



Michigan Rural  
Water Association



# City of Cheboygan Water and Sewer Rate Analysis

BY

MIKE ENGELS

WATER CIRCUIT RIDER

MICHIGAN RURAL WATER ASSOCIATION

[mrwa.net](http://mrwa.net)

Presented by: Jason Karmol DPW Director

**Why Are We Here ?**

**To Protect an Investment !**

# COMPARING RATES

- **DO NOT Compare to Neighboring Communities**
  - Different Type of Treatment
  - Larger grant / loan & interest, when financed

# YOUR WATER SYSTEM

## A MULTI-MILLION DOLLAR INVESTMENT

### *CUSTOMERS OR INVESTORS*

- Customers Paid Loans that Built System
- Customers Paying Loans Improvements
- Customers INVEST Every Water Bill

# YOUR WATER SYSTEM

## A MULTI-MILLION DOLLAR INVESTMENT

- *It's an Investment that we have to Preserve and Protect through the Budget & Rates*
- Inadequate, Low Rates
  - A Shorter System Life
  - Less Reliability
  - Disservice to the Investors / Customers

# WHO PROTECTS THE INVESTMENT

- Council & Board Members
- Village / City Managers
- System Operations Specialist
- Customers of the System
- COMBINED EFFORT

# Council Member Responsibilities

- It is their JOB to Protect the sewer system investment for today's customers
- Make sure tomorrow's customers are not handed a broken, ill functioning system because of inadequate maintenance, budgeting, and rates

# Council Member Responsibilities

- Set & Approve an adequate budget to achieve this Goal
- Raise the Rates if Necessary to Protect the community's sewer system investment.
- Nobody Wants to Raise the Rates.



# What Should Customers Expect

- Quality Product
- Reliability
- Long System Life Span – Proper Maintenance
- Efficient Use of Finances

# **WATER & SEWER RATES OBJECTIVES**

- 1. COLLECT THE MONEY NEEDED TO MAINTAIN THE WATER SYSTEM***
- 2. ENSURE THAT EVERYONE PAYS AN EQUAL SHARE OF THE COST***

**DON'T SET YOUR RATES**

**SET YOUR BUDGET**

**BUDGET = RATES**

**Set a Budget that will Protect YOUR  
Investment**

Determine  
Needs of the Water/Sewer  
System



Budget



Rates



Support the Needs of the  
System

# Infrastructure Overview

- 49 Miles of Water and Sewer Pipe
  - 4 Wells and Water Tower
  - WWTP and 5 Pump Stations
- Over 100 Million in total Assets

# Water Production and Distribution

- Sanitary Survey shows deficiency
- USDA Loan addresses those issues
- Rates set to pay loan and balance budget
- Increase reliability of system

# Water System Replacement Cost

Description	Quantity	Value per unit	Total
Service Connections	1800	\$10,000.00	\$18,000,000.00
Wells	4	\$500,000.00	\$2,000,000.00
Tower	1	\$2,000,000.00	\$2,000,000.00
Hydrants	455	\$3,500.00	\$1,592,500.00
Valves	550	\$2,500.00	\$1,375,000.00
Radio Equipment	5	\$9,500.00	\$47,500.00
Software	1	\$50,000.00	\$50,000.00
Metering Equipment	1	\$25,000.00	\$25,000.00
Chemical	4	\$18,500.00	\$74,000.00
Water main PVC	129360	\$88.00	\$11,383,680.00
Water Main Cast Iron	59505	\$88.00	\$5,236,440.00
Water Main AC	69855	\$88.00	\$6,147,240.00

**Total**

**\$47,931,360.00**

# Water System History

**Cheboygan, Cheboygan Co., population 6235; fire area 2870 acres; mercantile buildings, brick, 3 stories; private, wood, 2 stories; wooden roofs not permitted in fire limits; fireworks ordinance; causes of fire investigated. Fire department—1 steam fire engine, 1 hand engine, 1 hook and ladder truck, 6 hose carriages, all kinds; hose, cotton good 2800, inferior 500, rubber good 50, linen good 700 ft; value of fire department equipment \$5800; value of buildings occupied \$40,700; total ann expenses of department \$1200; total membership 140, paid part time; whistle and bell alarm. Chief engineer, F. R. Ming; chairman of fire and water com, D. J. Gallraith.**

