>Name</u>	<u>Position</u>	<u>Employer</u>
Mike Engels	Circuit Rider	Michigan Rural Water Association
Robin Wallace	Billing Clerk	Village of Cass City
Nanette Walsh	Treasurer	Village of Cass City
Debbie Powell	Village Manager	Village of Cass City
Dennis McCabe	Director of Public Works	Village of Cass City
	Village of Cass City Utility Committee	

**Village Manager**

**Sewer Superintendent**

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### Mission Statement

**We commit to improving and maintaining the public health protection and performance of our wastewater treatment facility and collection system utility assets, while minimizing the long-term cost of operating those assets. We strive to make the most cost-effective renewal and replacement investments and provide the highest-quality customer service possible.**

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This report assembles information based on the sewer system asset management plan as well as the budget adopted by decision makers. It uses this information to develop an appropriate reserve budget that will ensure the long-term sustainability and financial health of the sewer system. All of this is done for the benefit of the customers connected to the system.

The contents of this report and all information contained within were provided by the Village, then assembled by and approved by the team individuals listed on the previous page.

Once all budget items are set, especially the reserve funding and capital improvement budget, determining the correct sewer rate charges are simply nothing more than a mathematical calculation. The assembled budget is totaled, then a portion of this budget is divided by the anticipated gallons of sewage invoiced to customers, this generates the cost per unit of sewage. The remaining portion of the budget is divided by the number of meter equivalents (customers) to generate the Ready to Serve (RTS) / OMR charge.

This rate evaluation is based on the following data

1. Annual sewer budget adopted by the Village, including O&M and labor
2. Debt requirements, including principal and interest payments
3. Capital improvement plan, based on the results of the AMP - projected out 20 years
4. Equipment replacement program for assets with a life expectancy of 20 years or less
5. Number of customers connected to the system,
6. Gallons of sewage invoiced to customers

All this information is put into Michigan Rural Water Association's rate making program which does the mathematical calculation to calculate the cost per unit of sewer and the Ready to Serve charge. Michigan Rural Water Association does not recommend or suggest a rate increase, but rather lets the mathematical rate calculation speak for itself.

## Current rate structure

Customers are currently charged a minimum monthly fee based the size of the water meter. The meter sized based fee (Almost) follows the AWWA M-22 Manual on meter equivalents, which is one of the industry standards.

The minimum monthly fee for a ¾ inch meter also includes 3,33 gallons. The 3,333 gallons are then multiplied by the meter equivalent for each meter size to determine how many gallons are included for that meter size. See table below for the gallons currently included for each size water meter.

The cost for the minimum gallons of sewage included in each customer’s minimum monthly bill calculated out as follows.

\$9.55 per one thousand gallons of sewage for all meter sizes, except the 1.5-inch meter which calculates out to \$9.27 per one thousand gallons of sewage.

Meter size	Minimum fee		Units of sewage	Cost per one thousand gallons
¾ inch meter	= \$31.83	÷	3.33 units of sewage	= \$9.55 per one thousand gallons
1-inch meter	= \$50.93	÷	5.334 units of sewage	= \$9.55 per one thousand gallons
1.5-inch meter	= \$102.02	÷	11, units of sewage	= <b>\$9.27</b> per one thousand gallons
2-inch meter	= \$168.68	÷	17.667 units of sewage	= \$9.55 per one thousand gallons

This monthly fee is charged even if the customer uses less than the minimum gallons.

Once a customer exceeds the minimum gallons, they are charged \$7.74 per one thousand gallons of sewage.

The table below shows the current sewer rate structure including the minimum gallons included with the RTS charge.

### Wastewater Treatment Plant

#### Sewer Department

Sewer Rates <sup>h</sup>	Minimum Gallons	2019 Current	2020 Proposed (+2%)
5/8" or ¾"	3,333	31.83	31.83
1"	5,334	50.93	50.93
1 ½"	11,000	102.02	102.02
2"	17,667	168.68	168.68
3"	33,334	318.27	318.27
4"	53,334	509.75	509.75
6"	110,000	1050.28	1050.28
per thousand gallons over minimum usage		7.74	7.74
Commercial Sewage Rates			

The table below indicates that the current RTS rate charges are almost following the AWWA M-22 Manual.

