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Test Year 2020 Sewer Rate Study

Village of East Troy, WI



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Sewer Rate Study Executive Summary

INTRODUCTION

The Village engaged Ehlers in the fall of 2019 to perform a Sewer Rate Study (“Study”). The Study was to be completed as a continuation of the Financial Management Plan and further look into the Sewer Utility (“Utility”) rate performance. The primary goal of the study is to make recommendations for user rates that will be sufficient to meet all operating and capital expenses of the Utility.

The Study develops recommended sewer user rates based on a test year of fiscal year 2020. The recommended rates include a fixed charge and a volumetric rate per 1,000 gallons. The Study includes analysis of Historical Performance, a Long-Range Cash Flow, and the Equipment Replacement Fund (“ERF”) for the Utility and develops recommendations for future rate increases required to support the Utility’s debt, projected increases to the sewer operating budget, and sufficient funding of the ERF. This Report reviews the results of the Study completed for the Village.

KEY FINDINGS

- The Utility has been operating with positive net income for the past four fiscal years 2015-2018.
- The Utility is responsible for a 2008 Clean Water Fund Loan (“CWFL”) and has been able to pay the debt service. The Utility will also close on another CWFL on February 12, 2020.
- As of 12/31/2018 the Utility has \$2,667,381 in cash reserves.
- The Utility has customers that are both inside and outside the service area.
- Presently, all inside customers are charged a quarterly fixed charge based on meter size and volumetric rate based on usage (in gallons).
- Presently, outside customers are charged based on their individual outside customer agreements.
- The 2020 Operating and Maintenance budget has increased due to several factors. These factors include but are not limited to:
 - moving certain expenditures previously placed in the capital budget to be moved to operating as they were non-depreciable and
 - (starting in 2019) an increase to wages and benefits due to the promotion of an apprentice.
- Starting in fiscal year 2021 the utility will begin paying \$30,000 annually for Water Quality Trading related to Phosphorus Treatment regulation. This has been determined to be the lower cost for upcoming Phosphorus Treatment regulation. This addition to O&M has been built into the rates recommended for 2020 implementation.
- For fiscal year 2020, we recommend the Utility increase its current rates as revenues at current usages and customer counts are insufficient to pay all financial obligations. We recommend the Utility look to monitor rates in 2021 and beyond as shown in the Sewer Rate Model and Long-Range Cash Flow Analysis.
- Based on our projections, if the Village adopts the recommended rates shown in future years, we estimate that the sewer rate revenue generated will adequately meet the Utility’s revenue needs to fund all the Utility’s financial obligations.
- Further description and analysis of these findings are found in this Summary and its proceeding Sections.



DESCRIPTION OF EXISTING SEWER UTILITY & USER RATE PERFORMANCE

The goal of the Utility is to provide wastewater treatment facilities and a sanitary sewer collection system adequate to serve the existing and future industrial, commercial and residential needs of the Village. The Village-wide sewer system provides for the treatment and distribution of sewer within the Village using treatment, transmission, and distribution assets such as the sewer mains and sewer treatment plant. In addition, the Utility is also responsible for billing its users. Customers are billed quarterly. The existing sewer rate structure has two components:

1. A quarterly fixed charge based on meter size.
2. A volumetric rate per 1,000 gallons of metered sewer usage.

STUDY PURPOSE

Several goals were established for the Study, including:

1. Assess financial performance trends in recent past.
2. Develop user rates at a level where the Utility is self-sufficient, meaning it is generating adequate revenues from user rates to pay for all outstanding financial obligations.
3. Develop user rates at a level where the Utility is using and building cash for future CIP projects.
4. Incorporate the Village's CIP for the Sewer utility, which is based on the 2020 Budget.
5. Develop an initial funding plan for the Utility's CIP with recommendations on current and future rate increases necessary to complete all projects listed in the plan and adequately fund the ERF.
6. Develop a rate structure that is fair and equitable for all customer classes.
7. To avoid rate shock, develop a phased-in approach to rate increases so the Utility may meet its financial obligations over time.

STUDY METHODOLOGY

Rate development and planning require projections of future revenue needs. To establish those revenue needs, the existing user rates were updated using a cash-based method for a test year 2020. Under the utility-based method, a revenue requirement is established for a test year using several components. These components include: The Utility's 2020 budgeted operation and maintenance expenses, debt repayments (existing and near-future), and cash funded capital for fiscal sustainability. The components added together less other revenues not generated through user rates serve as the requirement that should be recovered in the user rates. Since the utility has two outstanding revenue pledged debt obligations and a CIP with future projects to fund, we determined the cash-based approach the most appropriate. The rate recommendations developed were to recover the revenue requirements for the test year 2020.

SUMMARY OF RECOMMENDATIONS

Based on historical performance and the results of the Study, there are several recommendations to the Utility and the Village.

- First, we recommend the Utility adjust rates for 2020 to adequately fund increases in O&M budget and additional debt service.



- Second, we recommend the Utility monitor reserve levels, rate of return, and its Equipment Replacement Fund that ensure its fiscal sustainability. To accomplish this, we recommend the Utility review rates bi-annually.
- Third, we recommend the Village to review Outside User Ordinance and apply rates to recover Collection System expenses.

Rate Increases

The Utility's operating and maintenance expenses excluding depreciation increased from \$731,476 to \$946,700 (actual 2017 to Budget 2020). As costs increase year over year in the O&M budget and the 2020 CWFL payments begin, rates will not be sufficient to cover costs and further the inability for the Utility to be self-sufficient. A 2020 rate increase is necessary. What would be needed to cover costs with one increase (and long-term increases assuming expense inflation) can be seen on Table 19 in the Long-Range Cash Flow Analysis Section of the Study. These rates were derived according to the Study Methodology and Purpose sections above. To reduce the initial impact (often referred to as "rate shock") the rates were adjusted to a phased-in approach where the Utility becomes self-sufficient over time.

The Village has one 2008 debt obligation outstanding, the 2008 CWFL. As of 12/31/2018 the loan will have \$5.26 Million in principal outstanding until 2027. CWFLs offer lower than market interest rates and in order to do so the state program has a AAA rating and therefore are not subject to prepayment of any maturities unless there are extraordinary circumstances. In addition, the Utility is in process of closing on another CWF loan and expects it to close 2/12/2020. The loan amount will be \$998,777 amortized over 20 years at a 1.70% interest rate. Further depiction of the amortization schedule can be seen on Table 18 of Section 3 in the Study. This will add a maximum \$59,000 to the annual debt service obligation of the Utility.

Reserve Levels, Rate of Return, Capital Needs and Equipment Replacement Fund ("ERF")

Generally, due to changes in customer count, usage, and capital planning, the recommended schedule to follow for completing rate studies is every 2-5 years. According to the loan documents for the CWFL Program the Utility is required to analyze its rates bi-annually. It is recommended that the Village continue to annually monitor the sewer rates and evaluate the need to adopt future rate increases shown in Section 3, the Long-Range Cash Flow Analysis, to maintain financial health. It is also further recommended that the Village monitor existing and targeted unrestricted cash and ERF balances along with its Rate of Return on its rate base ("ROR") within the Sewer Utility to bring them to a minimum recommended threshold. The minimum recommended threshold for unrestricted cash balance is equal to six months budgeted operations expenses, a full year of depreciation, and the utility's next year's debt service payments. This will allow the utility to have unrestricted cash available to meet expenses, cope with emergencies and navigate any business interruptions. The minimum recommended threshold for Rate of Return varies by resource. For a utility with a large asset base relative to its customer base we recommend targeting a ROR that mimics the annual interest expense on debt plus a fair rate of return. In this study we have shown a 1-2% rate of return is sufficient to cover all financial obligations of the Utility. Government-owned utilities use ROR to pay the annual interest cost of debt capital and provide a fair rate of return for the equity capital employed to finance facilities used to provide



their service. In developing a target, it is general practice to set the return so that it is sufficient to assure confidence in the financial integrity of the enterprise to maintain its credit and to attract and hold capital.

This study was completed with the Utility's current CIP. Any future projects can be altered, added, and removed and market conditions can change; therefore, future recommendations of debt financing may need to be altered and revised. In addition, this study was completed with an understanding of future projects listed in Section 3, Table 17. Other future capital improvements not listed within the study are outside the scope of the future recommended rate increases and debt instruments presented. Another rate study should be completed with the addition of future capital projects to the CIP. Lastly, the Utility should continue to monitor the need for future capital improvements and its ability to cash and debt finance their costs adjusting the rate structure as needed.

The Wisconsin Department of Natural Resources requires a municipality receiving a loan from the Clean Water Fund Program ("CWFP") is required to establish an ERF to be used only for expenses incurred for equipment related to the municipality's wastewater treatment works, urban runoff treatment works, or structural urban BMP. During the loan closing process, the DNR project manager will review the municipality's User Charge System ("UCS"). The UCS must include a proposed ERF schedule and projected ERF deposits. The ERF schedule and fund deposits must cover the entire treatment works.

