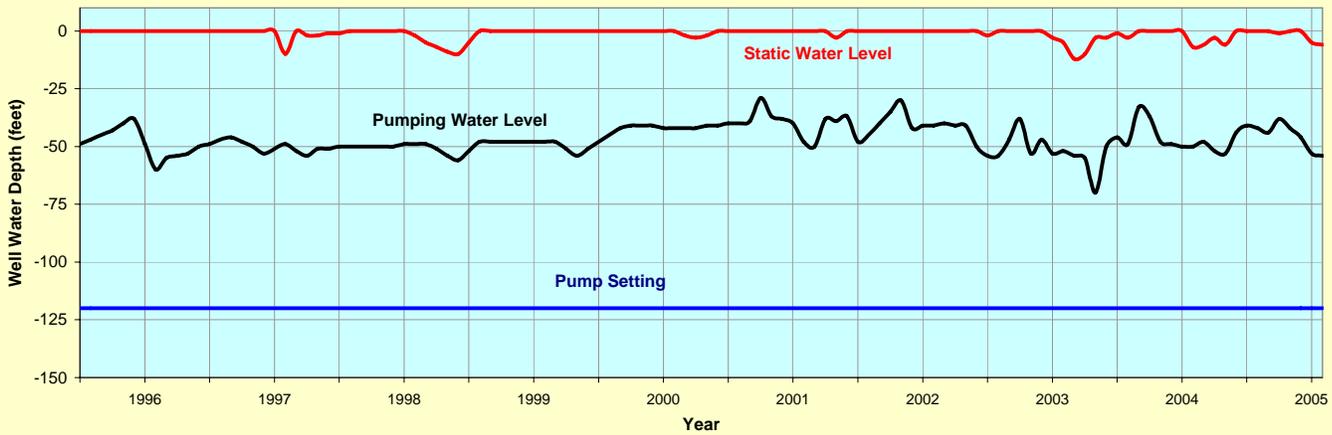


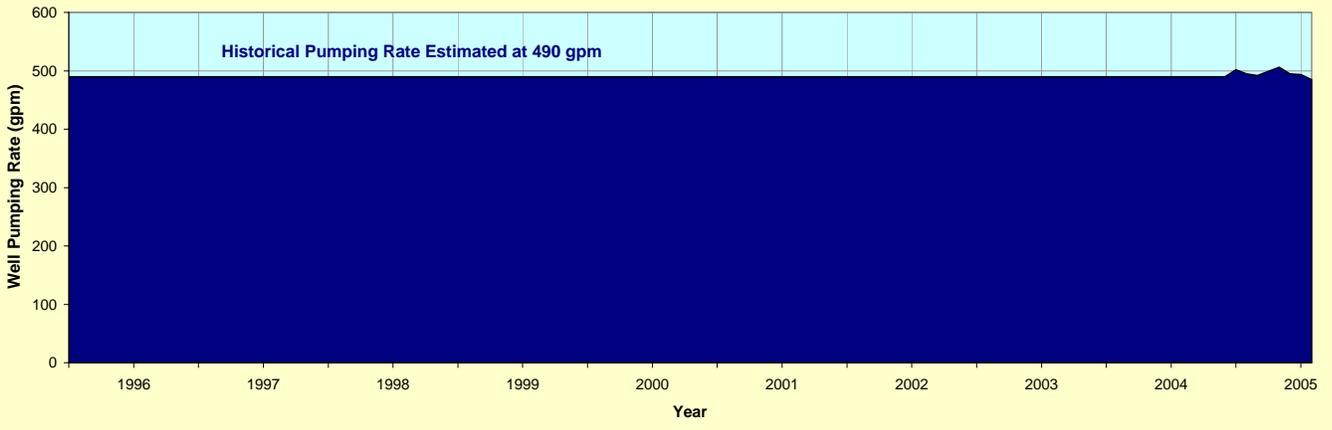
APPENDIX A

WELL PERFORMANCE SUMMARY

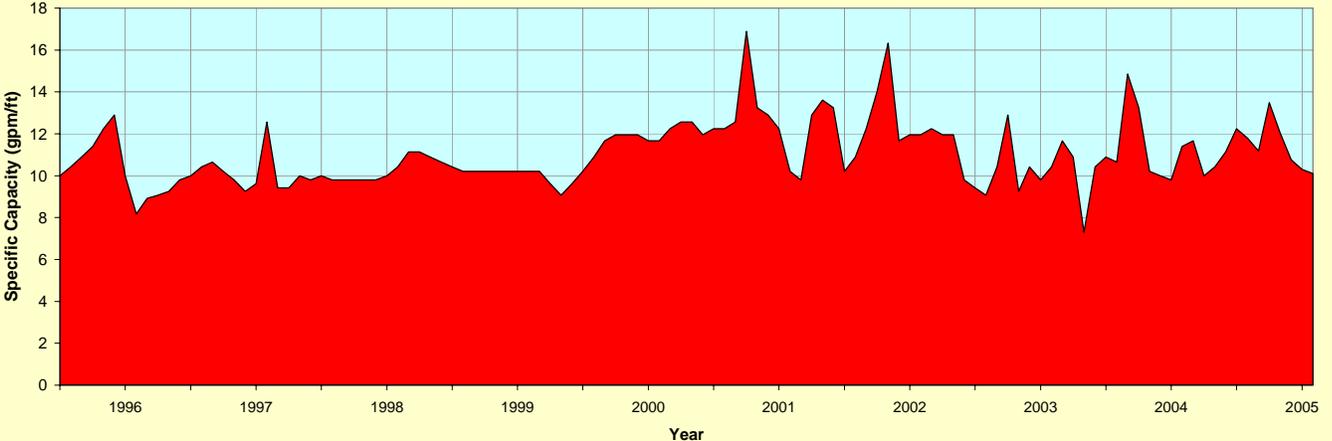
Well 1 Water Levels (1996 - 2005)



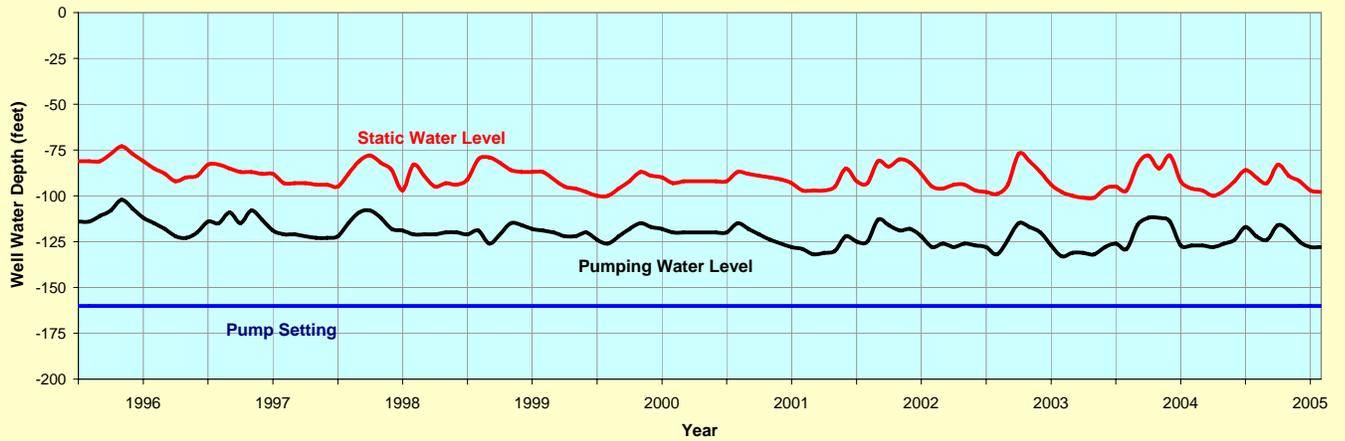
Well 1 Pumping Rate (1996-2005)