Pipe Diameter Meter Size	CURRENT RATES	AWWA M - 22 MANUAL	YOUR CURRENT METER / REU RATIO
3/4	\$31.83	1.00	1.00
1	\$50.93	1.67	1.60
1 1/2	\$102.02	3.33	3.21
2	\$168.68	5.33	5.30
3	\$318.27	10.00	10.00
4	\$509.75	16.67	16.01
6	\$1,050.28	33.33	33.00

The current rate charges / meter equivalents almost line up with the AWWA M-22 Manual on setting rate charges, which is considered one of the industry standards.

The new rate calculation will adopt the AWWA meter equivalents for each size meter.

### New Proposed Rate Structure

- Removes the minimum gallons charge.
- Gallons of sewage invoiced to customers will be determined by the gallons of water that are recorded through the water meter.
- Customers pay for gallons of sewage based on actual usage, at the same rate for all gallons.
- Customers are charged a monthly “Ready to Serve” or / OMR fee based on the size of the customer’s water meter.
- Alters the meter equivalents to match the AWWA industry standard meter equivalents table.

NOTE: Customers will not receive any gallons with the monthly charge.

Customers will pay for all gallons starting from the first gallon.

This is the meter equivalency table that is being used.

AWWA M - 22 MANUAL
1.00
1.67
3.33
5.33
10.00
16.67
33.33

Notice the ¾ inch meter has a meter equivalent of 1.00. Notice that the meter equivalent increases as the water meter increases in size.

The meter ratios are used to calculate the monthly RTS / OMR charge for each meter size.

The ratio for each meter size is multiplied by the \$ RTS / OMR charge for a ¾ inch meter.

### Details of Sewer Rate Evaluation

The Village used Michigan Rural Water Association Rate Making Program to determine the appropriate user rates.

### Number of Customers and Current Rates

These tables represent the current number or accounts / meters being invoiced for each meter size.

METER SIZE IN INCHES	NUMBER OF METERS / REU'S
3/4	996
1	31
1 1/2	5
2	15
3	4
4	6

### Gallons of Sewage Invoiced to Customers

The Village invoices sewage by the 1,000 gallons units.

The table below list the gallons of sewage invoiced to customers over the last two years. As can be seen in the table, sewage usage in 2019 was less than the 2018 numbers.

For purposes of the rate calculation, we anticipated a reduction in usage of two (2) percent from last year's usage. This sewer rate calculation will be based on an anticipated usage of 58,295,714 gallons of sewage by customers.

	2018	2019	MIN. YEAR	ANTICIPATED PERCENT REDUCTION NEXT YEAR	UNITS USED IN RATE EVALUATION
CASS CITY SEWER	60,741,479	59,485,423	59,485,423	2.0%	58,295,714

**The Budget**

This sewer rate evaluation was completed using the budget for the 2020/2021 fiscal year.

**Dept 001 – ADMINISTRATION**

<b>ACCT #</b>	<b>Dept 001 - ADMINISTRATION</b>	<b>2020</b>
590-001-706.000	SALARIES & WAGES	<b>\$52,129</b>
590-001-714.000	FRINGE BENEFITS	<b>\$25,150</b>
590-001-715.000	FICA/MEDICARE	<b>\$4,456</b>
590-001-722.000	RETIREMENT	<b>\$5,213</b>
590-001-740.000	OPERATING SUPPLIES	<b>\$5,400</b>
590-001-800.000	SERVICES	<b>\$500</b>
590-001-803.000	FEES	<b>\$3,066</b>
590-001-807.000	MEMBERSHIP & DUES	<b>\$876</b>
590-001-826.000	SEWER LEGAL FEES	<b>\$1,500</b>
590-001-827.000	INSURANCE & BONDS	<b>\$8,900</b>
590-001-853.000	TELEPHONE	<b>\$3,584</b>
590-001-860.000	TRAVEL/MEALS/LODGING	<b>\$1,236</b>
590-001-933.000	EQUIPMENT	<b>\$2,060</b>
590-001-943.000	SEWER EQUIPMENT RENTAL	<b>\$3,060</b>
590-001-960.000	PROFESSIONAL DEVELOPMENT	<b>\$5,029</b>
590-001-963.000	ADMIN. CHARGE G.F.	<b>\$74,761</b>
	<b>TOTAL</b>	<b>\$196,920</b>

Note the total fiscal year expenses in the red circle.

Although not shown in the above table, to represent what is likely to occur, the budget is projected out for the next five years with a 2% increase each year for each line-item expense.