**WATER SUPPLY—Source, artesian wells; system, pumping direct; reservoirs, cap 75,000 gals; Walker pumping engines, dy cap 2,000,000 gals; 35 hydrants, Haughley; pipe 6 miles, 12 to 4 in dia, Bay City Pipe Co.; quality of water good; pressure, domestic 40, fire 100 pounds; works owned by city; cost to construct \$40,000, to date \$50,000; ann expenses \$8000. Pres, H. Roberts; supt, Chas. Adams; mayor, J. E. Cuney; town clerk, J. Finn.**

1882 – Water system built and put online

1892 – Cheboygan already had 6 Miles of Water Main. The cost of the system at the time was \$26,240.65 (\$4,373/mile)

2017 – Original line on Huron St replaced 125 years after installation.(\$987,000/mile Grant)

## WATERWORKS WAS 1ST BUILT 57 YEARS AGO

### EDITOR'S NOTE

City Engineer Joseph F. Doyle provided information for this history of the waterworks. For his assistance and study of the records, the Tribune is greatly appreciative.

The Cheboygan Municipal Waterworks was constructed about 1882 at approximately the present location, at foot of North Huron Street. A building 40 by 60 feet in size was erected. Water mains were purchased from the Michigan Pipe Company of Bay City.

The building was under construction and water mains were being installed before a source of water supply was established. A well was begun with picks and shovels. Before excavating had progressed far the unsatisfactory nature of the method was apparent, and the well was abandoned, skilled drillers then being employed who gave Cheboygan its first well.

The cost had been estimated by Superintendent W. W. Green of the Cadillac Waterworks at \$25,150.94. On May 30, 1882, the Waterworks Board rendered an accounting to the City Council of the cost of construction, and revealed that actual cost was \$26,240.65, and estimated operating cost per year at \$5,995.43.

The first water schedule was set up Aug. 18, 1882. The first Water Works System was tested Sept. 9, 1882 and judged to be satisfactory.

The construction for the first waterworks building was authorized May 15, 1882, which is now used as a City garage.

Some of the original water mains were apparently laid very shallow. The main on Main Street was re-laid in 1889, the same year that the main on Court Street was laid.

The first water main on the east side of the river, from the waterworks to Duncan Avenue was laid in May, 1883, at the cost of \$6,125.42.

It appears that the original waterworks had a suction main connected to the river for emergen-

cy purposes. This main was used on several occasions despite the fact that a number of sewers were at that time discharging into the river above the main. In the spring of 1890 Mayor Dan P. McMullen, in an inaugural address to the City Council bitterly denounced the practice of drawing water into the system from the polluted river and ordered that the practice cease. Sometime later this connection was broken.

One of the unique things regarding the history of the waterworks is that the people on Cleveland Avenue petitioned the Council for a water main in 1891. This main was finally constructed in 1937.

The first method of pumping water for the city supply was by the use of steam apparatus. This system proved costly and rather inefficient. A modern plant was installed several years ago. Power is furnished by two automatic electric motors. In an emergency if the electric motor should fail, there is on hand an auxiliary gas engine ready to start on a moment's notice. Connected to the water system is an automatic graph which enables the water works manager to tell how much water the city has used during any hour of the day.

This whole pumping unit is compactly housed in a small brick building approximately 15 feet square as compared to the large building 40 feet long once necessary to house the old equipment.

The first waterworks building is used as a municipal garage.