A municipality may use funds on deposit in the ERF to pay costs incurred to replace equipment necessary for the operation of the WPDES-permitted treatment works. If the municipality includes installation costs when determining the replacement cost of the equipment, those costs may be paid out of the ERF, also. Major maintenance may also qualify as replacement, such as rebuilding an engine or pump, to avoid replacing a piece of equipment.

Two methods are acceptable for establishing an equipment replacement fund: an Itemized Schedule, or a Percentage Schedule. Based on the Financial Assistance Agreement for the 2020 CWFL the DNR is asking the Utility to deposit \$121,805 annually into the ERF. The rate increase depicted in the Study includes funding this amount and providing adequate debt coverage.

Outside Customers

After a review of the existing Outside Customers Agreements and the existing Sewer Use Ordinance, specifically 400-89 B(2), rates depicted have been adjusted accordingly. From the ordinance,

"The Village may allocate a portion of the user charge costs for the Village of East Troy wastewater collection system to outside users when the wastewater flow from an outside user is conveyed through any part of the Village of East Troy wastewater collection system in route to the wastewater treatment plant. In such cases, the Village may allocate a portion of the collection system operation and maintenance cost to the outside user based on the length of the section of the wastewater collection system through which the outside user's wastewater flows in route to the wastewater treatment plant and based on the ratio of the outside user's allocated flow, with a peaking factor applied, to the total design peak flow capacity of said section of the wastewater collection system. The outside user's allocation of the collection system operation and maintenance costs shall be in the direct proportion of the total length-diameter value for the section of the wastewater collection system through which the



outside user's flow is routed relative to the total length-diameter value for the entire Village of East Troy wastewater collection system. The length-diameter values shall be calculated as the pipe length, in miles, times the pipe diameter, in inches. The length-diameter value for the Village shall be calculated based on sewer mains only; building sewers shall not be included."

A study was completed in 2009 to derive the total length-diameter value for the section of the wastewater collection system through which the outside user's flow is routed relative to the total length-diameter value for the entire Village of East Troy wastewater collection system. Since there have been no material changes to the system since that time Village staff has determined the 2009 Study adequate. Reference Table 7 in Section 2 of the Study which depicts the derivation of the Collection System charges to be collected from the Outside Users. While this is an additional charge to the Outside Users the volumetric rate charged to Outside Users is recommended to decrease based on the appropriations defined in the Village's Ordinance. In 2009, the last time the volumetric rate for the Outside Users was analyzed, usage has increased significantly, and expenses allocated to the user charge have remained stable.

Further depiction of the calculation and derivation of these recommendations are found in Sections 2, 3, and 4. The proceeding Sections reveal the results of the Study, Long-Range Cash Flow Analysis, financing of the CIP, and appropriate Equipment Replacement Fund balances.



Test Year 2020 Sewer Rate Study

Section 1 — Historical Performance

Village of East Troy, WI

Table 1 Sewer Rate Performance

Village of East Troy, WI

Revenue Requirement		Shown with no increase				Est	Budget
Component	Description	2015	2016	2017	2018	2019	2020
Cash Basis							
1	Operating and Maintenance	\$694,339	\$734,503	\$731,476	\$815,919	\$948,114	\$946,700
2	Debt	\$652,399	\$652,196	\$651,985	\$651,771	\$653,777	\$712,559
3	Cash Funded Capital	\$103,538	\$90,522	\$66,734	\$0	\$662,722	\$144,000
Less:							
	Other Revenue	\$7,885	\$7,294	\$13,943	\$7,155	\$7,000	\$6,000
	Interest Income	\$26,537	\$157,089	\$53,805	\$92,977	\$75,395	\$76,000
	Revenue Requirement (Costs less Other Income)	\$1,415,854	\$1,312,838	\$1,382,447	\$1,367,558	\$2,182,218	\$1,721,259
	User Rates Revenue	\$1,558,628	\$1,574,506	\$1,613,931	\$1,718,369	\$1,635,050	\$1,620,000
	Rate Adequacy	\$142,774	\$261,668	\$231,484	\$350,811	(\$547,168)	(\$101,259)
Utility Basis							
1	Operating and Maintenance	\$694,339	\$734,503	\$731,476	\$815,919	\$948,114	\$946,700
2	Depreciation	\$611,575	\$613,704	\$619,023	\$621,231	\$614,000	\$614,000
	NIRB	\$13,466,713	\$12,958,074	\$12,426,959	\$11,885,375	\$11,693,712	\$11,540,311
3	Recommended ROI (2.5%)	\$336,668	\$323,952	\$310,674	\$297,134	\$292,343	\$288,508
Less:							
	Other Revenue	\$7,885	\$7,294	\$13,943	\$7,155	\$7,000	\$6,000
	Interest Income	\$26,537	\$157,089	\$53,805	\$92,977	\$75,395	\$76,000
	Revenue Requirement (Costs less Other Income)	\$1,608,160	\$1,507,776	\$1,593,425	\$1,634,152	\$1,772,062	\$1,767,208
	User Rates Revenue	\$1,558,628	\$1,574,506	\$1,613,931	\$1,718,369	\$1,635,050	\$1,620,000
	Rate Adequacy	(\$49,532)	\$66,730	\$20,506	\$84,217	(\$137,012)	(\$147,208)