Dept 002 - TREATMENT AND PUMPING

ACCT #	Dept 002 - TREATMENT AND PUMPING	2021
590-002-706.000	SALARIES & WAGES	\$58,594
590-002-714.000	FRINGE BENFITS	\$28,591
590-002-715.000	FICA/MEDICARE	\$5,877
590-002-722.000	RETIREMENT	\$5,859
590-002-740.000	OPERATING SUPPLIES	\$13,500
590-002-743.000	CHEMICALS	\$16,990
590-002-800.000	CONTRACTED SERVICES	\$21,000
590-002-853.000	COMMUNICATIONS	\$1,000
590-002-920.000	UTILITIES	\$80,340
590-002-933.000	REPAIR & MAINTENANCE	\$5,150
590-002-943.000	EQUIPMENT RENTAL	\$1,500
590-002-970.000	CAPITAL OUTLAY	\$2,500
590-002-977.000	EQUIPMENT UNDER \$5000	\$3,000
	Dept 002 - TREATMENT AND PUMPING	\$243,901

Note the total fiscal year expenses in the red circle.

Again, to project out what is likely to occur, the budget is projected out for the next five years with a 2% increase each year for each line item expense.

Dept 003 – COLLECTIONS

ACCT #	Dept 003 - COLLECTIONS	2020
590-003-706.000	SALARIES & WAGES	\$9,580
590-003-714.000	FRINGE BENFITS	\$3,565
590-003-715.000	FICA/MEDICARE	\$960
590-003-722.000	RETIREMENT	\$958
590-003-740.000	OPERATING SUPPLIES	\$6,180
590-003-800.000	CONTRACTED SERVICES	\$7,512
590-003-943.000	EQUIPMENT RENTAL	\$22,720
590-003-945.000	BUILDING LEASE EXPENSE	\$6,935
590-003-975.000	RESERVE EXP, CAPITAL IMPROVEMENT \$40,000 REMOVED TO KEEP RATES LOWER	
	Dept 003 - COLLECTIONS	\$58,410



**Dept 004 – MAINTENANCE**

ACCT #	Dept 004 - MAINTENANCE	2020
590-004-706.000	SALARIES & WAGES	\$84,378
590-004-714.000	FRINGE BENFITS	\$31,626
590-004-715.000	FICA/MEDICARE	\$5,701
590-004-722.000	RETIREMENT	\$8,438
590-004-740.000	OPERATING SUPPLIES	\$9,050
590-004-800.000	CONTRACTED SERVICES	\$5,000
590-004-933.000	REPAIR & MAINTENANCE	\$10,000
590-004-977.000	EQUIPMENT UNDER \$5000	\$1,000
590-004-995.000	INTEREST AND PRINCIPAL EXPENSE ON LOAN \$31,280 WILL LIST ON DEBT PAGE	
	<b>Dept 004 - MAINTENANCE</b>	<b>\$155,193</b>

**Debt Expenses**

The Village of Cass City has one existing sewer system loan. The loan was for a new grit machine at the head of the Wastewater treatment facility. This is a five-year loan and will be paid in full in 2024. The average annual principal and interest payments are approximately \$31,279 dollars

FISCAL YEAR STARTING		1	2	3	4	5
		2020	2021	2022	2023	2024
<b>GRIT MACHINE LOAN 5 YRS</b>		\$31,279	\$31,279	\$31,279	\$31,279	
ESTIMATED REMAINING BALANCE NOW	\$56,000					
ESTIMATED COST PER REU	\$2.04					
DATE OF ISSUE	2018					
DATE OF MATURITY	2023					
PAID BY RATES	<b>YES</b>					
RESERVE REQUIREMENT	NO					

**Current Available Cash in Bank**

The Village had the following Cash available in the spring of 2020

Name of Account / Description	Purpose	Balance
COMMON CASH		\$377,182
ACCOUNTS RECEIVABLE-SEWER		\$61,345
ACCOUNTS RECEIVALBES MISC		\$2,864
ACCRUED INTEREST RECEIVABLE		\$0
<b>Total Balance</b>		<b>\$441,391</b>

How much money a community sewer system has in reserve is typically dependent on the following

- **Age and condition of system**
- Upcoming capital projects (Paying Cash VS Financing)
- Upcoming major equipment replacement and rehabilitation expenses
- Debt requirements
- Time cycle between cash received from customers VS bills paid, especially debt payments

Because the sewer fund is an enterprise fund it is common to have at a minimum, six months of expenses available as cash, although many communities have significantly more, and some have significantly less.