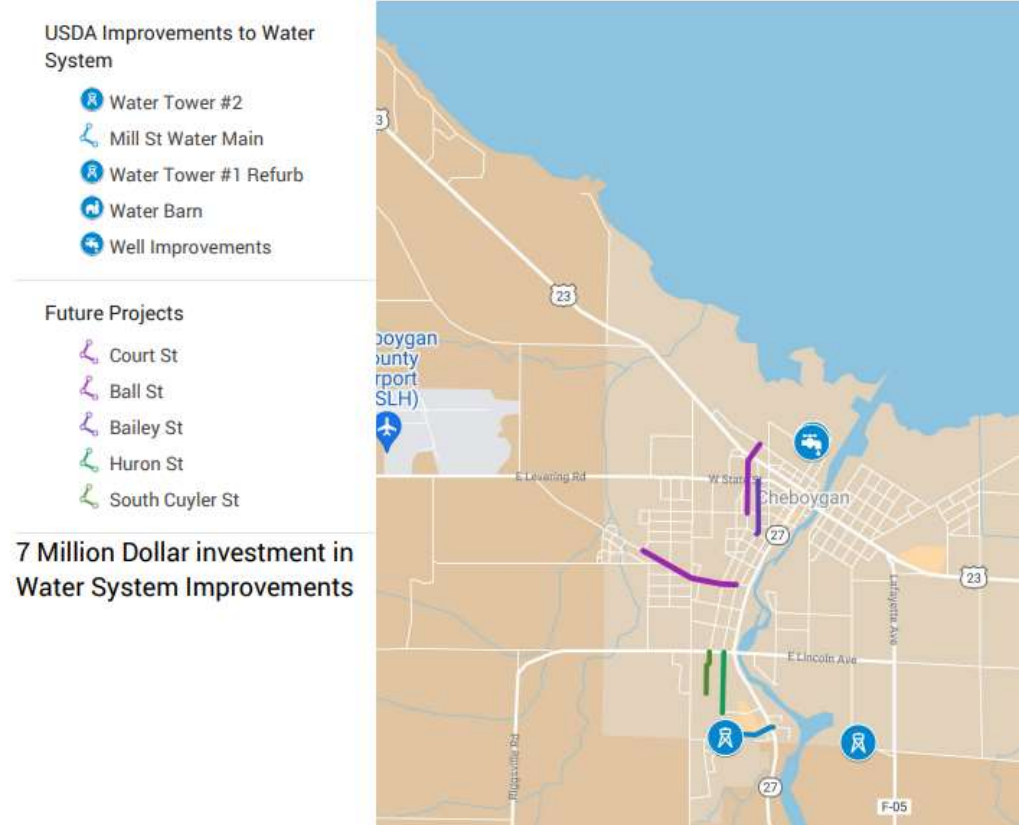
Laying Water Main - Cheboygan, Michigan

# EGLE evaluates Water System, City responds with proposed Improvements

The following table summarizes the DEQ's findings from the survey of the water system:

Survey Element	Findings
Source	Recommendations made
Treatment	No deficiencies/recommendations
Distribution System	<b>Deficiencies Identified</b>
Finished Water Storage	<b>Deficiencies Identified</b>
Pumps	Not Applicable
Monitoring & Reporting	<b>Deficiencies Identified</b>
Management & Operations	No deficiencies/recommendations
Operator Compliance	No deficiencies/recommendations
Security	No deficiencies/recommendations
Financial	Recommendations made

## USDA Water System Improvements



# We can prevent this!



- Repair is much more costly than replacement
- Potential to have contamination of system
- Property damage and safety concerns
- Investment in infrastructure is Investment in Community

# **Water Rate Proposed increase**

- Addresses Sanitary Survey deficiency
- Increases the ability to serve new customers
- Balance budget with USDA payment
- Increase reliability and safety of system

FINAL ANALYSIS RATE CALCULATION - CURRENT FISCAL YEAR	2022		RTS CHARGE		VOLUME CHARGE
CHEBOYGAN WATER	ANNUAL BUDGET	ASSIGNED AS FIXED EXPENSES	COST PER METER EQUIVALENT	ASSIGNED AS VARIABLE EXPENSES	\$ COST PER 1,000 GALLONS
DEPT 575 WATER	\$567,440	\$44,771	\$4.74	\$522,669	\$4.638
DEBT - PRINCIPAL & INTEREST ANNUAL PAYMENTS					
2007 WATER SYSTEM LOAN	\$41,444	\$3,270	\$0.35	\$38,174	\$0.34
2011 USDA LOAN	\$113,624	\$8,965	\$0.95	\$104,659	\$0.93
NEW USDA WATER LOAN STARTS IN 2023	\$317,546	\$25,054	\$2.65	\$292,491	\$2.60
USDA RESERVE REQUIREMENTS NEW LOAN	\$31,755	\$2,505	\$0.27	\$29,249	\$0.26
ANNUAL DEBT PAYMENTS PRINCIPAL & INTEREST	\$504,368	\$39,795	\$4.21	\$464,573	\$4.12
ANNUAL O & M + DEBT	\$1,071,808	\$84,566	\$8.95	\$987,242	\$8.76
NON SALES INCOME	\$25,000	\$0	0.000	\$25,000	0.222
ANNUAL USDA RRI RESERVE FUNDING/ BUDGET TOTAL	\$26,000	\$2,051	\$0.22	\$23,949	\$0.21
CAPITAL IMPROVEMENT AVERAGE ANNUAL BUDGETED AMOUNT	\$100,000	\$7,890	\$0.83	\$92,110	\$0.82
ADOPTED BUDGET	\$1,197,808	\$94,507		\$1,103,301	
CALCULATED RATE PER METER EQUIVALENT			PER QUARTER	RATE PER 1,000 GAL.	
			\$10.00		\$9.57
ANNUAL METER EQUIVALENTS / REU'S COUNT 9,453	CURRENT RATES		\$6.00	\$7.05	
ANTICIPATED EQUIVALENT GALLONS / UNITS 112,692	PERCENT INCREASE		66.5%	35.7%	
INVOICES PER YEAR 4	INCREASE OF		\$3.99	\$2.52	