Table 2 Sewer Utility Rate Performance Charts

Village of East Troy, WI

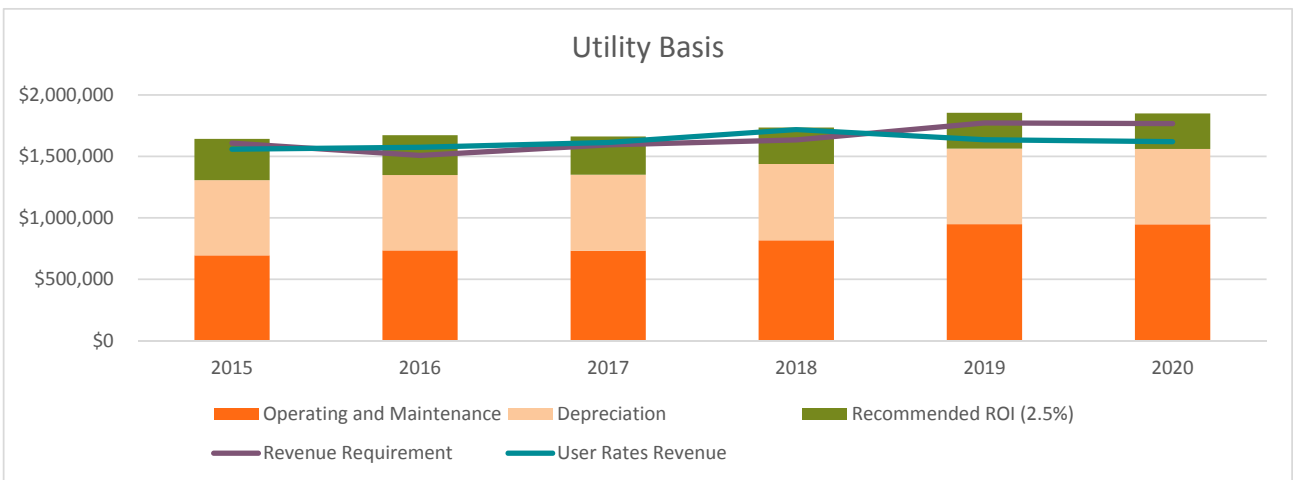
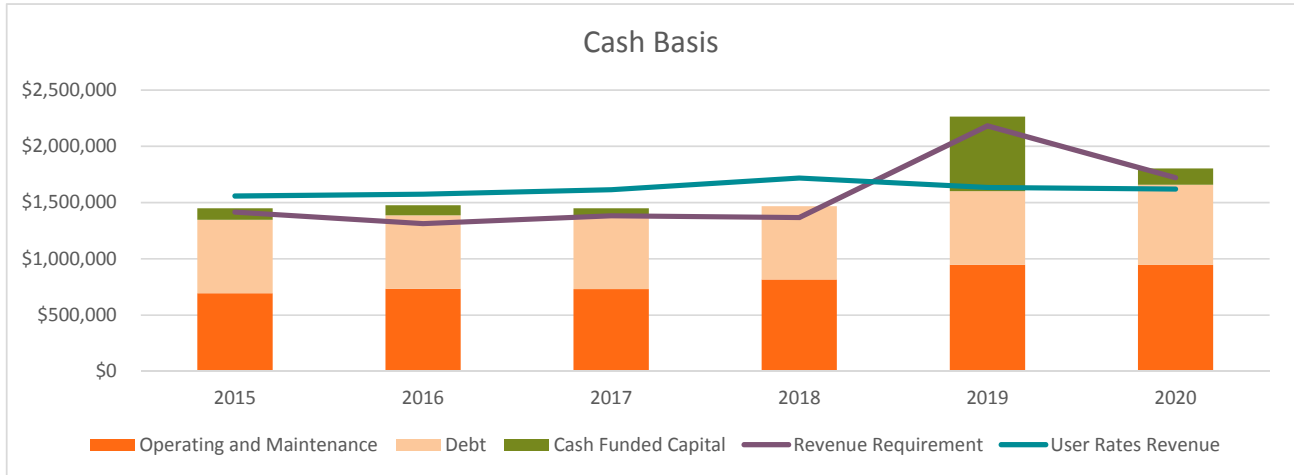
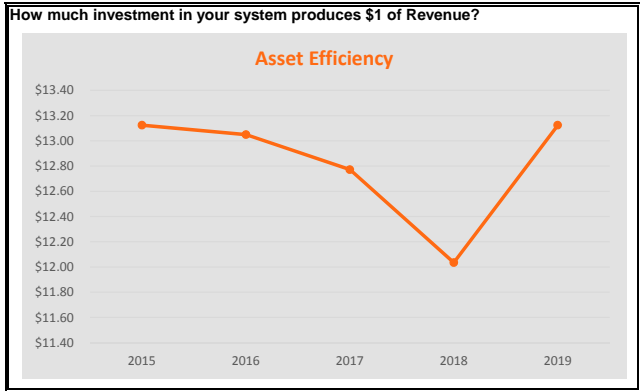
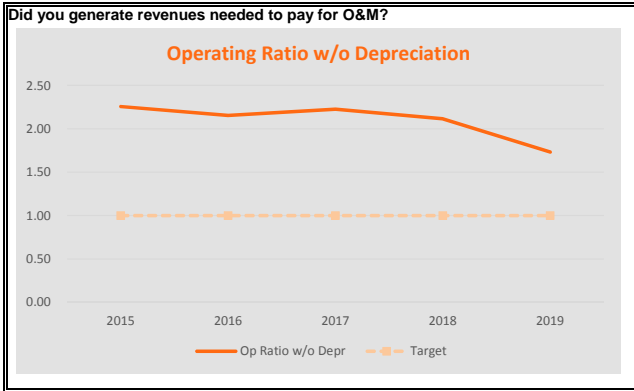
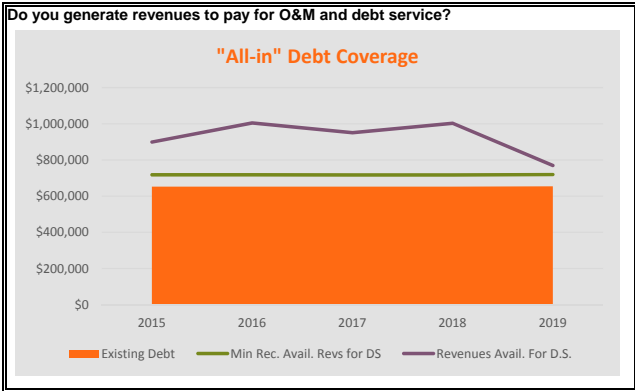
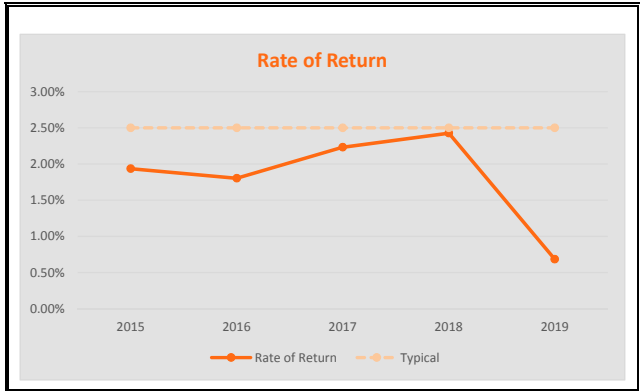
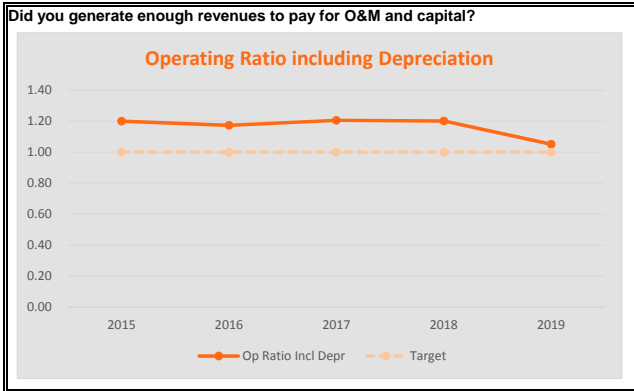
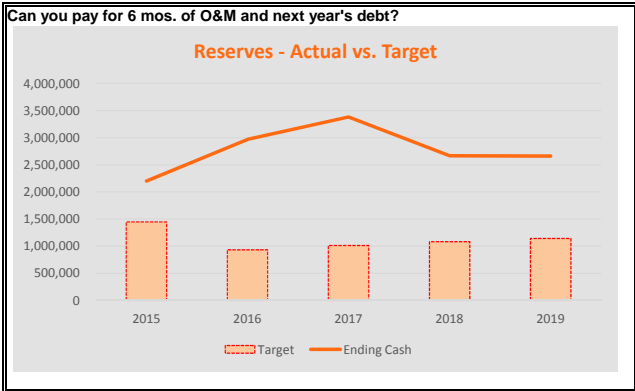


Table 3 Sewer Utility Financial Health Charts

Village of East Troy, WI





Test Year 2020 Sewer Rate Study

Section 2 — Sewer Rate Study

Village of East Troy, WI

Table 4 Projected Test Year 2020 WWTF Flows and Loadings

Village of East Troy, WI

	Flow (1,000 Gal)				BOD (Lbs)	TSS (Lbs)	P (Lbs)	N (Lbs)
	2017	2018	2019	2020				
Inside Customers								
Commercial (CO)	11,585	12,735	12,429	12,000	22,018	22,018	4,003	801
Industrial (IN)	13,952	14,184	15,730	14,000	25,687	25,687	4,670	934
Public (PU)	2,624	2,246	2,006	2,000	3,670	3,670	667	133
Residential (RE)	51,258	49,446	48,986	48,000	88,070	88,070	16,013	3,203
Multi-Family (MU)	23,318	24,401	22,937	22,500	41,283	41,283	7,506	1,501
Subtotal Inside Customers	102,737	103,012	102,088	98,500	180,728	180,728	32,860	6,572
Outside Customers								
Town of E.T. S.D. #2	22,206	22,775	23,894	22,000	40,366	40,366	7,339	1,468
Alpine Valley	4,205	4,813	5,368	4,500	8,257	8,257	1,501	300
Salvation Army	885	977	798	750	1,376	1,376	250	50
Subtotal Outside Billable	27,296	28,565	30,060	27,250	49,998	49,998	9,091	1,818
Wastewater Treatment Facility								
Total Billable	130,033	131,577	132,148	125,750	230,726	230,726	41,950	8,390
Inflow/Infiltration (I/I)	9,650	14,752	32,510	9,332				
Total WWTF	139,683	146,329	164,658	135,082				
Total For Rate Calcs				125,750	230,726	230,726	41,950	8,390

Notes:

Table 5 Projected Test Year 2020 Meter Counts

Village of East Troy, WI

Meter Size	Total Meters									Total
	Inside Customers					Outside Customers				
	Commercial (CO)	Industrial (IN)	Public (PU)	Residential (RE)	Multi-Family (MU)	Town of E.T. S.D. #2	Alpine Valley	Salvation Army		
5/8"	18	2		226	1					247
3/4"	72	15	10	1,006	8			0		1,111
1"	18	10	4		27					59
1 1/2"	5	2								7
2"	3	3	5		13		0			24
3"	1	4	2		1					8
4"	1		1							2
6"	1						0			1
		119	36	22	1,232	50	-	-	-	1,459
				Total Inside Customers		1,459	Total Outside Customers			-

Meter Size	Equiv. Ratio	Equivalent Meters									Total
		Inside Customers					Outside Customers				
		Commercial (CO)	Industrial (IN)	Public (PU)	Residential (RE)	Multi-Family (MU)	Town of E.T. S.D. #2	Alpine Valley	Salvation Army		
5/8"	1.0	18.0	2.0	-	226.0	1.0	-	-	-	247.0	
3/4"	1.0	72.0	15.0	10.0	1,006.0	8.0	-	-	-	1,111.0	
1"	1.7	30.6	17.0	6.8	-	45.9	-	-	-	100.3	
1 1/2"	3.3	16.5	6.6	-	-	-	-	-	-	23.1	
2"	5.3	15.9	15.9	26.5	-	68.9	-	-	-	127.2	
3"	10.0	10.0	40.0	20.0	-	10.0	-	-	-	80.0	
4"	16.7	16.7	-	16.7	-	-	-	-	-	33.4	
6"	33.3	33.3	-	-	-	-	-	-	-	33.3	
		213.0	96.5	80.0	1,232.0	133.8	-	-	-	1,755.3	