The budget used in this sewer rate evaluation is \$685,000 dollars, divided by 12 months of the year, then times three months would equal approximately \$171,250. The available cash in the bank does exceed this.

Six months of the budget would equal \$342,000 dollars, which is less than the current balance.

## **Equipment Replacement**

An equipment replacement fund was developed as part of the user fee rate analysis. The replacement money reserved annually is calculated using the replacement cost divided by the life of the equipment. The current reserve funds are enough to make up the difference between life of the equipment and years remaining. The anticipated annual replacement and rehabilitation expenditures have a two percent cost of living added in for each year.

The replacement schedule was developed to replace assets with a life span of 20 years or less, (short lived assets) that will be funded from system revenues. The schedule will typically contain assets with a value of greater than \$1,000 dollars, or routinely recurring maintenance items

NOTE: The program will set an average annual annuity payment to cover the Repair and Replacement Schedule expenses over the long term. Some years, the annual funding amount will be greater than the year's expenses, so money would go into the Repair and Replacement Reserve. Other years, the amount collected will be less than the expenses incurred, and the additional funding needed would come from the reserve account. The amount of the annual annuity set would have to be enough to cover all the expenses over the 15 /20-year period.

Larger more long-term items like sewer distribution piping, or items with a longer life expectancy of greater than 15 years, are typically included in a Capital Improvements program.

The Villages' equipment replacement program indicated a need for an annual funding level of \$125,000 to maintain the existing equipment.

**HOWEVER, IN ORDER TO KEEP THE SIZE OF THE RATE INCREASE DOWN THE EQUIPMENT FUND IS FUNDED AT ZERO DOLLARS \$0.00. (per request of utility committee.)**

**This tables below contain data from the "Wastewater Treatment Plant Asset Management Plan Executive Summary" prepared by Townley Engineering, LLC, Dated January 2020**

**See tables below for details on each item tracked.**

**CASS CITY SEWER EQUIPMENT REPLACEMENT SHORT LIVED ASSETS**

**2020**

[CLICK HERE TO SELECT ANNUAL FUNDING NEEDS](#)

YOUR ANTICIPATED NORMAL INTENDED USEFUL LIFE OR YEARS BETWEEN REHAB SHOULD BE BASED ON PAST MAINTENANCE HISTORY, WELL MAINTENANCE RECORDS AND WATER TOWER INSPECTION REPORTS. A COPY OF THESE REPORTS SHOULD BE INCLUDED IN YOUR RATE EVALUATION AS AN ATTACHMENT OR APPENDIX --- ALSO NOTE; IF YOU ARE APPLYING FOR A USDA RURAL DEVELOPMENT GRANT OR HOPE TO GET A USDA GRANT - THE REMAINING YEARS OF LIFE FOR ANY EQUIPMENT CAN NOT EXCEED 15 YEARS. FOR ANYTHING - WATER METERS WATER TOWER PAINTING ETC. ONCE THE USEFUL LIFE OR NEXT ANTICIPATED MAINTENANCE IS LESS THAN 15 YEARS AWAY IT CAN BE LISTED HERE,

