

**Village of Sister Bay Utilities
2005 Sewer Rate Study**

Revision 5

Fixed Charges

Size	Meter Equivalent	Quarterly O & M Meter Charge	Quarterly Debt Service Meter Charge	Total Quarterly Meter Charge
5/8, 3/4	1	\$31.80	\$14.70	\$46.50
1	2.5	\$79.50	\$36.75	\$116.25
1/12	5	\$159.00	\$73.50	\$232.50
2	8	\$254.40	\$117.60	\$372.00
3	15	\$477.00	\$220.50	\$697.50

Volume Charges

Normal Waste \$2.00

Unsewered Volume Charge

Holding Tank \$5.09
 Septage #REF!

Unsewered Debt Charge

Holding Tank \$3.81
 Septage \$35.46

Total Outside Unsewered User

Holding Tank \$8.90
 Septage #REF!

High Strength Waste Surcharge

B.O.D over 300 mg/l \$0.00
 S.S over 250 mg/l \$0.00
 P over 12 mg/l \$0.00

**Village of Sister Bay
Summary of User Charges**

	Proposed Village of Sister Bay		Existing Rates	Impacts	
	Alternative A	Alternative B		Alternative A	Alternative B
Sewered Volume Charge	\$2.55	\$2.00	1.68	51.87%	19.27%
Fixed Charges					
O & M	\$25.30	\$31.80			
Debt	\$14.70	\$14.70			
Additional 2006 increase	\$7.15	\$7.15			
Total	\$47.15	\$53.65	28.01	68.33%	91.54%
Unsewered Volume Charge					
Holding Tank	\$5.09	\$5.09	3.31	53.76%	53.76%
Septage	\$51.00	#REF!	46.04	10.77%	#REF!
Unsewered Debt Charge					
Holding Tank	\$3.81	\$3.81	N/A		
Septage	\$35.46	\$35.46	N/A		
Total Outside Unsewered User					
Holding Tank	\$8.90	\$8.90	7.28	22.24%	22.24%
Septage	\$86.46	#REF!	102.03	-15.26%	#REF!
Typical Residential Quarterly Charge (Based on 16,000/quarter usage)	\$87.97	\$85.71	54.89	60.27%	56.15%

Notes: All volume charges are per 1,000 gallons, fixed charges are for a typical residential user's meter.

Debt Service increases by \$7.15/quarter in 2006. Recommend \$39.95 and \$46.45 quarterly charges
Typical residential charges would be \$80.77 (Alt A) or \$78.51 (Alt B)

**Annual Loading
Wastewater Treatment Facility
Village of Sister Bay**

Month	Ave Flow	mg/l	BOD lbs	mg/l	TSS lbs	mg/l	P* lbs
January	0.123	305	313	273	280		20
February	0.123	287	294	237	243		20
March	0.269	236	529	225	505		35
April	0.332	254	703	300	831		40
May	0.243	303	614	274	555		35
June	0.322	397	1066	399	1072		45
July	0.347	489	1415	456	1320		50
August	0.322	482	1294	440	1182		45
September	0.248	560	1158	574	1187		45
October	0.236	421	829	433	852		40
November	0.147	407	499	333	408		30
December	0.136	358	406	308	349		30
Average	0.237		760		732		36.25
Annual Total	86.627		277,452		267,172		13,231
Winter (Nov-Mar)	0.160		408		357		
Summer (Apr-Oct)	0.293		1011		1000		

*P estimated based on other loadings, expressed as an approximate percentage of design loading

**Comparison of Actual Loadings with Assumed Loading Levels
Village of Sister Bay WWTF**

Sewered Loading

2004	Flow		65.33	MG	
Assumed Strengths	BOD		300	mg/l	
	TSS		250	mg/l	
	P		12	mg/l	
Projected Loading	BOD	=	163,456	lbs	
	TSS	=	136,213	lbs	
	P	=	6,538	lbs	