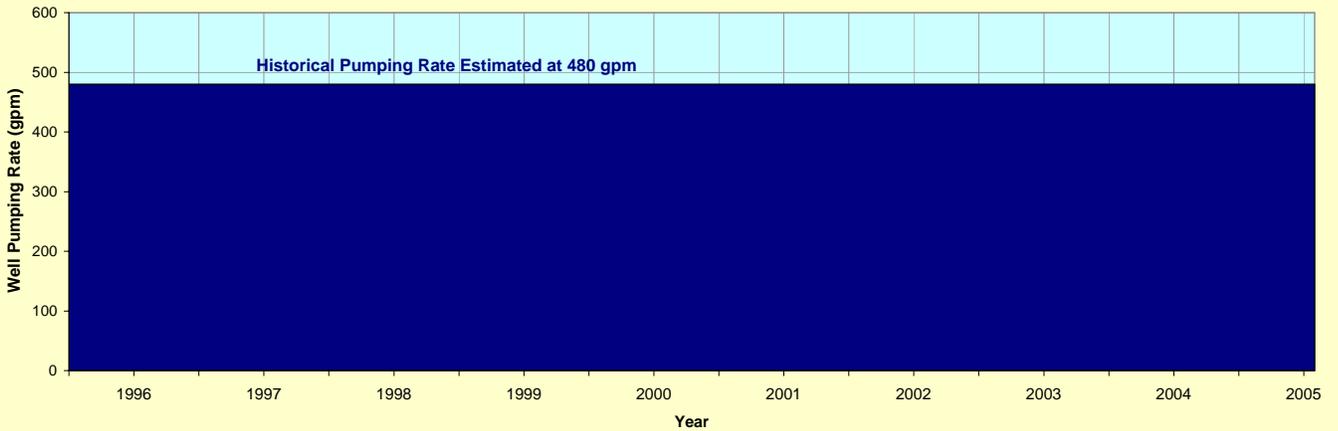
Well 1 Specific Capacity (1996-2005)



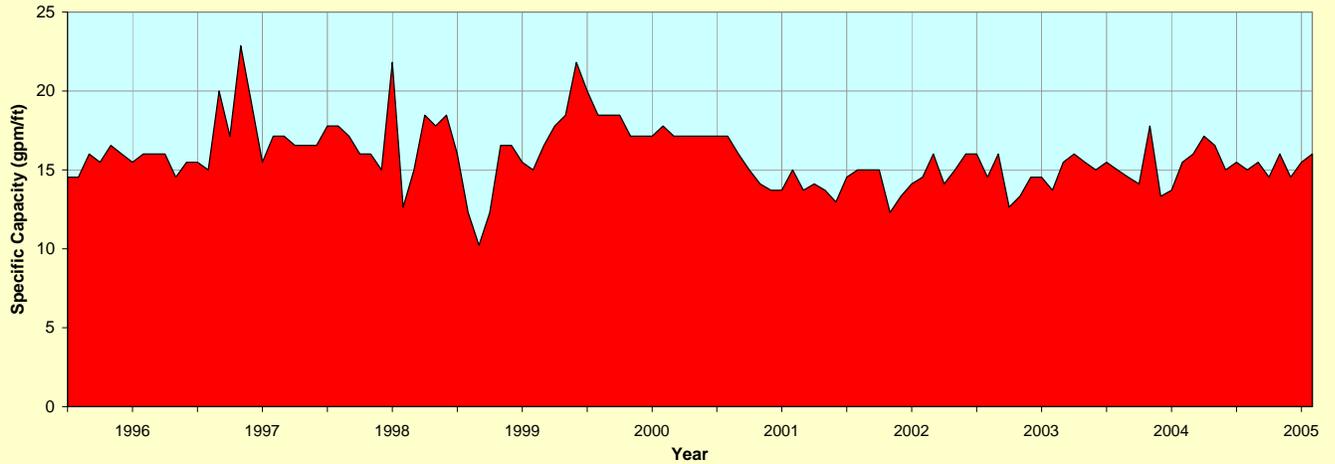
Well 2 Water Levels (1996 - 2005)



Well 2 Pumping Rate (1996-2005)



Well 2 Specific Capacity (1996-2005)