FIXED ASSET INVENTORY									
ASSET REPLACEMENT SCHEDULE									
EQUIPMENT LIST / MAINTENANCE ACTIVITY	ORIGINAL INSTALLATION YEAR OR LAST REHAB YEAR	ESTIMATED NORMAL INTENDED USEFUL LIFE	CURRENT AGE	NEXT ANTICIPATED REPLACEMENT YEAR	REMAINING LIFE - YEARS BEFORE REPLACEMENT	TOTAL REPLACEMENT COST	PERCENT OF ASSET LEFT	PERCENT CONSUMED	REPLACEMENT MONEY RESERVED ANNUALLY
Incubator	1999	20	21	2019	-1	\$3,000	-5%	105%	\$150
Backwash Pump Motor #1	1983	40	37	2023	3	\$5,000	8%	93%	\$125
Backwash Pump Motor #2	1983	40	37	2023	3	\$5,000	8%	93%	\$125
Backwash Pump P-8	1983	40	37	2023	3	\$40,000	8%	93%	\$1,000
Backwash Pump P-9	1983	40	37	2023	3	\$40,000	8%	93%	\$1,000
Bio Disc Blower E-10	1983	40	37	2023	3	\$50,000	8%	93%	\$1,250
Bio Disc Blower E-11	1983	40	37	2023	3	\$50,000	8%	93%	\$1,250
Bio Disc Blower E-9	1983	40	37	2023	3	\$50,000	8%	93%	\$1,250
Chlorinated effluent sample pump	1983	40	37	2023	3	\$3,000	8%	93%	\$75
Chlorine Feed Equipment	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Compressor #1	1983	40	37	2023	3	\$12,000	8%	93%	\$300
Compressor #2	1983	40	37	2023	3	\$12,000	8%	93%	\$300
Dirty Backwash Pump P-11	1983	40	37	2023	3	\$15,000	8%	93%	\$375
Dirty Backwash Pump P-12	1983	40	37	2023	3	\$15,000	8%	93%	\$375
Equalization Basin Blower E-5	1983	40	37	2023	3	\$20,000	8%	93%	\$500
Equalization Basin Blower. E-6	1983	40	37	2023	3	\$20,000	8%	93%	\$500
Ferric Chloride Transfer Pump	1983	40	37	2023	3	\$12,000	8%	93%	\$300
Furnace: Tertiary Control Room	1983	40	37	2023	3	\$3,000	8%	93%	\$75
Gas Metering Equipment	1983	40	37	2023	3	\$6,000	8%	93%	\$150
Grit Blower	1983	40	37	2023	3	\$11,000	8%	93%	\$275
Heat Exchanger E-16	1983	40	37	2023	3	\$70,000	8%	93%	\$1,750
Heat Exchanger E-16 Boiler	1983	40	37	2023	3	\$70,000	8%	93%	\$1,750
Heat exchanger E-17	1983	40	37	2023	3	\$70,000	8%	93%	\$1,750
Heat Exchanger E-17 Boiler	1983	40	37	2023	3	\$70,000	8%	93%	\$1,750
Magmeter	1983	40	37	2023	3	\$7,000	8%	93%	\$175
Primary Eff Sample Pump	1983	40	37	2023	3	\$2,000	8%	93%	\$50
Primary Sludge Pump P-13	1983	40	37	2023	3	\$50,000	8%	93%	\$1,250
Primary Sludge Pump P-14	1983	40	37	2023	3	\$50,000	8%	93%	\$1,250
Raw Sample Pump	1983	40	37	2023	3	\$2,000	8%	93%	\$50

Raw Sewage Pump P-1	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Raw Sewage Pump P-2	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Raw Sewage Pump P-3	1983	40	37	2023	3	\$30,000	8%	93%	\$750
RBC Gate Junction Chamber	1983	40	37	2023	3	\$17,000	8%	93%	\$425
Secondary Effluent Sample Pump	1983	40	37	2023	3	\$3,000	8%	93%	\$75
Sludge Recirc Pump P-22	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Sludge Recirc Pump PMP P-20	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Sludge Recirc Pump PMP-21	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Sludge Transfer Pump P-18	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Sludge Transfer Pump P-19	1983	40	37	2023	3	\$30,000	8%	93%	\$750
Surface Wash Pump P-10	1983	40	37	2023	3	\$20,000	8%	93%	\$500
Tertiary Control Panel	1983	40	37	2023	3	\$13,000	8%	93%	\$325
Tertiary effluent sample pump	1983	40	37	2023	3	\$3,000	8%	93%	\$75
Tertiary filter control console	1983	40	37	2023	3	\$20,000	8%	93%	\$500
Tertiary Influent Pump #4	1983	40	37	2023	3	\$25,000	8%	93%	\$625
Tertiary Influent Pump #4 motor	1983	40	37	2023	3	\$7,000	8%	93%	\$175
Tertiary Influent Pump #5	1983	40	37	2023	3	\$25,000	8%	93%	\$625
Tertiary Influent Pump #5 motor	1983	40	37	2023	3	\$7,000	8%	93%	\$175
Tertiary Influent Pump #6	1983	40	37	2023	3	\$25,000	8%	93%	\$625
Tertiary Influent Pump #6 motor	1983	40	37	2023	3	\$7,000	8%	93%	\$175
Tertiary Influent Pump #7	1983	40	37	2023	3	\$25,000	8%	93%	\$625
Tertiary Influent Pump #7 motor	1983	40	37	2023	3	\$7,000	8%	93%	\$175
Wet Well Bubbler	1983	40	37	2023	3	\$4,000	8%	93%	\$100
Sampler	2009	15	11	2024	4	\$8,000	27%	73%	\$533
Sampler	2009	15	11	2024	4	\$8,000	27%	73%	\$533
Sampler	2009	15	11	2024	4	\$8,000	27%	73%	\$533
Sampler	2009	15	11	2024	4	\$8,000	27%	73%	\$533
Phosphorus Spectrometer	1999	25	21	2024	4	\$4,000	16%	84%	\$160
Ferric Chloride Feed Pump	2012	15	8	2027	7	\$6,000	47%	53%	\$400
Muffle Furnace	2008	20	12	2028	8	\$2,000	40%	60%	\$100
Autoclave	2009	20	11	2029	9	\$2,000	45%	55%	\$100
Influent Meter	2004	25	16	2029	9	\$10,000	36%	64%	\$400
						<b>\$1,297,000</b>	7%		\$ 34,393