Unsewered Loading

Holding Tank

2004	Flow		8.343	MG	
Assumed Strengths	BOD		400	mg/l	
	TSS		400	mg/l	
	P		15	mg/l	

Septage

2004	Flow		0.346	MG	
Assumed Strengths	BOD		6,000	mg/l	
	TSS		10,000	mg/l	
	P		200	mg/l	
Unsewered Loading	BOD	=	45,136		
	TSS	=	56,671		
	P	=	1,620		

						Difference	
Total Proj Loading (Proj Sewered + Proj Unsewered)	BOD	= 208,591	Actual Total Loading (2004)	BOD	= 277,452	33.0%	
	TSS	= 192,884		TSS	= 267,172	38.5%	
	P	= 8,159		P	= 13,231	62.2%	

Actual Total Loading	BOD	= 277,452
	TSS	= 267,172
	P	= 13,231

Actual Hold/Sept	BOD	= 53,345
	TSS	= 79,532

Actual Sewered (Total-Unsewered)	BOD	= 224,107
	TSS	= 187,640

Sewered Strength	BOD	= 411
	TSS	= 344

Orig Level	Difference
300	37.1%
250	37.8%

**Table 3-2 Allocation of Plant Capacity
Based on Maximum Day Summer Loadings**

Parameter	Flow (gpd)	BOD (lbs/day)	TSS (lbs/day)	P (lbs/day)
Village	613,664 64.94%	918 38.75%	1,080 49.63%	54 52.94%
Town	262,952 27.83%	1,399 59.05%	1,003 46.11%	43 42.28%
Sanitary District	58,506 6.19%	87 3.68%	102 4.71%	5 4.96%
Total	945,000	2,369	2,176	102
Average Concentration		300	276	13

**Table 3-2A Utilization of Plant Capacity
Based on Annual Average 2004 Loadings**

Parameter	Flow (gpd)	BOD (lbs/day)	TSS (lbs/day)	P (lbs/day)
Village	148,000 75.86%	483 63.55%	382 52.19%	25 69.97%
Town	25,500 13.07%	207 27.24%	294 40.16%	7 19.83%
Sanitary District	21,600 11.07%	70 9.21%	56 7.65%	4 10.19%
Total	195,100	760	732	36
Average Concentration		467	450	22

Table 4-1 Total 1994 Loadings

Parameter	Village	Sanitary District	Town	Total
Flow				
Wastewater Flow, gpd	50,237	7,600	6,293	64,130
Infiltration, gpd	14,492	2,426	N/A	16,918
BOD, lbs/yr	125,776	19,015	20,993	165,784
TSS, lbs/yr	104,744	15,846	20,993	141,583
P, lbs/yr	5,028	761	787	6,526

Table 4-1A Total 2004 Loadings

Parameter	Village	Sanitary District	Town	Total
Flow				
Wastewater Flow, gpd	148,000	21,600	25,500	195,100
Infiltration, gpd	36,800	5,400	N/A	42,200
BOD, lbs/yr	176,300	25,730	75,425	277,455
TSS, lbs/yr	139,640	20,380	107,153	267,173
P, lbs/yr	9,270	1,350	2,630	13,231

**Metered Water Sales
Village of Sister Bay**

Year	2004	
User Class	Number Users	PSC Water Sales*
Residential	738	21,910
Commercial	185	30,849
Industrial	0	0
Public	<u>12</u>	<u>9,239</u>
Total	935	61,998

*1,000's of gallons

Summary of Total Quarterly Water Sales

	2004		2003		2002		2001	
	Flow	%	Flow	%	Flow	%	Flow	%
Village	54.113	87.3%	57.239	88.4%	55.873	88.4%	56.314	88.5%
LGSD	<u>7.885</u>	12.7%	<u>7.536</u>	11.6%	<u>7.342</u>	11.6%	<u>7.311</u>	11.5%
Total	61.998		64.775		63.215		63.625	