Table 6
Historical Expenses and 2020 Adopted Budget for Sewer Utility

Village of East Troy, WI

Account Number	Account Description	2017 ACTUAL	2018 ACTUAL	2019 ESTIMATE	YTD ACTUAL	2020 BUDGET
Sewer Admin - WWTP						
120	Wages	14,023	13,460	13,900	8,798	15,660
130	Social Security	1,083	1,029	1,075	778	1,200
131	Retirement	891	896	925	666	1,060
132	Health Insurance	1,517	1,776	4,518	3,305	920
139	Other Benefits	303	574	2,130	1,558	740
200	Professional Services	16,727	35,988	47,500	32,815	42,000
251	Equipment Replacement Fund	4,569	5,331	1,258	920	0
310	Office Supplies	436	267	2,500	331	1,500
314	Copy Machine Expenses	0	0	261	191	200
398	Uncollectible Accts	0	0	0	0	0
399	Misc Expenses	14,431	16,408	22,000	750	25,000
510	Insurance	38,960	34,004	44,761	32,743	33,400
542	Taxes	2,673	2,673	2,500	0	2,500
Sewer Admin - CS						
120	Wages	9,070	9,756	10,175	7,080	10,650
130	Social Security	650	704	800	529	810
131	Retirement	609	650	675	483	720
132	Health Insurance	4,084	4,697	5,475	3,845	6,000
139	Other Benefits	649	400	1,213	887	850
200	Professional Services	6,213	4,609	3,000	2,050	0
215	SCADA	0	0	3,000	595	4,000
250	Repair & Main Serv - Equip	0	0	0	0	0
310	Office Supplies	155	0	500	10	0
343	Postage	986	1,814	2,400	1,418	2,000
399	Misc Expenses	15	18	200	136	200
510	Insurance	0	0	0	0	0
Operations WWTP						
120	Wages	175,048	181,150	218,425	137,865	234,820
120	Wages-Customer Service-WWTP	0	0	0	0	0
130	Social Security	13,179	13,506	16,725	10,728	17,960
131	Retirement	10,893	12,023	14,325	9,313	15,850
132	Health Insurance	20,097	29,923	43,925	19,509	46,990
139	Other Benefits	3,695	3,472	8,975	4,908	9,070
140	Village Charges	0	0	0	0	0
180	Uniform Allowance	739	925	900	504	900
220	Telephone	2,023	2,906	2,902	2,123	6,500
221	Water & Sewer	2,283	2,336	4,700	1,981	3,000
222	Electric/Purchased Power	69,617	70,642	80,000	56,166	75,000
223	Heat	5,919	7,464	8,568	6,268	8,000
225	Sludge Disposal	10,591	12,486	14,000	5,909	15,000
231	Diggers Hotline	0	0	0	0	0
260	Repair & Maint Serv-Bldg/Plant	33,931	40,805	48,935	35,796	45,000
266	Repair & Maint Serv-Lift Stati	13,704	12,597	18,000	7,602	14,000
290	Other Contracted Services	5,460	5,864	7,500	2,599	6,000
314	Copy Machine Expenses	439	626	420	36	400
320	Publication/Subscrpt/Dues	157	608	3,000	471	1,500
340	Lab Supplies	14,649	16,496	17,000	8,164	15,000
344	Disinfection	0	9,675	5,000	2,045	5,000
344	Polymer	6,048	3,456	7,100	3,600	6,000
344	Phosphorous Removal Chemical	10,700	12,447	20,283	14,837	50,000
348	Gas, Diesel , Oil, Grease	836	1,676	2,357	1,724	2,000
393	Training	3,558	4,289	4,000	2,887	5,000
394	Transport Expense	0	0	0	0	0
Operations - CS						
120	Wages	31,052	38,730	45,475	32,376	48,250
120	Wages-Collection System	270	19	78	57	0
130	Social Security	2,326	2,924	3,500	2,545	3,690
131	Retirement	2,078	2,553	3,000	2,177	3,260
132	Health Insurance	4,966	8,680	7,700	4,613	7,610
138	Pension Expenses	21,675	3,088	0	0	0
139	Other Benefits	898	1,608	1,775	690	1,790
180	Uniform Allowance	739	925	900	504	900
221	Water & Sewer	753	784	898	657	800
222	Electric/Purchased Power	11,187	10,963	16,000	8,838	14,000
223	Heat	526	1,044	1,600	304	1,200
226	Bulk Water	0	84	0	0	0
231	Diggers Hotline	637	718	1,300	731	1,000
236	GIS Mapping	0	0	3,000	1,824	3,000
266	Repair & Maint Serv-Lift Stati	16,059	12,176	20,675	15,124	15,000
267	Repair & Maint Serv-Sewer Line	3,538	3,808	7,800	5,217	7,500
340	Operating Supplies	1,956	922	3,000	638	2,500
348	Gas, Diesel , Oil, Grease	890	1,313	2,000	1,305	1,500
393	Training	1,177	0	2,332	1,706	1,500
870	Capital Improvements (Non-Depr)	109,139	145,155	777,198	507,332	144,000
Total		731,476	815,919	1,616,036	1,021,559	989,900

Table 7 Recovery of O&M Costs to Outside Users

Village of East Troy, WI

O&M Costs & Allocations			
WWTP O&M Costs			
Sewer Admin - WWTP			\$124,180
Operations WWTP			\$582,990
ERF			\$121,805
Total Annual WWTP User Charge Costs			\$828,975
WWTP O&M Annual Allocation¹			
	Allocated Flow Annual (gal/yr)	Allocation %	Cost Allocation \$
Village	98,500	78%	\$ 649,336
Town S.D. #2	22,000	17%	\$ 145,029
Salvation Army	750	1%	\$ 4,944
Alpine Valley	4,500	4%	\$ 29,665
Total	125,750	100%	\$ 828,975
Collection System ("CS") O&M Costs			
Sewer Admin - CS			\$25,230
Operations - CS			\$113,500
Total Annual CS User Charge Costs			\$138,730
Collection System O&M Annual Allocation²			
User		Allocation %	Cost Allocation \$
Village		96.320%	\$ 133,625
Town S.D. #2		1.860%	\$ 2,580
Salvation Army		0.370%	\$ 513
Alpine Valley		1.450%	\$ 2,012
Total		100%	\$ 138,730

Notes:

- 1) Per Village Ordinance 400-89 B(2). Based on Projected Usage.
- 2) Per Village Ordinance 400-89 B(4). Allocation percentages based 2009 collection system evaluation.

Table 8 Recovery of Debt and Cash Funded Capital - Outside Users

Village of East Troy, WI

Outside User Debt Allocation				
Debt Allocable to Outside Users				
2008 CWFL				\$653,608
<i>Less Village Allocation</i>				
<i>Less Outside Users Prepayment</i>				-\$331,676
Net 2008 CWFL				\$321,932
2020 CWFL - Not Allocable to Outside Users				\$0
Total Debt Allocable to Outside Users				\$321,932
Flow Capacity Allocation				
User	Allocated Flow Capacity (gal/day)	Allocation %	Cost Allocation \$	Quarterly Charge \$
			2008 CWFL	2008 CWFL
			Paid thru Rates	Paid thru Rates
Village	737,500	79%		
Town S.D. #2	126,000	13%	\$ 43,383	\$ 10,845.84
Salvation Army	25,000	3%	Prepaid	Prepaid
Alpine Valley	46,500	5%	Prepaid	Prepaid
Total	935,000	100%	\$ 321,932	

Notes:

- 1) 2020 CWFL not allocable to Outside Users
- 2) Gal/Day Alloc. From 2009 Calculation