FIXED ASSET INVEN	ASSET REPLACEMENT SCHEDULE						ANNUAL RESERVE
	EQUIPMENT LIST / MAINTENANCE ACTIVITY	ORIGINAL INSTALLATION YEAR	NORMAL INTENDED USEFUL LIFE	CURRENT AGE	NEXT REPLACEMENT YEAR	TOTAL REPLACEMENT COST	PERCENT CONSUMED
Ferric Chloride Feed Pump	2015	15	5	2030	\$6,000	33%	\$400
SCADA	2009	25	11	2034	\$125,000	44%	\$5,000
Ferric Storage tank	2010	25	10	2035	\$30,000	40%	\$1,200
Incubator Water	2017	20	3	2037	\$2,000	15%	\$100
BOD Incubator	2017	30	3	2047	\$4,000	10%	\$133

### Capital Improvement Plan

A capital improvement plan was completed by Townley Engineering as part of the Wastewater Treatment Plant Asset Management Plan Executive Summary. See this plan for details of the Capital improvement suggestions and plan.

**It is anticipated that the Village will work with their engineer and a funding source to make needed improvement to the wastewater treatment facility sometime in the next five years.**

**When these details are worked out a new rate calculation should be performed as part of the process.**

**IN ORDER TO KEEP THE SIZE OF THE RATE INCREASE DOWN THE CAPITAL FUND IS FUNDED AT ZERO DOLLARS \$0.00. (per request of utility committee.)**

**NOTE: The size of the rate increase is directly related to the size of the annual capital funding and the aggressiveness of the capital plan.**

## Explanation of Final Rate Evaluation Calculation

Here is how the rate calculation takes place.

The program takes the annual budget for each line item and assigns a portion of this item as fixed expenses (which are collected through the RTS / OMR charge.)

The remainder of this budget item is assigned as a variable expense, (which are collected through units of sewer invoiced to customers).

Here is how it works

<b>Cass City Sewer Rate Calculation</b>	<b>ANNUAL BUDGET</b>	<b>PERCENT <i>FIXED</i> EXPENSES</b>	<b>ASSIGNED AS <u>FIXED</u> EXPENSES</b>	<b>COST PER METER EQUIVALENT / REU</b>
<b>Dept 001 - ADMINISTRATION</b>	\$196,920	30%	\$58,433	<b>\$3.79</b>

As shown in this table the adopted Administration budget is listed at \$196,920. The rate calculation is set to collect approximately fifty percent (30%) of this budget as Fixed Expenses. (\$58,433) This figure is then divided by the total annual number of meter equivalents to get a cost of \$3.79 per meter equivalent per billing cycle.

NOTE: One-meter equivalent = one  $\frac{3}{4}$  meter.

This calculation takes place for each line item in the budget.