**Determination of I/I Volume
Village of Sister Bay WWTF**
Supplement to Table 4-1A

Parameter	Value (MG)
Total Wastewater Flow	86.63
Water Sales	62.00
Hauled Wastes	<u>8.69</u>
Total Infiltration/Inflow	15.94
Allocation of Infiltration/Inflow*	
Village	13.65
Sanitary District	<u>2.29</u>
Total	15.94

*Based on 1988 I/I Analysis, 85.66% to Village, 14.34% to Sanitary District

**Summary of Fixed O & M Costs
Village of Sister Bay
Based on Table 6-2 Allocations**

(General summary of Fixed O & M Costs)

Summary of Total Fixed O & M Costs

		Flow	BOD	TSS	P
		%	Cost	%	Cost
		%	Cost	%	Cost
Collection System	\$30,958	100.0%	\$30,958	0.0%	\$0
WWTF	\$98,290	40.1%	\$39,414	30.9%	\$30,372
I/I Treatment	\$16,243	100.0%	\$16,243	0.0%	\$0
Total	\$145,491	100.0%	\$86,616	\$30,372	\$22,312

Allocation of Collection System Costs

	Flow	BOD	TSS	P
	%	Cost	%	Cost
	%	Cost	%	Cost
Village of Sister Bay (Fixed O&M Costs + I/I Costs)	100.0%	\$47,201	0.0%	\$0
Sanitary District	0.0%	\$0	0.0%	\$0
Town	0.0%	\$0	0.0%	\$0
Total	100.0%	\$47,201	0.0%	\$0

Allocation of WWTF Fixed Costs

	Flow	BOD	TSS	P
	%	Cost	%	Cost
	%	Cost	%	Cost
Village of Sister Bay	75.9%	\$29,900	63.6%	\$19,302
Sanitary District	11.1%	\$4,363	9.2%	\$2,797
Town	13.1%	\$5,151	27.2%	\$8,272
Total	100.0%	\$39,414	100.0%	\$30,372

Village of Sister Bay Fixed O & M Costs	Cost
Flow-Collection System (Fixed O&M Costs + I/I Costs)	\$47,201
Flow-WWTF	\$39,414
BOD	\$30,372
TSS	\$22,312
P	<u>\$6,192</u>
Total Fixed O & M Costs	\$145,491

Meter Charge-Fixed O & M Costs

Total Meter Equivalents	1,442
Charge/Meter Equivalent	\$100.90
Quarterly Charge	\$25.22
Use	\$25.30

**Summary of Quarterly O & M Meter Charges
Village of Sister Bay
Table 7-8 Alt A**

Size	Meter Equivalent	Quarterly O & M Meter Charge	Quarterly Debt Service Meter Charge	Total Quarterly Meter Charge
5/8, 3/4	1	\$25.30	\$14.70	\$40.00
1	2.5	\$63.25	\$36.75	\$100.00
1/12	5	\$126.50	\$73.50	\$200.00
2	8	\$202.40	\$117.60	\$320.00
3	15	\$379.50	\$220.50	\$600.00

**Summary of Fixed O & M Costs
Village of Sister Bay
Based on Table 6-2 Allocations
Based on Table 7-3B Alternative**

(General summary of Fixed O & M Costs)

Summary of Total Fixed O & M Costs

		%	Flow Cost	%	BOD Cost	%	TSS Cost	%	P Cost
Collection System	\$30,958	100.0%	\$30,958	0.0%	\$0	0.0%	\$0	0.0%	\$0
WWTF	\$146,140	40.1%	\$58,602	30.9%	\$45,157	22.7%	\$33,174	6.3%	\$9,207
I/I Treatment	\$6,067	100.0%	\$6,067	0.0%	\$0	0.0%	\$0	0.0%	\$0
Total	\$183,165		\$95,628		\$45,157		\$33,174		\$9,207

Allocation of Collection System Costs

	Flow %	Cost	BOD %	Cost	TSS %	Cost	P %	Cost
Village of Sister Bay (Fixed O&M Costs + I/I Costs)	100.0%	\$37,025	0.0%	\$0	0.0%	\$0	0.0%	\$0
Sanitary District	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0
Town	0.0%	\$0	0.0%	\$0	0.0%	\$0	0.0%	\$0
Total	100.0%	\$37,025	0.0%	\$0	0.0%	\$0	0.0%	\$0