SHORT ELLIOTT
HENDRICKSON

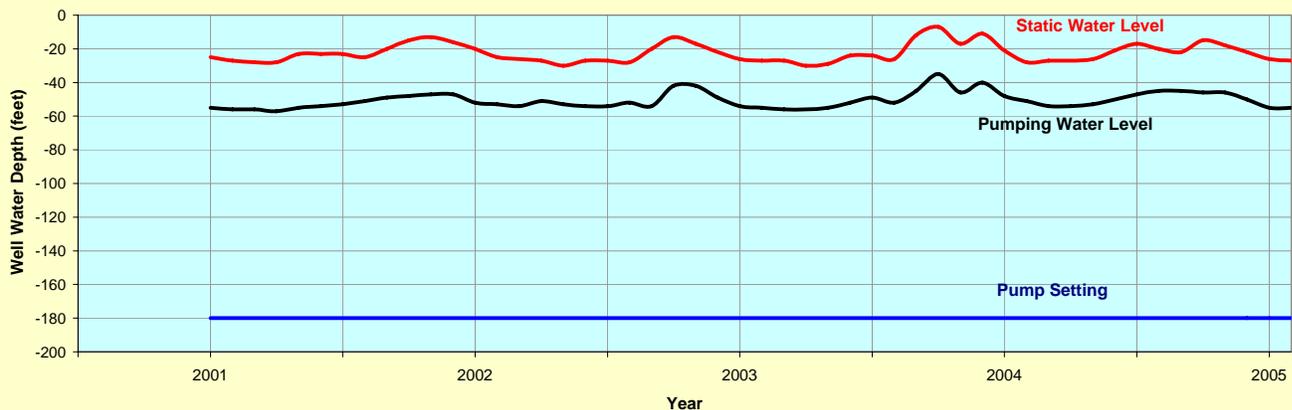


FIGURE A-2
HISTORICAL PERFORMANCE: WELL 2
SISTER BAY WATER UTILITY
VILLAGE OF SISTER BAY, WISCONSIN

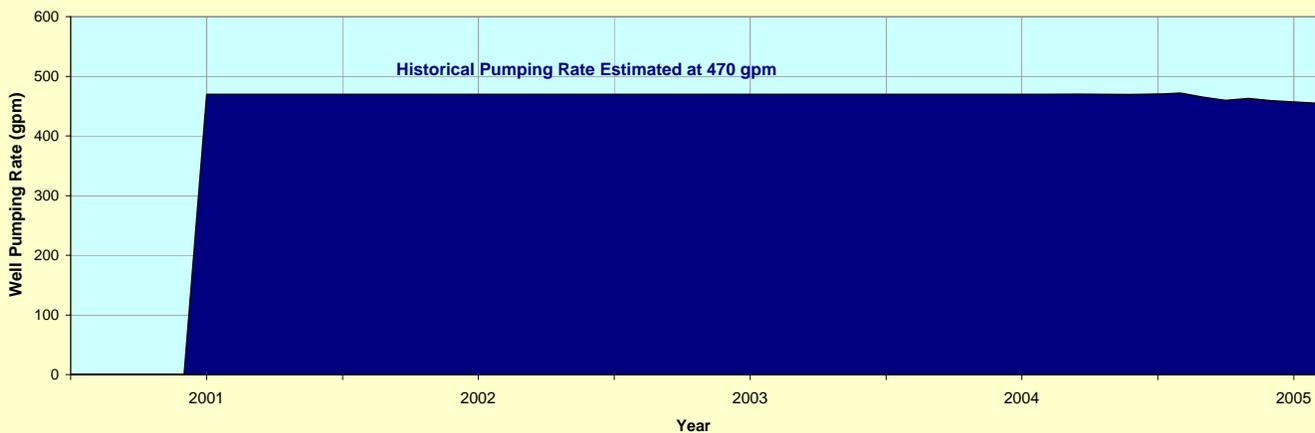
JANUARY 2006

SISTB0502.00

Well 3 Water Levels (1996 - 2005)



Well 3 Pumping Rate (1996-2005)



Well 3 Specific Capacity (1996-2005)

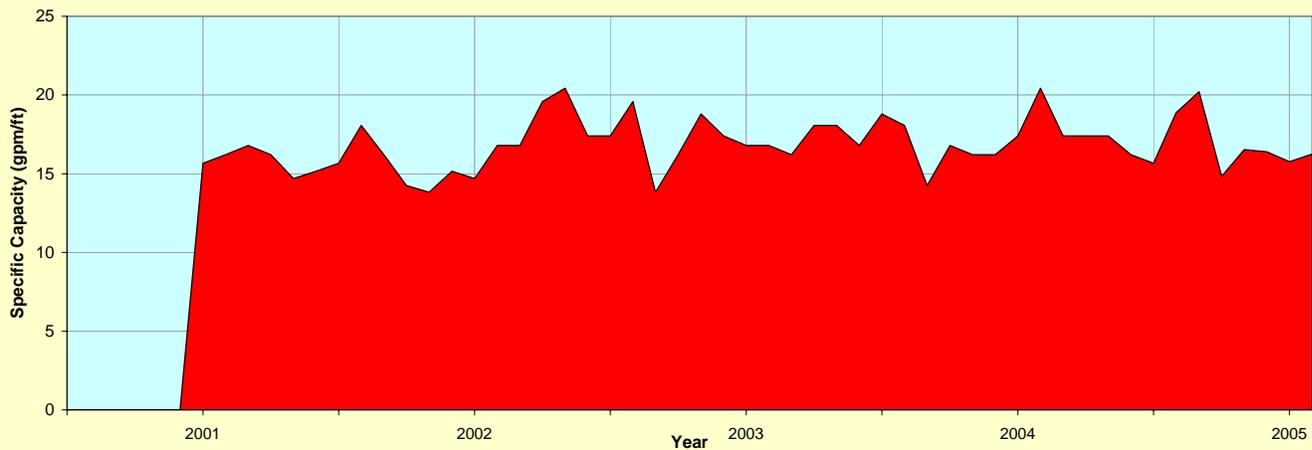


FIGURE A-3
HISTORICAL PERFORMANCE: WELL 3
 SISTER BAY WATER UTILITY
 VILLAGE OF SISTER BAY, WISCONSIN

SHORT ELLIOTT
 HENDRICKSON



JANUARY 2006

SISTB0502.00

APPENDIX B

WATER SYSTEM FIELD TESTING SUMMARY

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-1

Date: September 26, 2005

Time: 02:30 PM

Area of City: North

FLOWING HYDRANT

Location: Last hydrant on North Hillcrest Drive

Pressure Zone: HLPZ

Hydrant Number: 254

RESIDUAL HYDRANT

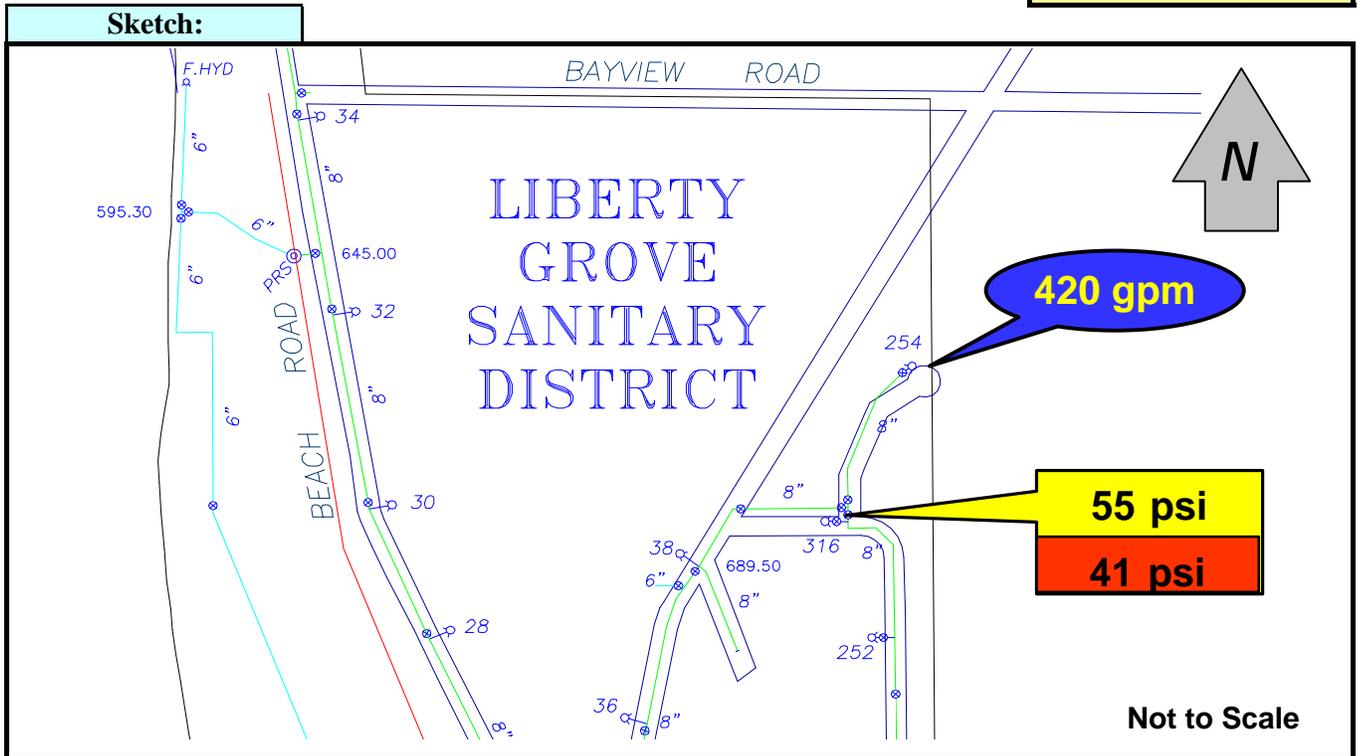
Location: 1st hydrant south of flowing hydrant