<b>Cass City Sewer Rate Calculation</b>	<b>ANNUAL BUDGET</b>	<b>PERCENT <i>FIXED</i> EXPENSES</b>	<b>ASSIGNED AS <u>FIXED</u> EXPENSES</b>	<b>COST PER METER EQUIVALENT / REU</b>
<b>Dept 001 - ADMINISTRATION</b>	\$196,920	30%	\$58,433	<b>\$3.79</b>
<b>Dept 002 - TREATMENT AND PUMPING</b>	\$243,901	30%	\$72,374	<b>\$4.70</b>
<b>Dept 003 - COLLECTIONS</b>	\$58,410	30%	\$17,332	<b>\$1.12</b>
<b>Dept 004 - MAINTENANCE</b>	\$155,193	30%	\$46,051	<b>\$2.99</b>
<b>OPERATION &amp; MAINTENANCE EXPENSES</b>	<b>\$654,424</b>		<b>\$194,191</b>	<b>\$12.60</b>
<b>GRIT MACHINE LOAN 5 YRS - PD OFF 2023</b>	\$31,280	100%	\$31,280	<b>\$2.03</b>
<b>EQUIPMENT REPLACEMENT SHORT LIVED ASSETS</b>	\$0	30%	\$0	<b>\$0.00</b>
<b>CAPITAL FUNDING \$ 40,000 BUDGETED</b>	\$0	30%	\$0	<b>\$0.00</b>
<b>ADOPTED BUDGET</b>	<b>\$685,704</b>		<b>\$225,471</b>	
		<b>29.67%</b>	33%	
REVENUE COLLECTED CALCULATED RATES	\$685,704		\$225,471	
REVENUE COLLECTED CURRENT RATES	\$948,258			
<b>CALCULATED RATE PER METER EQUIVALENT / REU PER MONTH</b>				<b>\$14.63</b>

The cost per meter equivalent for each line item are then added together, to generate a total cost per meter equivalent per billing cycle.

Based on the meter equivalent table discussed earlier the calculated rate for one-meter equivalent of \$14.63 is then multiplied by the meter equivalent table to generate the rate charge for larger meters.

<b>2020</b>	<b>CURRENT</b>	<b>NEW</b>	
METER SIZE	READY TO SERVE PER MONTH	READY TO SERVE PER MONTH	METER RATIO FACTOR - REU'S PER METER SIZE
<b>3/4</b>	<b>\$31.83</b>	<b>\$14.63</b>	1.00
<b>1</b>	<b>\$50.93</b>	<b>\$24.38</b>	1.67
<b>1 1/2</b>	<b>\$102.02</b>	<b>\$48.77</b>	3.33
<b>2</b>	<b>\$168.68</b>	<b>\$78.02</b>	5.33
<b>3</b>	<b>\$318.27</b>	<b>\$146.30</b>	10.00
<b>4</b>	<b>\$509.75</b>	<b>\$243.83</b>	16.67
<b>6</b>	<b>\$1,050.28</b>	<b>\$487.65</b>	33.33

**NOTE:**

These are the new monthly RTS / OMR charges for each meter size.

These charges do NOT include any gallons of sewage, as is the current practice.



**Let's look at the cost per unit of sewage (one thousand gallons)**

<b>Cass City Sewer Rate Calculation</b>	<b>ANNUAL BUDGET</b>	<b>PERCENT <i>FIXED</i> EXPENSES</b>	<b>ASSIGNED AS VARIABLE EXPENSES</b>	<b>\$ COST PER 1,000 GALLONS</b>
<b>Dept 001 - ADMINISTRATION</b>	\$196,920	30%	\$138,487	<b>\$2.376</b>

Looking again at the Administration line-item budget we see an annual funding amount of \$196,920. The program is set to collect approximately 30% of this through the cost per unit of sewage. (volume sales) This equates to \$138,487 which is divided by the anticipated units of sewage invoiced to customers in the upcoming fiscal year, to get a charge of \$2.376 dollars per one thousand gallons of sewage invoiced to customers.

This calculation is done for each line item.

<b>Cass City Sewer Rate Calculation</b>	<b>ANNUAL BUDGET</b>	<b>PERCENT <i>FIXED</i> EXPENSES</b>	<b>ASSIGNED AS VARIABLE EXPENSES</b>	<b>\$ COST PER 1,000 GALLONS</b>
<b>Dept 001 - ADMINISTRATION</b>	\$196,920	30%	\$138,487	<b>\$2.376</b>
<b>Dept 002 - TREATMENT AND PUMPING</b>	\$243,901	30%	\$171,527	<b>\$2.942</b>
<b>Dept 003 - COLLECTIONS</b>	\$58,410	30%	\$41,078	<b>\$0.705</b>
<b>Dept 004 - MAINTENANCE</b>	\$155,193	30%	\$109,142	<b>\$1.872</b>
<b>OPERATION &amp; MAINTENANCE EXPENSES</b>	<b>\$654,424</b>		<b>\$460,233</b>	<b>\$7.895</b>
<b>GRIT MACHINE LOAN 5 YRS - PD OFF 2023</b>	\$31,280	<b>100%</b>	\$0	<b>\$0.00</b>
<b>EQUIPMENT REPLACEMENT SHORT LIVED ASSETS</b>	\$0	30%	\$0	<b>\$0.00</b>
<b>CAPITAL FUNDING \$ 40,000 BUDGETED</b>	\$0	30%	\$0	<b>\$0.00</b>
<b>ADOPTED BUDGET</b>	<b>\$685,704</b>		<b>\$460,233</b>	
		<b>29.67%</b>	67%	
<b>CALCULATED RATE PER METER EQUIVALENT / REU</b>			<b>1,000 GAL.</b>	<b>\$7.89</b>

The cost per 1,000 gallons of sewage for each line item are then added together, to generate a total cost per 1,000 gallons of sewage invoiced.