Allocation of WWTF Fixed Costs

	%	Flow Cost	%	BOD Cost	%	TSS Cost	%	P Cost
Village of Sister Bay	75.9%	\$44,456	63.6%	\$28,699	52.2%	\$17,312	70.0%	\$6,442
Sanitary District	11.1%	\$6,487	9.2%	\$4,159	7.7%	\$2,538	10.2%	\$938
Town	13.1%	\$7,659	27.2%	\$12,299	40.2%	\$13,324	19.8%	\$1,826
Total		\$58,602		\$45,157		\$33,174	100.0%	\$9,207

Village of Sister Bay Fixed O & M Costs	Cost
Flow-Collection System (Fixed O&M Costs + I/I Costs)	\$37,025
Flow-WWTF	\$58,602
BOD	\$45,157
TSS	\$33,174
P	<u>\$9,207</u>
Total Fixed O & M Costs	\$183,165

Meter Charge-Fixed O & M Costs

Total Meter Equivalents	1,442
Charge/Meter Equivalent	\$127.02
Quarterly Charge	\$31.76
Use	\$31.80

**Summary of Quarterly O & M Meter Charges
Village of Sister Bay
Table 7-8 Alt B**

Size	Meter Equivalent	Quarterly O & M Meter Charge	Quarterly Debt Service Meter Charge	Total Quarterly Meter Charge
5/8, 3/4	1	\$31.80	\$14.70	\$46.50
1	2.5	\$79.50	\$36.75	\$116.25
1/12	5	\$159.00	\$73.50	\$232.50
2	8	\$254.40	\$117.60	\$372.00
3	15	\$477.00	\$220.50	\$697.50

Summary of 2004 Hauling Wastes
Village of Sister Bay WWTF
Supplement to Table 4-1A Current Loading

Month	Summary of Flows				Summary of Total Loadings				
	Sister Bay*		Town of Liberty Grove		Total Flow	Ave BOD	Ave TSS	lbs BOD	lbs TSS
	Septage	Holding	Septage	Holding					
January	0	5,300	3,500	368,900	377,700	514	482	1,619	1,518
February	0	30,500	1,000	326,700	358,200	348	371	1,040	1,108
March	0	26,800	1,500	346,600	374,900	412	525	1,288	1,641
April	0	36,400	32,650	406,200	475,250	698	1308	2,767	5,184
May	0	42,500	34,700	595,950	673,150	632	799	3,548	4,486
June	0	56,300	38,250	880,500	975,050	759	1251	6,172	10,173
July	0	104,400	19,800	1,444,000	1,568,200	578	814	7,560	10,646
August	0	90,500	22,250	1,228,600	1,341,350	613	576	6,858	6,444
September	0	65,100	124,650	759,780	949,530	1471	2847	11,649	22,546
October	0	45,000	51,700	628,100	724,800	1121	1726	6,776	10,433
November	0	72,900	10,300	382,800	466,000	632	818	2,456	3,179
December	0	29,600	5,500	369,400	404,500	478	644	1,613	2,173
2004 Total	0	605,300	345,800	7,737,530	8,688,630	8,256	12,161	53,345	79,532
2003 Total	3,000	630,900	429,500	8,116,850					
2002 Total	2,000	563,400	390,400	7,673,600					
2001 Total	0	593,800	436,725	7,789,650					
2000 Total	10,200	554,100	604,000	7,729,700					