Table 9
Allocation of Costs to Function - Inside Users

Village of East Troy, WI

Acct Group/#	Acct Description	Allocation Percentages							2020 Budget	Allocable to Inside (Less: Outside Alloc.)	Conveyance System	WWTF					Customer Meter/Conn
		Conv	Flow	BOD	TSS	P	NH3-N	Cnn				Flow	BOD	TSS	P	N	
Operating & Maintenance																	
Sewer Admin - WWTP		0%	8%	5%	5%	5%	5%	72%	\$124,180	\$124,180	\$0	\$9,934	\$6,209	\$6,209	\$6,209	\$6,209	\$89,410
Sewer Admin - CS		20%	8%	0%	0%	0%	0%	72%	\$25,230	\$24,302	\$4,860	\$1,944	\$0	\$0	\$0	\$0	\$17,497
Operations WWTP		0%	13%	20%	15%	10%	5%	37%	\$582,990	\$403,351	\$0	\$52,436	\$80,670	\$60,503	\$40,335	\$20,168	\$149,240
Operations - CS		40%	14%	0%	0%	0%	0%	46%	\$113,500	\$109,323	\$43,729	\$15,305	\$0	\$0	\$0	\$0	\$50,289
870	Capital Improvements (Non-Depr)	0%	14%	15%	15%	10%	5%	41%	\$144,000	\$144,000	\$0	\$20,160	\$21,600	\$21,600	\$14,400	\$7,200	\$59,040
Total O & M		6%	12%	13%	11%	8%	4%	45%	\$989,900	\$805,156	\$48,590	\$99,779	\$108,479	\$88,312	\$60,944	\$33,577	\$365,475
Capital Costs																	
Debt		15%	14%	10%	10%	5%	5%	41%	\$712,559	\$669,176	\$100,376	\$93,685	\$66,918	\$66,918	\$33,459	\$33,459	\$274,362
Cash Financed Capital		15%	10%	10%	10%	5%	5%	45%	\$181,246	\$181,246	\$27,187	\$18,125	\$18,125	\$18,125	\$9,062	\$9,062	\$81,561
Total Capital Costs		15%	13%	10%	10%	5%	5%	42%	\$893,806	\$850,422	\$127,563	\$111,809	\$85,042	\$85,042	\$42,521	\$42,521	\$355,923
Subtotal Revenue Requirements									\$1,883,706	\$1,655,578	\$176,153	\$211,589	\$193,521	\$173,354	\$103,465	\$76,098	\$721,398
Other Income																	
Misc Service, Late Charges, & Other		15%	14%	10%	10%	5%	5%	41%	(\$6,000)	(\$6,000)	(\$900)	(\$840)	(\$600)	(\$600)	(\$300)	(\$300)	(\$2,460)
Investment Income		15%	14%	10%	10%	5%	5%	41%	(\$76,000)	(\$76,000)	(\$11,400)	(\$10,640)	(\$7,600)	(\$7,600)	(\$3,800)	(\$3,800)	(\$31,160)
Total Other Income		15%	14%	10%	10%	5%	5%	41%	(\$82,000)	(\$82,000)	(\$12,300)	(\$11,480)	(\$8,200)	(\$8,200)	(\$4,100)	(\$4,100)	(\$33,620)
Total Net Revenue Requirements									\$1,801,706	\$1,573,578	\$163,853	\$200,109	\$185,321	\$165,154	\$99,365	\$71,998	\$687,778

Notes:

Legend:

BOD = Biochemical Oxygen Demand
TSS = Total Suspended Solids
P = Phosphorus
NH3-N = Nitrogen

Table 10 Rate Computation Worksheet

Village of East Troy, WI

Calculation of Inside Customer Rates					Calculation of Outside Customer Rates			
Fixed Charges (Annual)								
Charge Type		Costs	Billable Units	Rate	Charge Type	Costs	Billable Units	Rate
Customer Charge		\$0	1,459	\$0.00	Debt Charge			
Meter/Connection Charge		\$687,778	1,755	\$391.83	Town S.D. #2	\$43,383.36	1	\$43,383.36
					Salvation Army	Prepaid	1	\$0.00
					Alpine Valley	Prepaid	1	\$0.00
					CS Charge			
					Town S.D. #2	\$2,580.38	1	\$2,580.38
					Salvation Army	\$513.30	1	\$513.30
					Alpine Valley	\$2,011.59	1	\$2,011.59
<u>Meter Size</u>	<u>Equiv Ratio</u>	<u>Meter/Connection Charge</u>	<u>Customer Charge</u>	<u>Total Fixed Charge</u>				
5/8"	1	\$391.83	\$0.00	\$391.83				
3/4"	1	\$391.83	\$0.00	\$391.83				
1"	1.7	\$666.11	\$0.00	\$666.11				
1 1/2"	3.3	\$1,293.04	\$0.00	\$1,293.04				
2"	5.3	\$2,076.70	\$0.00	\$2,076.70				
3"	10	\$3,918.30	\$0.00	\$3,918.30				
4"	16.7	\$6,543.56	\$0.00	\$6,543.56				
6"	33.3	\$13,047.94	\$0.00	\$13,047.94				
Volumetric Charges								
Charge Type		Cost	Billable Units (1,000 Gal or lbs)	Rate/Unit	Charge Type	Cost	Billable Units (1,000 Gal or lbs)	Rate/Unit
Flow Charge per 1000 Gal		\$200,109	98,500	\$2.03	User Charge (O&M)			
Conveyance Charge per 1000 Gal		\$163,853	98,500	\$1.66	Town S.D. #2	\$145,029	22,000	\$6.59
BOD Charge per lb.		\$185,321	180,728	\$1.03	Salvation Army	\$4,944	750	\$6.59
TSS Charge per lb.		\$165,154	180,728	\$0.91	Alpine Valley	\$29,665	4,500	\$6.59
P Charge per lb.		\$99,365	32,860	\$3.02				
N Charge per lb.		\$71,998	6,572	\$10.96				
BOD Charge per 1000 Gal				\$1.89				
TSS Charge per 1000 Gal				\$1.67				
P Charge per 1000 Gal				\$1.01				
N Charge per 1000 Gal				\$0.73				
Total Volumetric Rate per 1000 Gal				\$8.99				
Wastehauler Charges								
<u>Septic Charges</u>								
Flow Charge per 1000 Gal				\$2.03				
BOD Charge per 1000 Gal				\$34.36				
TSS Charge per 1000 Gal				\$72.10				
P Charge per 1000 Gal				\$3.78				
N Charge per 1000 Gal				\$36.56				
Total				\$148.83				
<u>Holding Tank Charges</u>								
Flow Charge per 1000 Gal				\$2.03				
BOD Charge per 1000 Gal				\$3.44				
TSS Charge per 1000 Gal				\$2.66				
P Charge per 1000 Gal				\$0.38				
N Charge per 1000 Gal				\$7.77				
Total				\$16.27				
<u>Chemical Toilet Waste Charges</u>								
Flow Charge per 1000 Gal				\$2.03				
BOD Charge per 1000 Gal				\$1.89				
TSS Charge per 1000 Gal				\$1.67				
P Charge per 1000 Gal				\$1.01				
N Charge per 1000 Gal				\$0.73				
Total				\$7.33				
<u>Mixed Load Waste Charges</u>								
Flow Charge per 1000 Gal				\$2.03				
BOD Charge per 1000 Gal				\$1.89				
TSS Charge per 1000 Gal				\$1.67				
P Charge per 1000 Gal				\$1.01				
N Charge per 1000 Gal				\$0.73				
Total				\$7.33				
Rate Summary								
Fixed charge per Equivalent Unit				\$391.83	Fixed Charge			
					Town S.D. #2			\$45,963.74
Total Volumetric Rate per 1000 Gal				\$8.99	Salvation Army			\$513.30
BOD Charge per lb.				\$1.030	Alpine Valley			\$2,011.59
TSS Charge per lb.				\$0.910				
P Charge per lb.				\$3.020	Total Volumetric Rate per 1000 Gal			\$6.59
N Charge per lb.				\$10.960				

Table 11

Rate Summary (Quarterly Charges)

Village of East Troy, WI

	Current	COS	2020 Proposed
Inside Sewer Customers			
<u>Meter Size</u>			
5/8"	\$90.48	\$97.96	\$97.96
3/4"	\$90.48	\$97.96	\$97.96
1"	\$153.81	\$166.53	\$166.53
1 1/2"	\$298.57	\$323.26	\$323.26
2"	\$479.52	\$519.18	\$519.17
3"	\$904.76	\$979.58	\$979.58
4"	\$1,510.94	\$1,635.89	\$1,635.89
6"	\$3,012.84	\$3,261.99	\$3,261.98
Volumetric Rate per 1000 Gal	\$8.38	\$8.99	\$8.99
Outside Sewer Customers			
<u>Fixed Charge</u>			
Town S.D. #2	\$10,859.85	\$11,490.94	\$11,490.94
Salvation Army	\$0.00	\$128.33	\$128.33
Alpine Valley	\$0.00	\$502.90	\$502.90
Volumetric Rate per 1000 Gal	\$6.79	\$6.59	\$6.59
High Strength Industrial			
<u>BOD Charge per lb.</u>			
	\$1.23	\$1.03	\$1.03
<u>TSS Charge per lb.</u>			
	\$0.78	\$0.91	\$0.91
<u>P Charge per lb.</u>			
	\$19.31	\$3.02	\$3.02
<u>N Charge per lb.</u>			
	\$2.79	\$10.96	\$10.96
Wastehauler			
<u>Septic Rate per 1000 Gal</u>			
	\$95.00	\$148.83	\$148.83
<u>Chemical Toilet Rate per 1000 Gal</u>			
	\$0.89	\$7.33	\$7.33
<u>Mixed Load Rate per 1000 Gal</u>			
	\$0.89	\$7.33	\$7.33
<u>Holding Tank Rate per 1000 Gal</u>			
	\$8.00	\$16.27	\$16.27

Table 12

Revenue Check (Based on COS)