All gallons of sewage are invoiced at the same price.

NOTE that \$7.89 is two percent higher than the current rate charge.

Here is the complete rate calculation in one table.

Cass City Sewer Rate Calculation	ANNUAL BUDGET	ASSIGNED AS FIXED EXPENSES	COST PER METER EQUIVALENT / REU	ASSIGNED AS VARIABLE EXPENSES	\$ COST PER 1,000 GALLONS
Dept 001 - ADMINISTRATION	\$196,920	\$58,433	\$3.79	\$138,487	\$2.376
Dept 002 - TREATMENT AND PUMPING	\$243,901	\$72,374	\$4.70	\$171,527	\$2.942
Dept 003 - COLLECTIONS	\$58,410	\$17,332	\$1.12	\$41,078	\$0.705
Dept 004 - MAINTENANCE	\$155,193	\$46,051	\$2.99	\$109,142	\$1.872
OPERATION & MAINTENANCE EXPENSES	\$654,424	\$194,191	\$12.60	\$460,233	\$7.895
GRIT MACHINE LOAN 5 YRS - PD OFF 2023	\$31,280	\$31,280	\$2.03	\$0	\$0.00
EQUIPMENT REPLACEMENT SHORT LIVED ASSETS	\$0	\$0	\$0.00	\$0	\$0.00
CAPITAL FUNDING \$ 40,000 BUDGETED	\$0	\$0	\$0.00	\$0	\$0.00
ADOPTED BUDGET	\$685,704	\$225,471		\$460,233	
		33%		67%	
CALCULATED RATE PER METER EQUIVALENT / REU PER MONTH			\$14.63	1,000 GAL.	\$7.89

As mentioned earlier the new rate structure is as follows

- Removed the minimum gallons included for each meter size
- Keeps a RTS / OMR charge for each meter size without including any gallons as part of the charge.
- All customers pay for all gallons of sewage at the same price per unit.

Here is a summary of the complete rate charges using the new rate structure.

	CURRENT		NEW	
PER 1,000 GAL.	\$7.74		\$7.89	
<b>2020</b>				
METER SIZE	READY TO SERVE PER MONTH		READY TO SERVE PER MONTH	METER RATIO FACTOR - REU'S PER METER SIZE
3/4	\$31.83		\$14.63	1.00
1	\$50.93		\$24.38	1.67
1 1/2	\$102.02		\$48.77	3.33
2	\$168.68		\$78.02	5.33
3	\$318.27		\$146.30	10.00
4	\$509.75		\$243.83	16.67
6	\$1,050.28		\$487.65	33.33

The table below calculates the new rates per monthly bill for a variety of meter sizes and volumes.

METER SIZE IN INCHES	GALLONS USED	VOLUME CHARGE	RTS MONTHLY CHARGE	NEW BILL	CURRENT MONTHLY BILL	CHANGE IN CURRENT BILL
3/4	2,200	\$17.37	\$14.63	\$32.00	\$31.83	\$0.17
3/4	3,000	\$23.68	\$14.63	\$38.31	\$31.83	\$6.48
3/4	4,000	\$31.58	\$14.63	\$46.21	\$36.99	\$9.22
3/4	6,000	\$47.37	\$14.63	\$62.00	\$52.47	\$9.53
3/4	15,000	\$118.42	\$14.63	\$133.05	\$122.13	\$10.92
1	50,000	\$394.74	\$24.38	\$419.12	\$396.64	\$22.48
1 1/2	110,000	\$868.43	\$48.77	\$917.19	\$868.28	\$48.91
2	210,000	\$1,657.91	\$78.02	\$1,735.93	\$1,657.34	\$78.59
3	250,000	\$1,973.70	\$146.30	\$2,120.00	\$1,995.26	\$124.73
4	2,450,000	\$19,342.26	\$243.83	\$19,586.09	\$19,059.94	\$526.14