Total Holding Tank = 8,342,830 gallons

Total Septage = 345,800 gallons

Total = 8,688,630 gallons

*District included, no hauled wastes from District

Estimated 2004 Loading

BOD	=	45,136	lbs
TSS	=	56,671	lbs
P	=	1,620	lbs

Actual 2004 Loading

BOD	=	53,345	lbs	18.2%
TSS	=	79,532	lbs	40.3%
P*				

Average Strength

BOD	=	736
TSS	=	782
P*		

*Phosphorous not sampled, no evaluation of loadings due to lack of data

Septage Loading

BOD	=	2,766	8000
TSS	=	28,840	10000

Holding

BOD	=	50,445	725
TSS	=	48,705	700

Total

BOD	=	53,211
TSS	=	77,545

Collection System	Total Cost	Fixed Cost	Variable Cost	Flow %	Cost
Labor	\$17,600	\$8,800	\$8,800	100.0	\$8,800
Power	\$9,000	\$0	\$9,000	100.0	\$9,000
Chemicals	\$300	\$0	\$300	100.0	\$300
Maintenance Supplies	\$3,500	\$1,750	\$1,750	100.0	\$1,750
Insurance	\$4,100	\$4,100	\$0	0.0	\$0
Office Supplies	\$2,600	\$2,600	\$0	0.0	\$0
Outside Services	\$1,000	\$1,000	\$0	0.0	\$0
Administration Exp	\$6,500	\$6,500	\$0	0.0	\$0
FICA Taxes	\$2,000	\$1,000	\$1,000	100.0	\$1,000
Replacement	\$7,358	\$5,208	\$2,150	100.0	\$2,150
Subtotal	\$53,958	\$30,958	\$23,000		\$23,000
Total Gallons					54,113,000 Village of Sister Bay Usage Only
Unit Charge (\$/1,000 gallons)					\$0.43 Village of Sister Bay Only
I/I Cost				NA	\$6,775
Total Collection System	\$53,958	\$30,958	\$23,000		all collection system costs from variable costs

Unit Costs for Sewered Areas

	Flow	BOD	TSS	P
Collection System	\$0.43	-	-	-
WWTF	<u>\$0.59</u>	<u>\$0.25</u>	<u>\$0.18</u>	<u>\$1.45</u>
Total Unit Cost	\$1.02	\$0.25	\$0.18	\$1.45

Typical Wastewater Charge

	Village of Sister Bay		Sanitary District	
Flow	=	\$1.02 per 1,000 gallons	=	\$0.59 per 1,000 gallons
BOD	=	\$0.86 per lb	=	\$0.86 per lb
TSS	=	\$0.53 per lb	=	\$0.53 per lb
P	=	\$0.15 per lb	=	\$0.15 per lb
Total		\$2.55 per 1,000 gallons		\$2.13 per 1,000 gallons

Basis for typical wastewater charge; 1,000 gallon, 410 mg/l BOD, 350 mg/l TSS, 12 mg/l P

Total Unsewered Charge O, M & R

Holding Tank Wastes

Flow	=	\$1.05		
BOD	=	\$2.18	725.0	mg/l
TSS	=	\$1.54	700.0	mg/l
P	=	\$0.32	20.0	mg/l
Total	=	\$5.09 per 1,000 gallons		

Septage Wastes

Flow	=	\$1.05		
BOD	=	\$24.08	8000.0	mg/l
TSS	=	\$22.03	10000.0	mg/l
P	=	\$3.84	240.0	mg/l
Total	=	\$51.00 per 1,000 gallons		

Debt Service Charges for Outside Users

Holding Tank Wastes

Flow	=	\$1.03 per 1,000 gallons
BOD	=	\$1.50 per lb
TSS	=	\$1.10 per lb
P	=	\$0.18 per lb
Total	=	\$3.81 /1,000 gallons

Septage Wastes

Flow	=	\$1.03 per 1,000 gallons
BOD	=	\$16.54 per lb
TSS	=	\$15.77 per lb
P	=	\$2.12 per lb
Total	=	\$35.46 /1,000 gallons