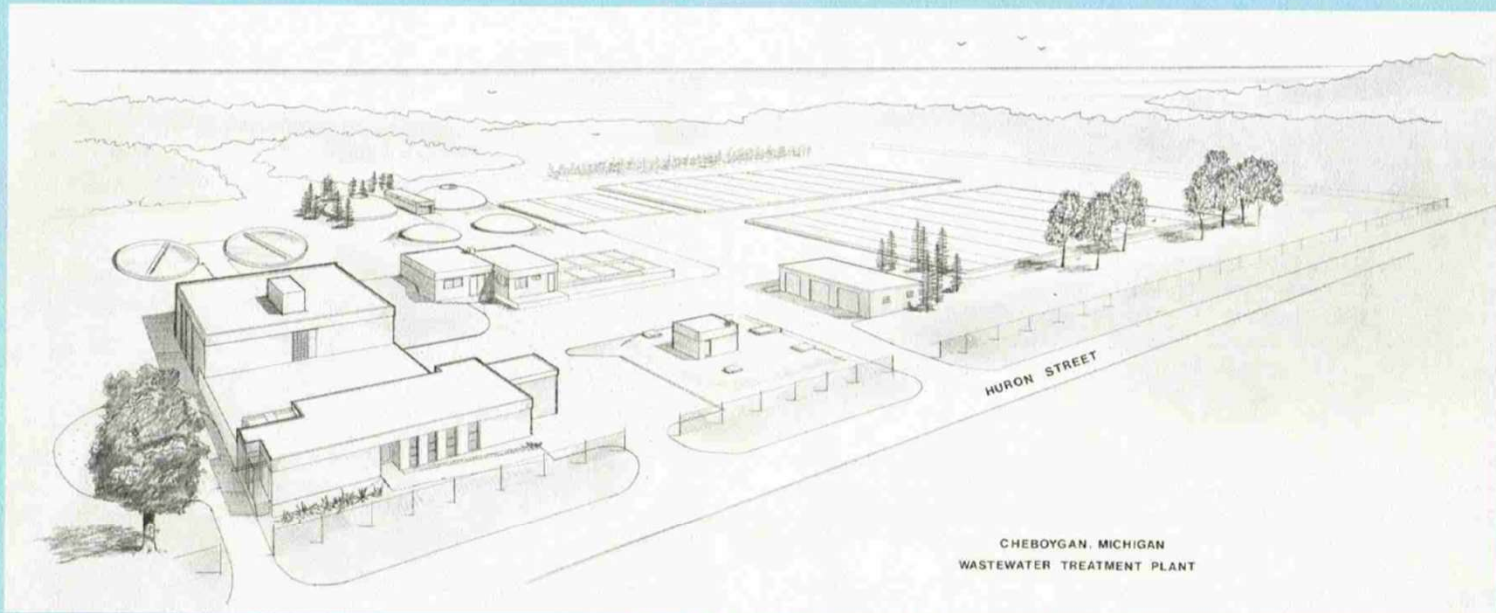
# Wastewater Treatment and Collection system

- Wastewater Treatment Plant
  - 5 Pump Stations
  - 49 Miles of Collection Pipe
- Under Administrative Consent Order (ACO) from EGLE
- Have not fully met discharge requirement since 2006
- 44 years of service with a 20-25 year life