Village of East Troy, WI

		Units	Rate	Annual Total
Fixed Charge (Inside)				
	<u>Meter Size</u>			
	5/8"	247	\$97.96	\$ 96,782.01
	3/4"	1,111	\$97.96	\$ 435,323.13
	1"	59	\$166.53	\$ 39,300.49
	1 1/2"	7	\$323.26	\$ 9,051.28
	2"	24	\$519.18	\$ 49,840.80
	3"	8	\$979.58	\$ 31,346.40
	4"	2	\$1,635.89	\$ 13,087.12
	6"	1	\$3,261.99	\$ 13,047.94
Subtotal		1,459		\$ 687,779.17
Fixed Charge (Outside)				
	Town S.D. #2	1	\$11,490.94	\$ 45,963.74
	Salvation Army	1	\$128.33	\$ 513.30
	Alpine Valley	1	\$502.90	\$ 2,011.59
Subtotal				\$ 48,488.63
Volumetric Charges (Inside)				
Commercial (CO)	Flow (000 gal)	12,000	\$8.99	\$ 107,858.82
Industrial (IN)	Flow (000 gal)	14,000	\$8.99	\$ 125,835.29
Public (PU)	Flow (000 gal)	2,000	\$8.99	\$ 17,976.47
Residential (RE)	Flow (000 gal)	48,000	\$8.99	\$ 431,435.29
Multi-Family (MU)	Flow (000 gal)	22,500	\$8.99	\$ 202,235.29
Subtotal		98,500		\$ 885,341.17
High Strength Industrial				
Industrial Excess BOD	Lbs	0	\$1.030	\$0.00
Industrial Excess TSS	Lbs	0	\$0.910	\$0.00
Industrial Excess P	Lbs	0	\$3.020	\$0.00
Industrial Excess N	Lbs	0	\$10.960	\$0.00
Subtotal		0		\$0
Volumetric Charges (Outside)				
Town of E.T. S.D. #2	Flow (000 gal)	22,000	\$6.59	\$144,980
Alpine Valley	Flow (000 gal)	4,500	\$6.59	\$29,655
Salvation Army	Flow (000 gal)	750	\$6.59	\$4,943
Subtotal				\$179,578
Total Revenues			\$	1,801,186
Revenue Requirements			\$	1,801,706
Difference				(\$519)

Notes:

1) Difference due to rounding

Table 13 Revenue Summary (Proposed Rates)

Village of East Troy, WI

		Units	Rate	Annual Total
Fixed Charge (Inside)				
	<u>Meter Size</u>			
	5/8"	247	\$97.96	\$ 96,782.01
	3/4"	1,111	\$97.96	\$ 435,323.13
	1"	59	\$166.53	\$ 39,300.55
	1 1/2"	7	\$323.26	\$ 9,051.27
	2"	24	\$519.17	\$ 49,840.78
	3"	8	\$979.58	\$ 31,346.40
	4"	2	\$1,635.89	\$ 13,087.12
	6"	1	\$3,261.98	\$ 13,047.94
Subtotal		1,459		\$ 687,779.20
Fixed Charge (Outside)				
	Town S.D. #2	1	\$11,490.94	\$ 45,963.74
	Salvation Army	1	\$128.33	\$ 513.30
	Alpine Valley	1	\$502.90	\$ 2,011.59
Subtotal				\$ 48,488.63
Volumetric Charges (Inside)				
Commercial (CO)	Flow (000 gal)	12,000	\$8.99	\$ 107,858.82
Industrial (IN)	Flow (000 gal)	14,000	\$8.99	\$ 125,835.29
Public (PU)	Flow (000 gal)	2,000	\$8.99	\$ 17,976.47
Residential (RE)	Flow (000 gal)	48,000	\$8.99	\$ 431,435.29
Multi-Family (MU)	Flow (000 gal)	22,500	\$8.99	\$ 202,235.29
Subtotal		98,500		\$ 885,341.17
Volumetric Charges (Outside)				
Town of E.T. S.D. #2	Flow (000 gal)	22,000	\$6.59	\$144,980
Alpine Valley	Flow (000 gal)	4,500	\$6.59	\$29,655
Salvation Army	Flow (000 gal)	750	\$6.59	\$4,943
Subtotal				\$179,578
Total Revenues				\$ 1,801,186
Revenue Requirements				\$ 1,801,706
Difference				(\$519)

Notes:

1) Difference due to rounding

Table 14

Test Year Cash Flow Analysis

Village of East Troy, WI

	2020
<u>Cash Sources</u>	
Revenues from User Rates ⁽¹⁾	\$1,801,186
Other Income ⁽²⁾	\$6,000
Investment Income on Unrestricted Cash	\$76,000
Total Cash Sources	\$1,883,186
<u>Cash Uses</u>	
O&M	\$989,900
Other	
Net Before Debt Service	\$893,286
<u>Debt Service</u>	
General Obligation Debt Service P&I	\$0
Revenue Bond Debt Service P&I	\$653,608
Total Debt Service	\$653,608
ERF	\$121,805
Transfer in/(out)	\$0
Net Cash Flow	\$117,873
<u>Total Unrestricted Cash Balance</u>	
Beginning Year Est. Balance	\$747,783
Net Additions (Subtractions)	\$117,873
End of Year Unrestricted Cash Balance	\$865,656
<u>Equipment Replacement Fund Balance</u>	
Beginning Year Balance	\$1,151,544
Additions from Rates	\$121,805
Fund Expenditures	\$0
Interest Income	\$5,000
End Year Replacement Fund Balance	\$1,278,349

Notes:

- 1) Full year of revenues from proposed user rates
- 2) Miscellaneous revenue and late fees.

Table 15 Comparison of Existing and Proposed Bills

Village of East Troy, WI

Customer	Usage Level	Meter Size	Quarterly				
			Usage 1,000 Gal	Current Bill	Proposed Bill	Dollar Change	Percent Change
Residential	Low User	5/8"	7.31	\$151.70	\$163.62	\$11.92	7.9%
Residential	Avg. User	5/8"	9.74	\$172.10	\$185.51	\$13.40	7.8%
Residential	High User	5/8"	12.18	\$192.51	\$207.39	\$14.88	7.7%
Commercial	Low User	3/4"	18.91	\$248.93	\$267.90	\$18.98	7.6%
Commercial	Avg. User	3/4"	25.21	\$301.74	\$324.55	\$22.81	7.6%
Commercial	High User	3/4"	31.51	\$354.56	\$381.20	\$26.64	7.5%
Industrial	Low User	1"	72.92	\$764.85	\$821.92	\$57.07	7.5%
Industrial	Avg. User	1"	97.22	\$968.53	\$1,040.38	\$71.85	7.4%
Industrial	High User	1"	121.53	\$1,172.21	\$1,258.85	\$86.64	7.4%
Public	Low User	3/4"	17.05	\$233.32	\$251.17	\$17.85	7.6%
Public	Avg. User	3/4"	22.73	\$280.93	\$302.24	\$21.30	7.6%
Public	High User	3/4"	28.41	\$328.55	\$353.31	\$24.76	7.5%
Town S.D. #2	Avg. User		5,500.00	\$48,204.85	\$47,735.94	(\$468.92)	-1.0%
Salvation Army	Avg. User		187.50	\$1,273.13	\$1,363.95	\$90.83	7.1%
Alpine Valley	Avg. User		1,125.00	\$7,638.75	\$7,916.65	\$277.90	3.6%

Notes:

- 1) Meter sizes chosen based on highest number of users for each class
- 2) Average user is defined as the total estimated test year flow for the class divided by the projected number of users in the class.

Table 16 Projected Impact of CIP on Typical Residential Utility Bill

Village of East Troy, WI

Year	Sewer				
	Increase	Sewer Vol. Charge ³	Sewer User Charge ³	Utility Bill (Quarterly)	Change Over Prior Year
		1,000 Gal	Gen Service		
2019		8.38	90.48	\$ 172.19	
2020	7.79%	8.99	97.96	\$ 185.59	\$ 13.41
2021	0.00%	8.99	97.96	\$ 185.59	\$ -
2022	0.00%	8.99	97.96	\$ 185.59	\$ -
2023	3.00%	9.26	100.90	\$ 191.16	\$ 5.57
2024	0.00%	9.26	100.90	\$ 191.16	\$ -
2025	0.00%	9.26	100.90	\$ 191.16	\$ -
2026	3.00%	9.54	103.92	\$ 196.90	\$ 5.73
2027	0.00%	9.54	103.92	\$ 196.90	\$ -
2028	0.00%	9.54	103.92	\$ 196.90	\$ -
2029	3.00%	9.82	107.04	\$ 202.80	\$ 5.91
2030	0.00%	9.82	107.04	\$ 202.80	\$ -

Notes:

1. The current Sewer volumetric rate is 8.38/1,000gal and Qtrly Service Charge of \$90.48
2. The usage is assumed to be 9,750 gallons per quarter