Total Unsewered User Charges

Holding Tank Wastes = \$8.90 /1,000 gallons

Septage Wastes = \$86.46 /1,000 gallons

Collection System	Total Cost	Fixed Cost	Variable Cost	%	Flow Cost
Labor	\$17,600	\$8,800	\$8,800	100.0	\$8,800
Power	\$9,000	\$0	\$9,000	100.0	\$9,000
Chemicals	\$300	\$0	\$300	100.0	\$300
Maintenance Supplies	\$3,500	\$1,750	\$1,750	100.0	\$1,750
Insurance	\$4,100	\$4,100	\$0	0.0	\$0
Office Supplies	\$2,600	\$2,600	\$0	0.0	\$0
Outside Services	\$1,000	\$1,000	\$0	0.0	\$0
Administration Exp	\$6,500	\$6,500	\$0	0.0	\$0
FICA Taxes	\$2,000	\$1,000	\$1,000	100.0	\$1,000
Replacement	\$7,358	\$5,208	\$2,150	100.0	\$2,150
Subtotal	\$53,958	\$30,958	\$23,000		\$23,000
Total Gallons					54,113,000 Village of Sister Bay Usage Only
Unit Charge (\$/1,000 gallons)					\$0.43 Village of Sister Bay Only
Total Collection System	\$53,958	\$30,958	\$23,000		

Unit Costs for Sewered Areas

	Flow	BOD	TSS	P
Collection System	\$0.43	-	-	-
WWTF	<u>\$0.38</u>	<u>\$0.19</u>	<u>\$0.14</u>	<u>\$1.23</u>
Total Unit Cost	\$0.81	\$0.19	\$0.14	\$1.23

Typical Wastewater Charge

	Village of Sister Bay		Sanitary District	
Flow	=	\$0.81 per 1,000 gallons	=	\$0.38 per 1,000 gallons
BOD	=	\$0.66 per lb	=	\$0.66 per lb
TSS	=	\$0.42 per lb	=	\$0.42 per lb
P	=	\$0.12 per lb	=	\$0.12 per lb
Total		\$2.00 per 1,000 gallons		\$1.58 per 1,000 gallons

Basis for typical wastewater charge; 1,000 gallon, 410 mg/l BOD, 350 mg/l TSS, 12 mg/l P

Total Unsewered Charge O, M & R

Holding Tank Wastes

Flow	=	\$1.05		
BOD	=	\$2.18	725.0	mg/l
TSS	=	\$1.54	700.0	mg/l
P	=	\$0.32	20.0	mg/l
Total	=	\$5.09 per 1,000 gallons		

Septage Wastes

Flow	=	\$1.05		
BOD	=	\$24.08	8000.0	mg/l
TSS	=	\$22.03	10000.0	mg/l
P	=	\$3.84	240.0	mg/l

Debt Service Charges for Outside Users

Holding Tank Wastes

Flow	=	\$1.03 per 1,000 gallons
BOD	=	\$1.50 per lb
TSS	=	\$1.10 per lb
P	=	\$0.18 per lb
Total	=	\$3.81 /1,000 gallons

Septage Wastes

Flow	=	\$1.03
BOD	=	\$16.54
TSS	=	\$15.77
P	=	\$2.12
Total	=	\$35.46 /1,000 gallons