Hydrant Number: 316

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	420			254
Flowing: 2.5 inch Dia.				
Residual Hydrant		55	41	316

Test Nozzle Size **1 1/2 inches**

Tower Elevations		Pumps Operating			
Jungwirth Court	21.9 feet	Well 1	OFF	Booster 1	OFF
Standpipe	16.3 feet	Well 2	OFF	Booster 2	OFF
		Well 3	ON	Booster 3	ON
				Booster 4	Offline



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-2

Date: September 27, 2005

Time: 08:45 AM

Area of City: North

FLOWING HYDRANT

Location: North end of Beach Road

Pressure Zone: HLPZ

Hydrant Number: 314

RESIDUAL HYDRANT

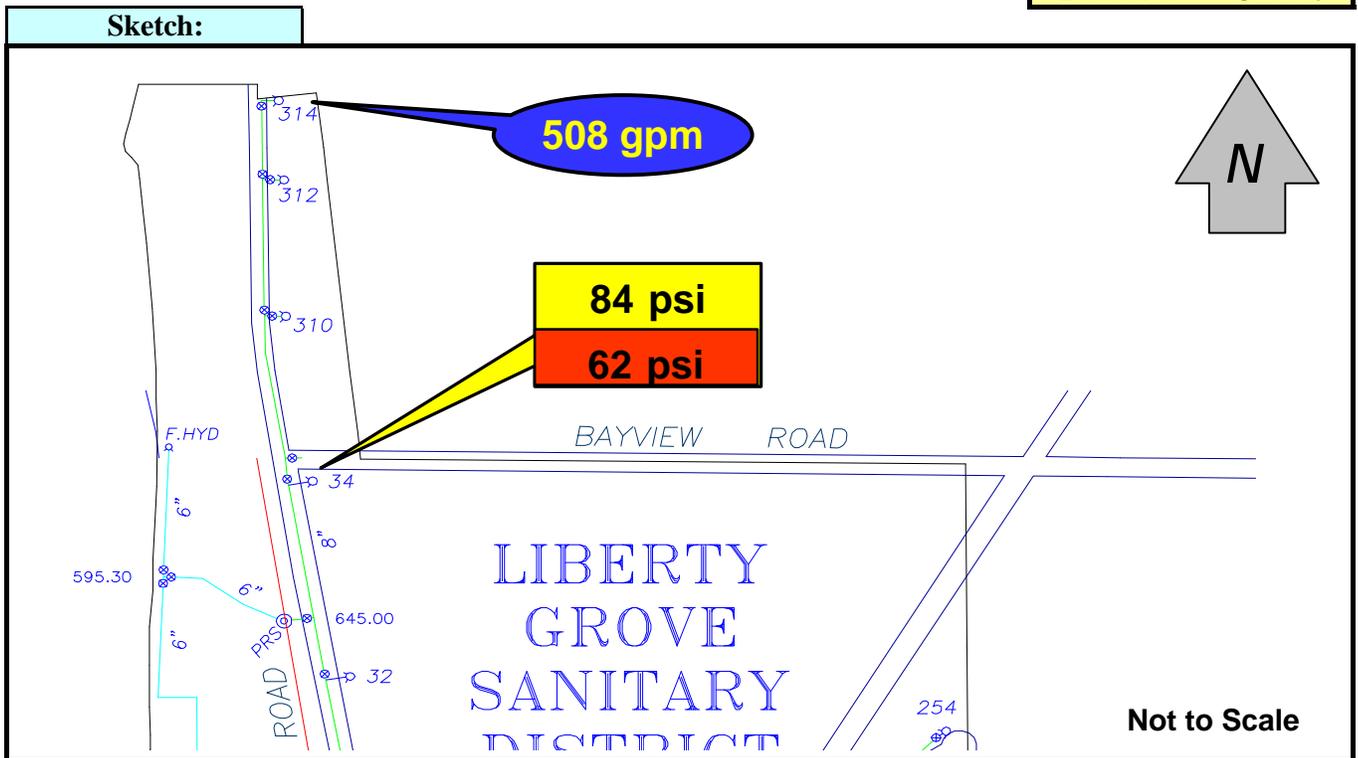
Location: Beach Road and Bayview Road

Hydrant Number: 34

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	508			314
Flowing: 2.5 inch Dia.				
Residual Hydrant		84	62	34

Test Nozzle Size 1 1/2 inches

Tower Elevations		Pumps Operating			
Jungwirth Court	20.5 feet	Well 1	ON	Booster 1	OFF
Standpipe	13.0 feet	Well 2	OFF	Booster 2	OFF
		Well 3	ON	Booster 3	ON
				Booster 4	Offline



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-4

Date: September 27, 2005

Time: 09:40 AM

Area of City: East

FLOWING HYDRANT

Location: Trillium Lane east of Birchwood Dr.