Test Year 2020 Sewer Rate Study

Section 3 — Long-Range Cash Flow Analysis

Village of East Troy, WI

Table 17 Sewer Utility Capital Improvement Plan

Village of East Troy, WI

Projects	Funding	2020	2021	2022	2023	2024	Totals
Lateral Replacement Assessed for Street Projects	User Fees	50,000	200,000	50,000		25,000	325,000
Televising collection system Move to Op. budget	User Fees	12,000	12,000	12,000	12,000	12,000	60,000
Replace controls School Street lift station	User Fees		15,000				15,000
Rehabilitation manholes in conjunction of street repairs	User Fees						0
Sewer relining	User Fees			50,000			50,000
Design School Street Improvements	User Fees		10,000				10,000
School Street Sewer Improvements	User Fees			75,000			75,000
Engineering for Village Square and Main Street renovations	User Fees	10,000					10,000
Hwy. 20 Sanitary Improvements Engineering	User Fees		5,000				5,000
Hwy. 20 Sanitary Improvements	User Fees				75,000		75,000
Edwards Street sewer relining and sanitary repairs	User Fees					50,000	50,000
Clayton Avenue sewer relining	User Fees	42,000					42,000
Improvements in Structures 30 & 35	User Fees					75,000	75,000
Hwy ES Sewer Improvements	User Fees		100,000				100,000
School Street Forcemain Replacement	User Fees		175,000				175,000
Roof Replacement on Sludge Drying Beds	User Fees						0
Replace VFD's at Honey Creek Lift Station	User Fees		25,000				25,000
Replace VFD's at WWTP Lift Station	User Fees		15,000				15,000
Collection System repairs	User Fees	30,000	30,000	30,000	30,000	30,000	150,000
Replace Gas Monitors	User Fees				5,000		5,000
Replace Honey Creek generator	User Fees				90,000		90,000
Actual CIP Costs		144,000	587,000	217,000	212,000	192,000	1,352,000

Sources of Funding	2020	2021	2022	2023	2024	Totals
G.O. Debt	0	0	0	0	0	0
Revenue Debt	0	0	0	0	0	0
Grants/Aids	0	0	0	0	0	0
Special Assessment	0	0	0	0	0	0
User Fees	144,000	587,000	217,000	212,000	192,000	1,352,000
Tax Levy	0	0	0	0	0	0
Equipment Replacement Fund	0	0	0	0	0	0
Cash	0	0	0	0	0	0
Total	144,000	587,000	217,000	212,000	192,000	1,352,000

Notes:

Table 18

Sewer Utility Projected Debt Service Payments (PROPOSED)

Village of East Troy, WI

NAME	2020 Clean Water Fund Loan Project No. 4278-03				PROPOSED Sewer Utility Debt Service Summary				
AMT	\$998,777								
DATED	2/12/2020								
MATURE	5/1								
RATE	1.98%								
Year	Principal	Est. Rate ¹	Interest	Total	Total Prin	Total Int	Total P&I	Prin Outstanding	Year
2020	42,361	1.70%	16,590	58,951	42,361	16,590	58,951	956,416	2020
2021	43,080	1.70%	15,865	58,945	43,080	15,865	58,945	913,336	2021
2022	43,811	1.70%	15,128	58,939	43,811	15,128	58,939	869,525	2022
2023	44,555	1.70%	14,378	58,932	44,555	14,378	58,932	824,970	2023
2024	45,311	1.70%	13,615	58,926	45,311	13,615	58,926	779,659	2024
2025	46,080	1.70%	12,840	58,919	46,080	12,840	58,919	733,579	2025
2026	46,862	1.70%	12,051	58,913	46,862	12,051	58,913	686,718	2026
2027	47,657	1.70%	11,249	58,906	47,657	11,249	58,906	639,061	2027
2028	48,466	1.70%	10,434	58,899	48,466	10,434	58,899	590,595	2028
2029	49,288	1.70%	9,604	58,892	49,288	9,604	58,892	541,307	2029
2030	50,125	1.70%	8,761	58,885	50,125	8,761	58,885	491,183	2030
2031	50,975	1.70%	7,903	58,878	50,975	7,903	58,878	440,208	2031
2032	51,840	1.70%	7,030	58,871	51,840	7,030	58,871	388,367	2032
2033	52,720	1.70%	6,143	58,863	52,720	6,143	58,863	335,648	2033
2034	53,615	1.70%	5,241	58,856	53,615	5,241	58,856	282,033	2034
2035	54,524	1.70%	4,323	58,848	54,524	4,323	58,848	227,509	2035
2036	55,450	1.70%	3,390	58,840	55,450	3,390	58,840	172,059	2036
2037	56,391	1.70%	2,441	58,832	56,391	2,441	58,832	115,668	2037
2038	57,348	1.70%	1,476	58,824	57,348	1,476	58,824	58,321	2038
2039	58,321	1.70%	495	58,816	58,321	495	58,816	0	2039
2040					0	0	0	0	2040
TOTALS	998,777		178,958	1,177,735	998,777	178,958	1,177,735		TOTALS

Notes:

1) Rate assumes current CWFL Program Interest Rates plus 30 basis points

Table 19 Sewer Utility Cash Flow Analysis - Projected 2020-2030

Village of East Troy, WI

	Actual	Estimated	Budget	Projected									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues													
Total Revenues from User Rates ¹	\$1,718,369	\$1,635,050	\$1,718,118	\$1,801,186	\$1,801,186	\$1,855,222	\$1,855,222	\$1,855,222	\$1,910,879	\$1,910,879	\$1,910,879	\$1,968,205	\$1,968,205
Percent Increase to User Rates Required			7.79%	0.00%	0.00%	3.00%	0.00%	0.00%	3.00%	0.00%	0.00%	3.00%	0.00%
Cumulative Percent Rate Increase			7.79%	7.79%	7.79%	11.02%	11.02%	11.02%	14.35%	14.35%	14.35%	17.78%	17.78%
Dollar Amount Increase to Revenues Required			\$83,068	\$83,068	\$0	\$54,036	\$0	\$0	\$55,657	\$0	\$0	\$57,326	\$0
Other Revenues													
Interest Income	\$92,977	\$75,395	\$76,000	\$76,190	\$76,380	\$76,571	\$76,763	\$76,955	\$77,147	\$77,340	\$77,533	\$77,727	\$77,922
Other Income	\$7,155	\$7,000	\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306	\$6,369	\$6,433	\$6,497	\$6,562	\$6,628
Total Other Revenues	\$100,132	\$82,395	\$82,000	\$82,250	\$82,501	\$82,753	\$83,006	\$83,261	\$83,516	\$83,773	\$84,031	\$84,289	\$84,549
Total Revenues	\$1,818,501	\$1,717,445	\$1,800,118	\$1,883,436	\$1,883,688	\$1,937,975	\$1,938,229	\$1,938,483	\$1,994,395	\$1,994,652	\$1,994,909	\$2,052,494	\$2,052,754
Expenses													
Operating and Maintenance	\$815,919	\$948,114	\$946,700	\$975,101	\$1,004,354	\$1,034,485	\$1,065,519	\$1,097,485	\$1,130,409	\$1,164,322	\$1,199,251	\$1,235,229	\$1,272,286
Net Before Debt Service and Capital Expenditures	\$1,002,582	\$769,331	\$853,418	\$908,335	\$879,334	\$903,491	\$872,709	\$840,998	\$863,986	\$830,330	\$795,658	\$817,266	\$780,469
Debt Service													
Existing Debt P&I ¹	\$651,771	\$653,777	\$653,608	\$653,435	\$653,257	\$653,075	\$652,888	\$652,696	\$652,499	\$652,298	\$0	\$0	\$0
New (2020-2029) Debt Service P&I			\$58,951	\$58,945	\$58,939	\$58,932	\$58,926	\$58,919	\$58,913	\$58,906	\$58,899	\$58,892	\$58,885
Total Debt Service	\$651,771	\$653,777	\$712,559	\$712,380	\$712,196	\$712,007	\$711,814	\$711,615	\$711,412	\$711,204	\$58,899	\$58,892	\$58,885
Transfer In (Out)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Improvements	\$1,055,744	\$777,198	\$144,000	\$587,000	\$217,000	\$212,000	\$192,000	\$0	\$0	\$0	\$0	\$0	\$0
Bonds Issued/Grants/Aid	\$0	\$578,420	\$591,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Annual Cash Flow	(\$704,933)	(\$83,224)	\$588,659	(\$391,044)	(\$49,862)	(\$20,516)	(\$31,104)	\$129,383	\$152,574	\$119,126	\$736,759	\$758,373	\$721,584
Restricted and Unrestricted Cash Balance:													
Balance at first of year		\$2,667,381	\$2,584,157	\$3,172,816	\$2,781,771	\$2,731,909	\$2,711,393	\$2,680,289	\$2,809,671	\$2,962,245	\$3,081,371	\$3,818,130	\$4,576,503
Net Annual Cash Flow Addition/(subtraction)		(\$83,224)	\$588,659	(\$391,044)	(\$49,862)	(\$20,516)	(\$31,104)	\$129,383	\$152,574	\$119,126	\$736,759	\$758,373	\$721,584
Balance at end of year	\$2,667,381	\$2,584,157	\$3,172,816	\$2,781,771	\$2,731,909	\$2,711,393	\$2,680,289	\$2,809,671	\$2,962,245	\$3,081,371	\$3,818,130	\$4,576,503	\$5,298,087