Total Unsewered User Charges

Holding Tank Wastes = \$8.90 /1,000 gallons

Septage Wastes = #REF! /1,000 gallons

**Major Equipment Replacement Costs
Village of Sister Bay WWTF
Table 7-5**

Item	Service Life	Replacement Cost	10-Year Cost	20-Year Cost	Total Annual Cost	Variable Costs	Fixed Costs
Lift Station & Telemetry							
Raw Wastewater Pumps	20	\$43,000	\$0	\$43,000	\$2,150	\$2,150	\$0
Generator	20	\$65,560	\$0	\$65,560	\$3,278	\$0	\$3,278
Data Collection Hardware	10	\$6,300	\$6,300	\$0	\$630	\$0	\$630
Instrument Air Equipment	20	\$2,000	\$0	\$2,000	\$100	\$0	\$100
Telemetry Systems*	10	\$12,000	\$12,000	\$0	\$1,200	\$0	\$1,200
Subtotal		\$128,860	\$18,300	\$110,560	\$7,358	\$2,150	\$5,208
WWTF							
Pretreatment Screen	10	\$47,000	\$47,000	\$0	\$4,700	\$0	\$4,700
Pump and Grit Conveyor	20	\$52,000	\$0	\$52,000	\$2,600	\$0	\$2,600
Pretreatment Blowers	20	\$6,000	\$0	\$6,000	\$300	\$0	\$300
Grit Removal Equipment	20	\$14,000	\$0	\$14,000	\$700	\$0	\$700
Septage & Flow Eq Pumps	20	\$17,000	\$0	\$17,000	\$850	\$850	\$0
Disinfection Equipment	20	\$33,000	\$0	\$33,000	\$1,650	\$1,650	\$0
Chemical Feed Equipment	20	\$12,000	\$0	\$12,000	\$600	\$600	\$0
Water Pumps	20	\$6,000	\$0	\$6,000	\$300	\$300	\$0
RAS & WAS Pumps	20	\$22,000	\$0	\$22,000	\$1,100	\$1,100	\$0
Sewage Ejectors	20	\$11,000	\$0	\$11,000	\$550	\$0	\$550
Disc Aerators	20	\$115,000	\$0	\$115,000	\$5,750	\$5,750	\$0
Clarifiers	20	\$117,000	\$0	\$117,000	\$5,850	\$0	\$5,850
Sludge Blowers	20	\$42,000	\$0	\$42,000	\$2,100	\$2,100	\$0
Sludge Concentrator	20	\$55,000	\$0	\$55,000	\$2,750	\$2,750	\$0
Polymer Equipment	20	\$9,000	\$0	\$9,000	\$450	\$450	\$0
Sludge Pumps	20	\$80,000	\$0	\$80,000	\$4,000	\$4,000	\$0
Samplers	10	\$13,400	\$13,400	\$0	\$1,340	\$0	\$1,340
Sludge Truck	20	\$71,500	\$0	\$71,500	\$3,575	\$3,575	\$0
Generator	20	\$120,000	\$0	\$120,000	\$6,000	\$0	\$6,000
VFD Drives	20	\$40,000	\$0	\$40,000	\$2,000	\$0	\$2,000
Diffusers	10	\$16,000	\$16,000	\$0	\$1,600	\$0	\$1,600
Subtotal		\$898,900	\$76,400	\$822,500	\$48,765	\$23,125	\$25,640
TOTAL		\$1,027,760	\$94,700	\$933,060	\$56,123	\$25,275	\$30,848

*WWTF Telemetry only, Village lift station telemetry charged to Village users only.

Village of Sister Bay

LS # 1 Telemetry	10	\$2,400	\$2,400	\$0	\$240	\$240	\$0
LS # 2 Telemetry	10	\$2,400	\$2,400	\$0	\$240	\$240	\$0
Forest LS Telemetry	10	\$2,400	\$2,400	\$0	\$240	\$240	\$0
Field Crest LS Telemetry	10	\$2,400	\$2,400	\$0	\$240	\$240	\$0
Total		\$9,600	\$9,600	\$0	\$960	\$960	\$0

Village of Sister Bay Replacement Charge

Village Water User	54.113	MG
Village Replacement	\$960	
Village Replacement Charge	\$0.018	per 1,000 gallons
Use	\$0.02	per 1,000 gallons

**Summary of Water Meters
Village of Sister Bay
Table 7- 8**

Size	Number	Meter Equivalent	Total Equivalents
5/8, 3/4	910	1	910
1	56	2.5	140
1/12	20	5	100
2	29	8	232
3	4	15	60
Total	1019		1,442.0
Total Village Debt Service			\$43,122
Annual Meter Charge			\$29.90
Quarterly Meter Charge			\$7.48
Additional debt service add-on			7.15
Use			\$14.70

Quarterly Meter Charge

Debt Service

Village of Sister Bay

Size	Meter Equivalents	Quarterly Fixed Charge	Annual Fixed Charge
3/4	1	\$14.70	\$58.80
1	2.5	\$36.75	\$147.00
1/12	5	\$73.50	\$294.00
2	8	\$117.60	\$470.40
3	15	\$220.50	\$882.00