Pressure Zone: HLPZ

Hydrant Number: 96

RESIDUAL HYDRANT

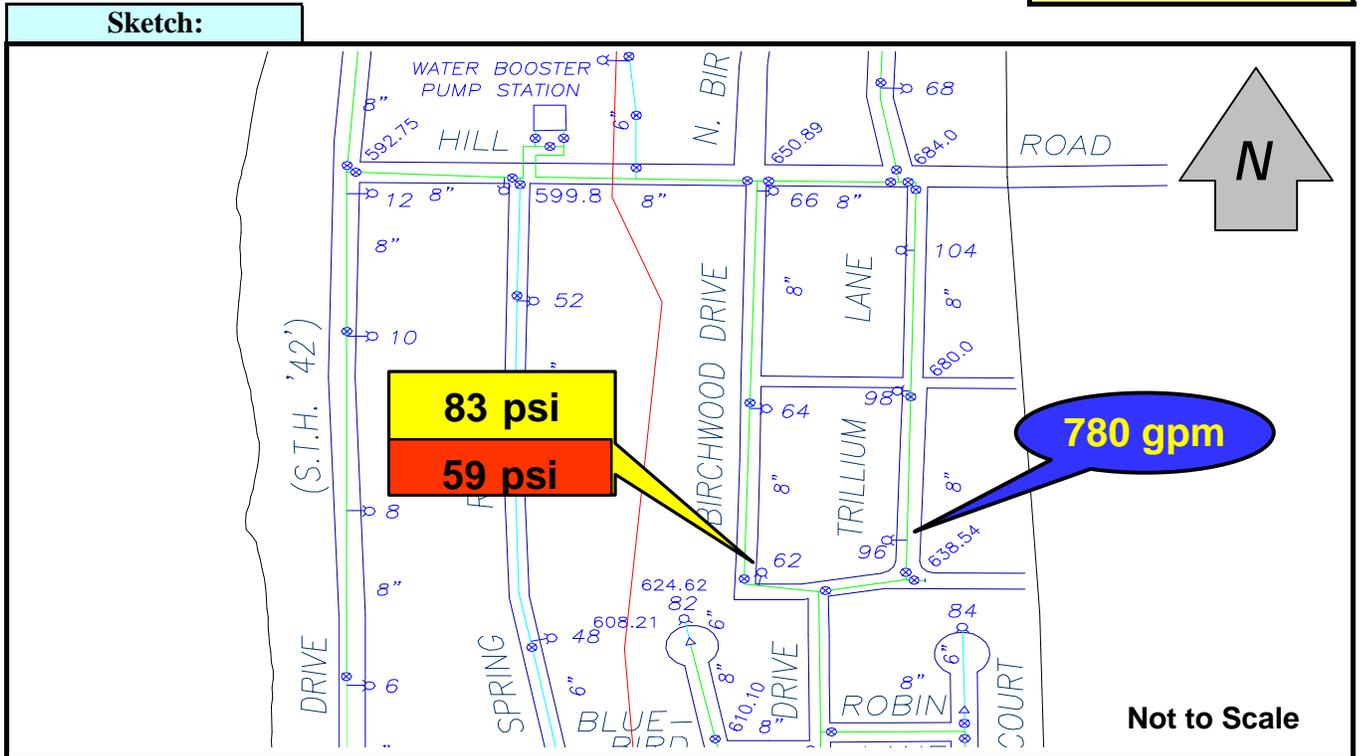
Location: Birchwood Drive west of Trillium Ln.

Hydrant Number: 62

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	780			96
Flowing: 2.5 inch Dia.				
Residual Hydrant		83	59	62

Test Nozzle Size **2** inches

Tower Elevations	Pumps Operating			
Jungwirth Court 21.0 feet	Well 1	OFF	Booster 1	OFF
Standpipe 16.6 feet	Well 2	OFF	Booster 2	OFF
	Well 3	OFF	Booster 3	ON
			Booster 4	Offline



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-6

Date: September 27, 2005

Time: 10:30 AM

Area of City: Southwest

FLOWING HYDRANT

Location: Bay Shore Drive west of Forest Lane

Pressure Zone: HLPZ

Hydrant Number: 101

RESIDUAL HYDRANT

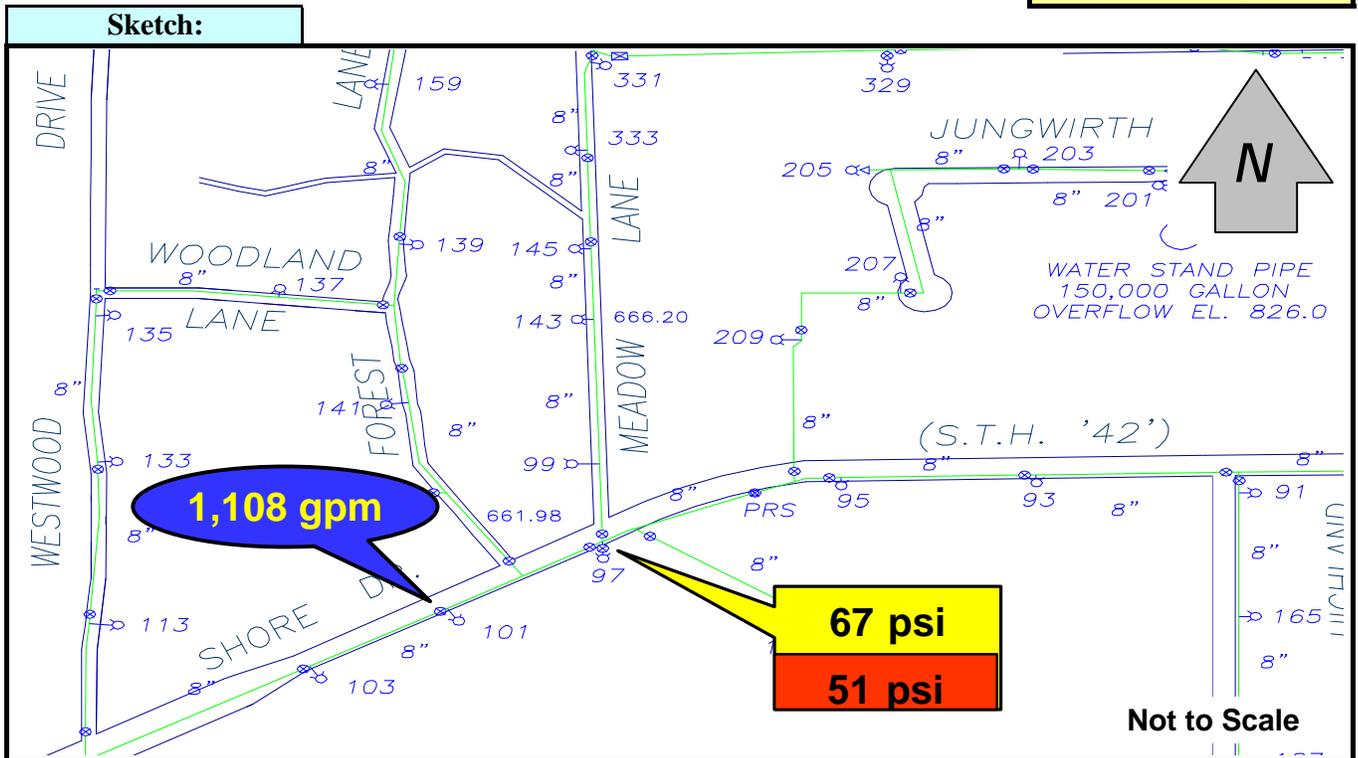
Location: Bay Shore Drive and Meadow Lane

Hydrant Number: 97

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	1,108			101
Flowing: 2.5 inch Dia.				
Residual Hydrant		67	51	97

Test Nozzle Size **2 1/2 inches**

Tower Elevations		Pumps Operating			
Jungwirth Court	18.7 feet	Well 1	OFF	Booster 1	OFF
Standpipe	15.2 feet	Well 2	OFF	Booster 2	OFF
		Well 3	ON	Booster 3	ON
				Booster 4	Offline