Notes:

1) No assumptions for flow or customer count beyond 2020

Legend:

Increase depicted to maintain with assumed O&M inflation
 Increase needed above inflationary adjustment

Table 20 Sewer Utility Financial Benchmarking Analysis

Village of East Troy, WI

	Actual	Estimated	Budget	Projected									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Target minimum cash balance													
Target minimum working capital - Ehlers ¹	1,084,451	1,142,526	1,156,547	1,170,990	1,185,866	1,201,190	1,216,975	1,233,234	1,249,982	658,525	676,507	695,028	714,105
Actual Days Cash Available - PSC ²	1,435	1,183	1,472	1,251	1,187	1,139	1,090	1,100	1,116	1,118	1,303	1,490	1,653
Actual Days Cash Available - Moody's ³	957	45	288	150	143	147	147	200	258	301	516	725	911
Target minimum working capital - S&P ⁴	957	45	288	150	143	147	147	200	258	301	516	725	911
Actual working capital-cash balance	2,667,381	2,662,590	3,294,632	2,946,970	2,940,491	2,963,358	2,975,637	3,148,402	3,344,359	3,506,868	4,243,627	5,002,000	5,723,584
Over (Under) Ehlers target	1,582,930	1,520,063	2,138,084	1,775,981	1,754,625	1,762,168	1,758,662	1,915,169	2,094,377	2,848,343	3,567,120	4,306,972	5,009,479
Over (Under) PSC target (90 days)	1,345	1,093	1,382	1,161	1,097	1,049	1,000	1,010	1,026	1,028	1,213	1,400	1,563
Over (Under) Moody's target (150 days)	807	(105)	138	(0)	(7)	(3)	(3)	50	108	151	366	575	761
Over (Under) Ehlers target (150 days)	807	(105)	138	(0)	(7)	(3)	(3)	50	108	151	366	575	761

Notes:

- 1) Target capital equals 6 mos of next year's operating expenses, including depreciation, plus 100% of debt.
- 2) PSC formula = O&M expense + taxes + interest on long term debt ÷ 365 to get expense per day. Then Unrestricted Cash ÷ expense per day
- 3) Moody's Formula = [(Unrestricted Cash + Liquid Investments) * 365 days] ÷ Total O&M Expenses less Depreciation
- 4) S&P Formula = [(Unrestricted Cash + Liquid Investments) * 365 days] ÷ Total O&M Expenses less Depreciation; include designated reserve funds: ERFs, RSFs, etc

Rate of Return

Average Utility Plant in Service	20,646,166	21,068,503	21,529,102	21,894,602	22,296,602	22,511,102	22,713,102	22,809,102	22,809,102	22,809,102	22,809,102	22,809,102	22,809,102
Less: Utility Plant Accumulated Depreciation	8,760,791	9,374,791	9,988,791	10,613,619	11,255,661	11,905,697	12,563,356	13,225,767	13,888,178	14,550,589	15,213,000	15,875,411	16,537,822
Average Net Investment Rate Base (NIRB)	11,885,375	11,693,712	11,540,311	11,280,983	11,040,941	10,605,405	10,149,746	9,583,335	8,920,924	8,258,513	7,596,102	6,933,691	6,271,280
Net Operating Income	288,374	79,936	163,418	207,317	160,911	176,883	138,288	101,632	124,428	90,579	55,714	77,127	40,136
ROR	2.43%	0.68%	1.42%	1.84%	1.46%	1.67%	1.36%	1.06%	1.39%	1.10%	0.73%	1.11%	0.64%

Typical

Cost Recovery

Operating Revenues	1,725,524	1,642,050	1,724,118	1,807,246	1,807,307	1,861,404	1,861,466	1,861,528	1,917,248	1,917,312	1,917,376	1,974,767	1,974,833
Operating Expenses incl. Depr & Amortization	1,437,150	1,562,114	1,560,700	1,599,929	1,646,396	1,684,521	1,723,178	1,759,896	1,792,820	1,826,733	1,861,662	1,897,640	1,934,697
Cost Recovery	1.20	1.05	1.10	1.13	1.10	1.11	1.08	1.06	1.07	1.05	1.03	1.04	1.02
Cost Recovery w/o Depr.	2.11	1.73	1.82	1.85	1.80	1.80	1.75	1.70	1.70	1.65	1.60	1.60	1.55
Target	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes:

This operating ratio indicates whether operating revenues (mostly charges to customers) were sufficient to cover operations and capital (in the form of depreciation) for the water and/or wastewater utility in the fiscal year. A ratio of less than 1 could be a sign of financial concern. In general, this ratio should be higher than 1 to accommodate future capital investments.

Leverage

Total Long-Term Debt	4,728,903	4,728,903	5,144,646	4,547,198	3,934,976	3,307,614	2,664,733	2,005,946	1,330,858	639,061	590,595	541,307	491,183
Total Net Assets	13,387,077	13,450,996	13,560,889	13,729,465	13,866,783	14,035,593	14,181,711	14,307,469	14,472,720	14,621,232	14,744,045	14,889,296	14,998,593
Debt-to Equity Ratio	0.35	0.35	0.38	0.33	0.28	0.24	0.19	0.14	0.09	0.04	0.04	0.04	0.03

Notes:

This indicator measures the existing level of leveraging of assets, and is used by funders and bond rating agencies to evaluate the risk of providing additional loans to the utility. The ratio indicates the amount of long-term debt that exists for every \$1 of assets (fund equity). A utility with a ratio greater than 1.0 has more long-term debt than equity in the system's assets. There are no natural benchmarks for this indicator, and funders and bond rating agencies will assess this ratio in various ways. In general, the higher this ratio, the more likely the utility will be considered to be over-leveraged and the more difficult it will be for the utility to obtain additional loans. For this ratio, Net Assets are equal to the Net Investment Rate Base of the utility.

Condition of Assets:

Accumulated Depreciation Expense	8,760,791	9,374,791	9,988,791	10,613,619	11,255,661	11,905,697	12,563,356	13,225,767	13,888,178	14,550,589	15,213,000	15,875,411	16,537,822
Average Total Plant in Service	20,646,166	21,068,503	21,529,102	21,894,602	22,296,602	22,511,102	22,713,102	22,809,102	22,809,102	22,809,102	22,809,102	22,809,102	22,809,102
Asset Depreciation	29.79%	30.79%	31.69%	32.65%	33.55%	34.59%	35.61%	36.70%	37.85%	38.95%	40.01%	41.04%	42.03%

Notes:

This indicator of infrastructure condition estimates the portion of the average expected life of the utility's physical assets that has already passed. As this ratio approaches 100%, the capital assets become fully depreciated, and infrastructure needs replacement or rehabilitation. The accuracy of this indicator relies heavily on the accuracy of the depreciation schedule, and historic pricing likely distorts this indicator (newer utilities may be slightly disadvantaged as a result).

Table 21 Sewer Utility Statement of Projected Revenue Bond Coverage

Village of East Troy, WI

Year	Total Operating Revenues	Less: Total O&M Expense	Amount Available for Debt Service	Existing Rev Debt	Future Rev Debt (2020-2029)	Total Sewer Debt Service	Coverage	Capacity @ 1.25 Coverage
				Total	Total			
2020	1,800,118	(946,700)	853,418	653,608	58,951	712,559	1.20	(37,281)
2021	1,883,436	(975,101)	908,335	653,435	58,945	712,380	1.28	17,861
2022	1,883,688	(1,004,354)	879,334	653,257	58,939	712,196	1.23	(10,911)
2023	1,937,975	(1,034,485)	903,491	653,075	58,932	712,007	1.27	13,482
2024	1,938,229	(1,065,519)	872,709	652,888	58,926	711,814	1.23	(17,058)
2025	1,938,483	(1,097,485)	840,998	652,696	58,919	711,615	1.18	(48,521)
2026	1,994,395	(1,130,409)	863,986	652,499	58,913	711,412	1.21	(25,280)
2027	1,994,652	(1,164,322)	830,330	652,298	58,906	711,204	1.17	(58,675)
2028	1,994,909	(1,199,251)	795,658	-	58,899	58,899	13.51	722,034
2029	2,052,494	(1,235,229)	817,266	-	58,892	58,892	13.88	743,650
2030	2,052,754	(1,272,286)	780,469	-	58,885	58,885	13.25	706,862

Notes:

- 1) Existing and Proposed CWFLs require 1.10x Coverage annually
- 2) 1.25x Coverage typically required for market debt

Legend:

- < 1.10 Debt Coverage
- < 1.25 Debt Coverage