Total WWTF System Fixed Costs

Charged To

Collection System	\$30,958	Village
WWTF	\$98,290	All users
Infiltration	<u>\$9,468</u>	Village and District
Total	\$138,716	

Summary of Village Debt Service
Village of Sister Bay
Information from Village of Sister Bay

Fund	2005	2006	2007	2008	2009
48	\$25,513	\$63,270	\$67,458	\$71,483	\$75,258
Crow's Nest*	\$17,609	\$17,609	\$17,609	\$17,609	\$17,609
Total	\$43,122	\$80,879	\$85,067	\$89,092	\$92,867
ME	1,442	1442	1442	1442	1442
Quarterly Charge	\$7.48	\$14.02	\$14.75	\$15.45	\$16.10

*10 years, 5% on deferred assessments

**Allocation of Fixed O & M Costs for Unsewered Users
Village of Sister Bay WWTF**

		%	Flow Cost	%	BOD Cost	%	TSS Cost	%	P Cost
Total Fixed Costs	\$98,290	27.3%	\$26,806	37.0%	\$36,344	25.6%	\$25,148	10.2%	\$9,991
Total Variable Costs	\$188,675		<u>\$51,456</u>		<u>\$69,766</u>		<u>\$48,274</u>		<u>\$19,179</u>
Total			\$78,262		\$106,110		\$73,423		\$29,170
Billing Units					277,452		267,172		13,231
Unit Cost (Per 1,000 gallons for flow, per lb for BOD, TSS, and P)					\$0.38		\$0.27		\$2.20

**Liberty Grove Sanitary District
Summary of O&M Meter Charges**

The fixed WWTF O&M costs are recovered from Liberty Grove Sanitary District through meter charges.
The following charges are for the fixed O&M costs only.

**Liberty Grove Sanitary District
Summary of Meters**

Size	Number	Meter Equivalent	Total Equivalents
5/8, 3/4	119	1	119
1	10	2.5	25
1/12	4	5	20
2	3	8	24
3	0	15	0
Total	136		188.0

Total Fixed WWTF O&M Costs-Sanitary District

Alt A		Fixed Cost Allocation
	Parameter	
	Flow	\$4,363
	I/I Treatment	\$969
	BOD	\$2,797
	TSS	\$1,707
	P	<u>\$631</u>
	Total	\$10,467
	Quarterly Meter Charge	\$13.92
	use	\$12.00

**Meter Charge
Fixed WWTF O&M Costs
Liberty Grove Sanitary District**

Size	Meter Equivalents	Quarterly Fixed Charge
3/4	1	\$12.00
1	2.5	\$30.00
1/12	5	\$60.00
2	8	\$96.00
3	15	\$180.00

Alt B

Parameter	Fixed Cost Allocation
Flow	\$6,487
I/I Treatment	\$868
BOD	\$4,159
TSS	\$2,538
P	<u>\$1,826</u>
Total	\$15,878
Quarterly Meter Charge	\$21.11
use	\$19.05

Meter Charge
Fixed WWTF O&M Costs
Liberty Grove Sanitary District

Size	Meter Equivalents	Quarterly Fixed Charge
3/4	1	\$19.05
1	2.5	\$47.63
1/12	5	\$95.25
2	8	\$152.40
3	15	\$285.75

**Village of Sister Bay
Unit Debt Service Costs
Based on Table 6-1**

Parameter	Flow	BOD	TSS	P	Total
Annual Cost*	\$89,249	\$68,773	\$50,523	\$14,022	\$222,567
Allocation	40.10%	30.90%	22.70%	6.30%	
Loading Level	86,627,000	277,452	267,172	13,231	
Unit Cost (per 1,000 gallons for flow, per lb for BOD, TSS, P)	\$1.03	\$0.25	\$0.19	\$1.06	

*Village Debt Service Costs are summarized on Village Debt Service Summary