Remarks: Well 3 just turned on - could have been off during test

FLOW & PRESSURE TEST

Sister Bay Water Utility

Village of Sister Bay, Wisconsin

Test Number: F-8

Date: September 27, 2005

Time: 11:45 AM

Area of City: South

FLOWING HYDRANT

Pressure Zone: HLPZ

Location: Cherrywood Lane and Koessl Lane

Hydrant Number: 223

RESIDUAL HYDRANT

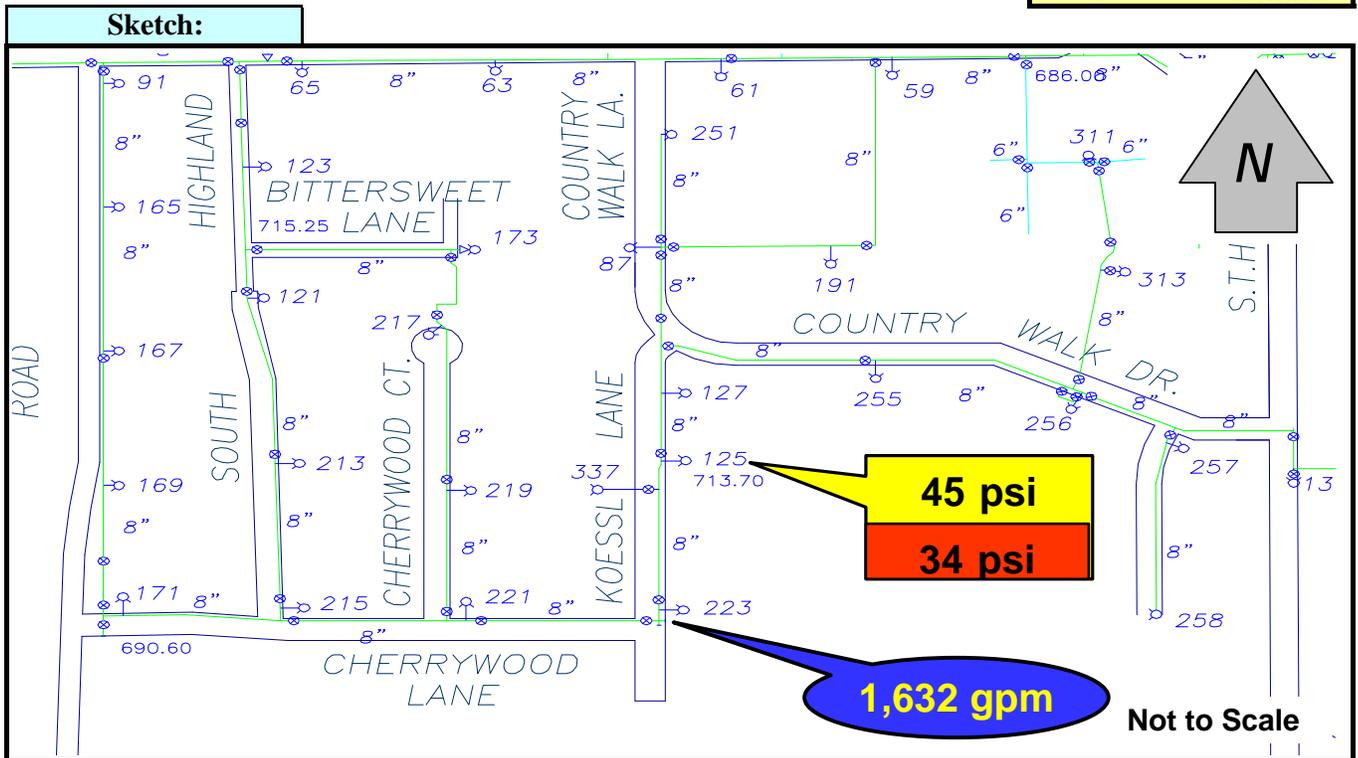
Location: 2nd Hydrant north of flowing

Hydrant Number: 125

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	816			223
Flowing: 2.5 inch Dia.	816			223
Residual Hydrant		45	34	125

Test Nozzle Size **2 1/2 inches**

Tower Elevations		Pumps Operating			
Jungwirth Court	20.5 feet	Well 1	OFF	Booster 1	OFF
Standpipe	13.2 feet	Well 2	OFF	Booster 2	OFF
		Well 3	OFF	Booster 3	ON
				Booster 4	Offline