# Wastewater Plant Investment

## CITY OF CHEBOYGAN, MICHIGAN WASTEWATER TREATMENT PLANT

1979



CHEBOYGAN, MICHIGAN  
WASTEWATER TREATMENT PLANT

CONSULTING ENGINEERS  
McNAMEE, PORTER AND SEELEY  
ANN ARBOR, MICHIGAN

# Wastewater Compliance:

## Thoughts for Consideration

- Cheboygan WWTP has logged 38 pages of violations since 2003
- Current process utilizes dangerous chemicals
- Staff has done an excellent job of doing the best they can with what they have, but would like to meet discharge requirements consistently
- 40 year old equipment tends to break down more often
- Difficult to get parts for this outdated equipment
- Discharge Permit considers quality of receiving stream
- Facility has a 30 Million dollar replacement value
- Critical to public health
- Sewer Rates have not been increased since 2002
- Plant rebuilt in 1978 online in 1979
- Last upgrade was 1998 Combined Sewer Overflow Basin (CSO)
- Public is generally interested in the above ground money



# When I flush it goes away, why do you need upgrades?



# Proposed Upgrades Address:

- **Tools needed to achieve compliance**
  - Biological Treatment capable of meeting permit limits
  - Large clarifier to reduce solids loading to discharge
  - Headworks reworked to remove debris upfront
- **Reduce Operation and Maintenance Cost**
  - Parts would be readily available
  - Minimize the downtime of critical processes
- **Community Investment**
  - Critical to public health and environment
  - Safer for employees and environment (biological)

# Self Sustaining Rate Structure

## **Goal: Sustained Long-term Performance**

- Control your future rather than having it control you.
- Set priorities to solve problems.
- Communicate your needs.
- Promote creativity.
- Show responsibility to customers.
- Allows generational cost sharing.
- Fiscal responsibility.

FINAL ANALYSIS RATE CALCULATION - CURRENT FISCAL YEAR	2022		RTS CHARGE		VOLUME CHARGE
CHEBOYGAN SEWER	ANNUAL BUDGET	ASSIGNED AS FIXED EXPENSES	COST PER METER EQUIVALENT	ASSIGNED AS VARIABLE EXPENSES	\$ COST PER 1,000 GALLONS
DEPT 555 SEWER	\$788,890	\$117,663	\$13.97	\$671,227	\$6.165
NEW SEWER PLANT & SSES	\$691,426	\$103,126	\$12.24	\$588,300	\$5.40
ANNUAL O & M + DEBT	\$1,480,316	\$220,789	\$26.21	\$1,259,527	\$11.57
		15%		85%	
INVERNESS TOWNSHIP TREATMENT CHARGES	\$190,000	\$18,611	2.209	\$171,390	1.574
ADOPTED BUDGET	\$1,480,316	\$220,789		\$1,259,527	
		15%		85%	
REVENUE COLLECTED CALCULATED RATES	\$1,290,316	\$202,179		\$1,088,138	
REVENUE COLLECTED CURRENT RATES	\$1,049,754				
CALCULATED RATE PER METER EQUIVALENT		PER QUARTER	\$24.00	RATE PER 1,000 GAL.	\$9.99
ANNUAL METER EQUIVALENTS / REU'S COUNT 8,425		CURRENT RATES	\$15.00		\$8.48
ANTICIPATED EQUIVALENT GALLONS / UNITS 108,879		PERCENT INCREASE	60.0%		17.9%
INVOICES PER YEAR 4		INCREASE OF	\$9.00		\$1.51

# RECOMMENDATIONS

- Adopt Option A for full increase July 1<sup>st</sup>, 2022
- Adopt Option B for Two step increase with part increase occurring July 1<sup>st</sup>, 2022 and rest of the increase occurring July 1<sup>st</sup>, 2023

# Considerations

- Clean water is becoming extremely valuable
- Responsible resource management is the right thing to do
- Operating costs will continue to increase.
- Need to keep up maintenance, prolong life of facilities.
- Need to plan for the future; rehab, replace, rebuild.
- Water Quality is excellent, distribution system needs help
- If you have learned something, pass it on
- Infrastructure is generally overlooked if it still works
- The biggest challenge that all Utility providers face is the age of the infrastructure.

# Questions?



# Thank You

Jason Karmol  
City of Cheboygan  
231-627-2582  
[jkarmol@Cheboygan.org](mailto:jkarmol@Cheboygan.org)