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-9

Date: September 27, 2005

Time: 01:15 PM

Area of City: East

FLOWING HYDRANT

Location: Last Hydrant east of WWTP

Pressure Zone: HLPZ

Hydrant Number: 318

RESIDUAL HYDRANT

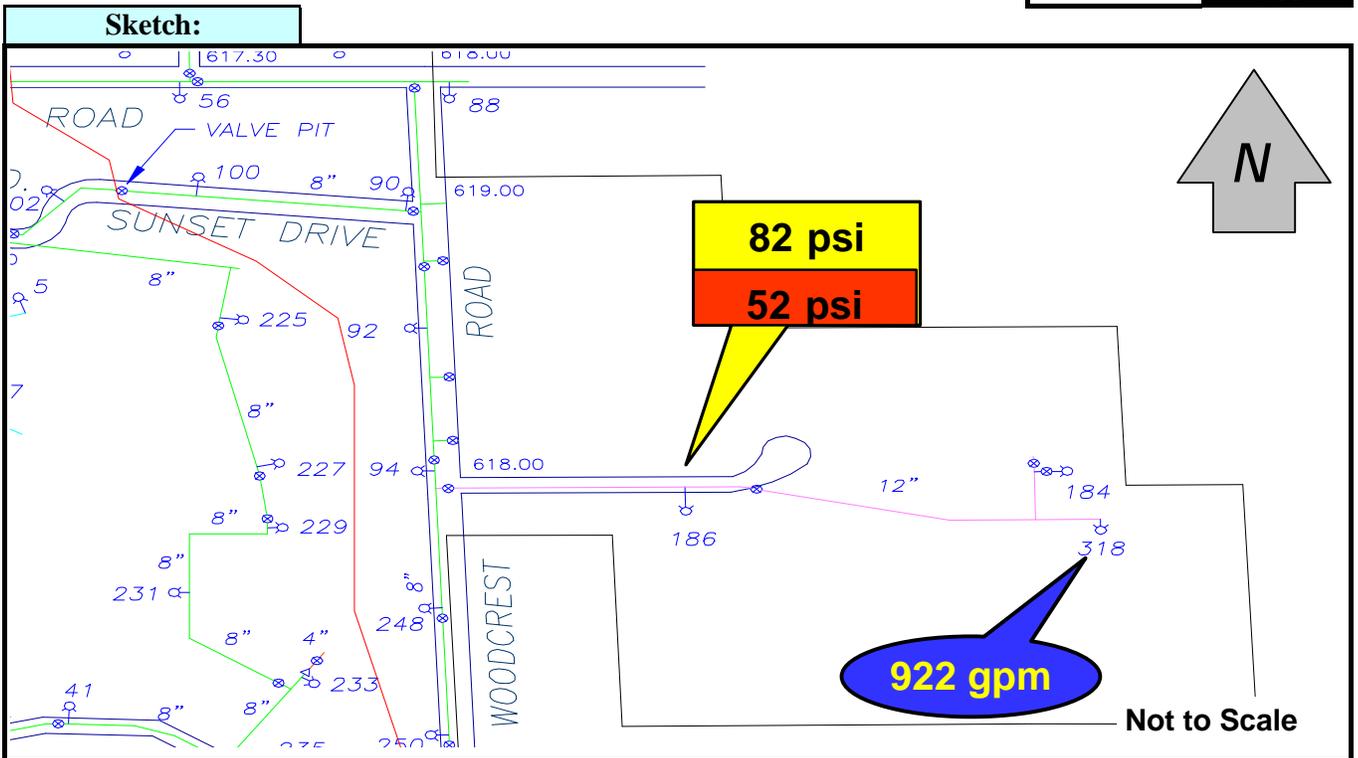
Location: 1st Hydrant west of flowing

Hydrant Number: 186

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	922			318
Flowing: 2.5 inch Dia.				
Residual Hydrant		82	52	186

Test Nozzle Size **2 1/2 inches**

Tower Elevations		Pumps Operating			
Jungwirth Court	18.6 feet	Well 1	OFF	Booster 1	OFF
Standpipe	16.4 feet	Well 2	OFF	Booster 2	OFF
		Well 3	OFF	Booster 3	OFF
				Booster 4	ON



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: F-10

Date: September 27, 2005

Time: 01:35 AM

Area of City: Southeast

FLOWING HYDRANT

Location: East of Smith Drive

Pressure Zone: HLPZ

Hydrant Number: 245

RESIDUAL HYDRANT

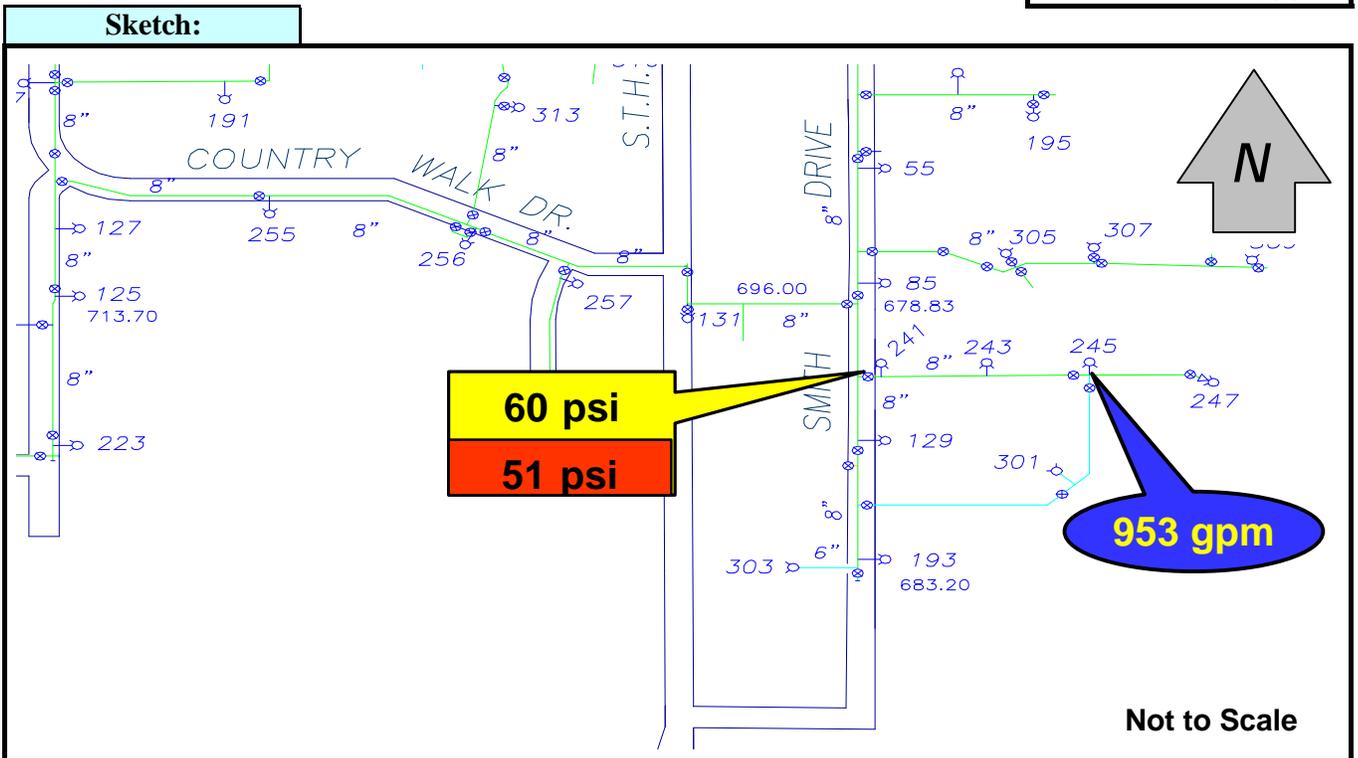
Location: 2nd Hydrant west of flowing

Hydrant Number: 241

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	953			245
Flowing: 2.5 inch Dia.				
Residual Hydrant		60	51	241

Test Nozzle Size **2 1/2** inches

Tower Elevations		Pumps Operating			
Jungwirth Court	18.3 feet	Well 1	OFF	Booster 1	OFF
Standpipe	15.8 feet	Well 2	OFF	Booster 2	OFF
		Well 3	ON	Booster 3	ON
				Booster 4	OFF



Remarks: None

FLOW & PRESSURE TEST

Sister Bay Water Utility

Village of Sister Bay, Wisconsin

Test Number: F-11

Date: September 27, 2005

Time: 01:55 PM

Area of City: Central

FLOWING HYDRANT

Location: Mill Road and South Spring Drive

Pressure Zone: Main

Hydrant Number: 13

RESIDUAL HYDRANT

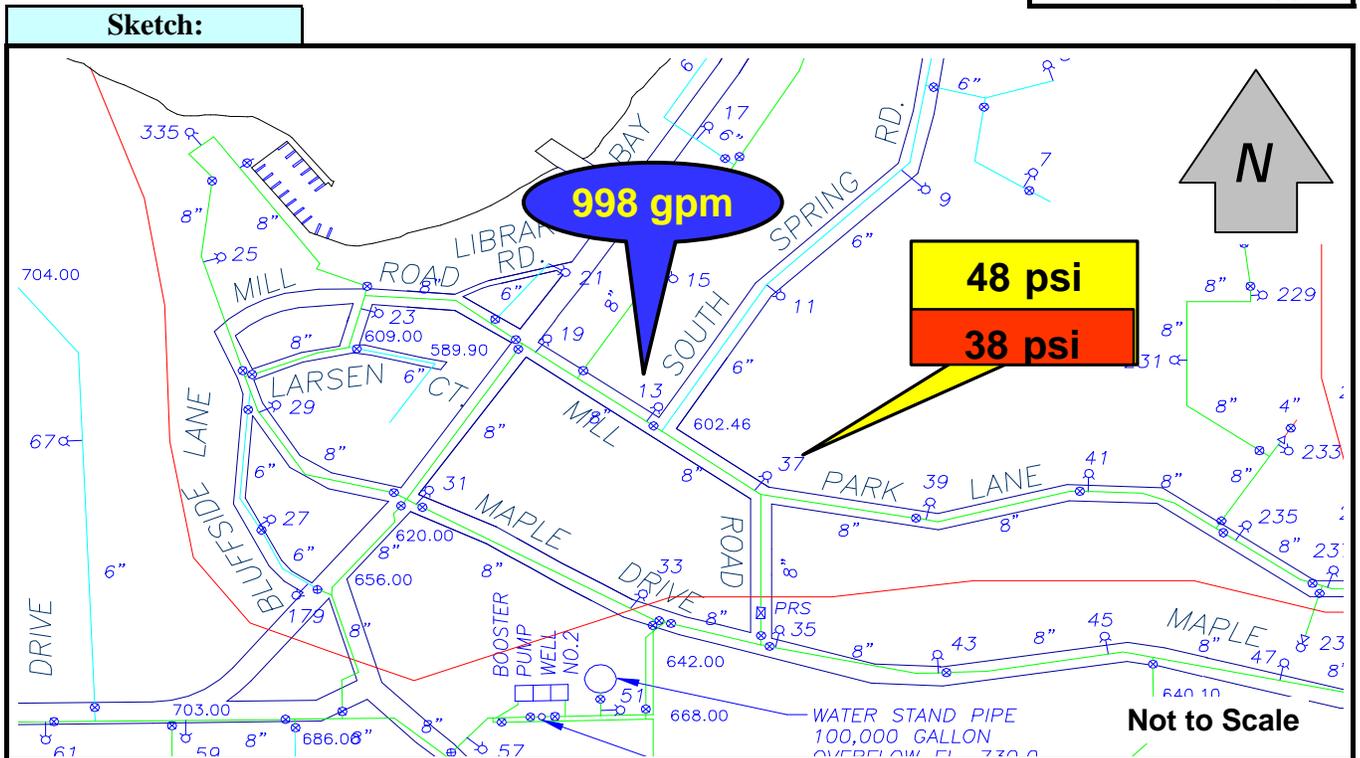
Location: Mill Road and Park Lane

Hydrant Number: 37

Test Hydrant	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant No.
Flowing: 2.5 inch Dia.	998			13
Flowing: 2.5 inch Dia.				
Residual Hydrant		48	38	37

Test Nozzle Size **2 1/2** inches

Tower Elevations		Pumps Operating			
Jungwirth Court	20.1 feet	Well 1	OFF	Booster 1	OFF
Standpipe	14.8 feet	Well 2	OFF	Booster 2	OFF
		Well 3	ON	Booster 3	ON
				Booster 4	OFF



Remarks: None

C-VALUE TEST
Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: C-1

Date: September 27, 2005

Time: 02:20 PM

Area of City: Central

FLOWING HYDRANT

Location: Bay Shore Drive Hydrant #10

RESIDUAL HYDRANT #1

Location: Bay Shore Drive Hydrant #8

VALVES CLOSED

Location: 1st valve north of flowing hydrant

RESIDUAL HYDRANT #2

Location: Bay Shore Drive and Scandia Road - Hydrant #2

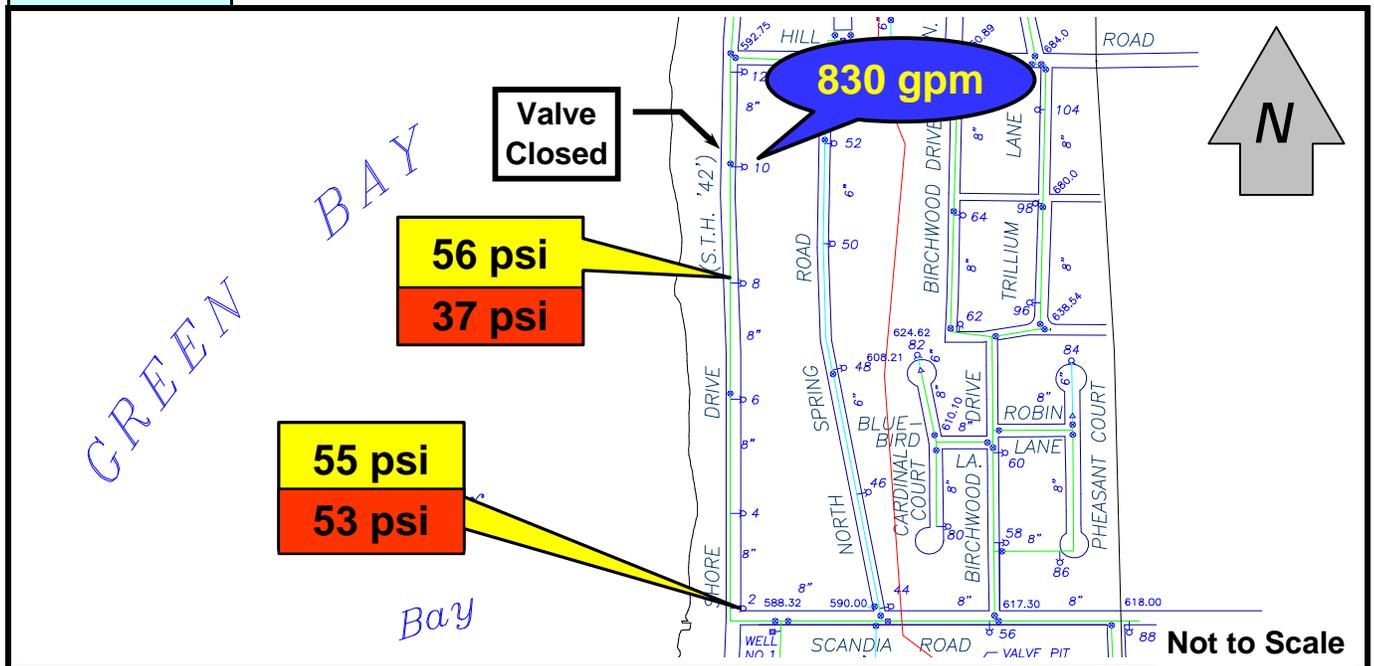
Hydrant	Pressure (psi)	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydraulic Grade Line (feet)
Flowing: 2.5 inch Dia.	20	830			
Residual Hydrant #1			56	37	43.9
Residual Hydrant #2			55	53	4.6

Test Nozzle Size: 2 1/2 inches Number of Barrels: 1 (1 or 2)

Pipe Diameter: 8 inches **Distance Between Residual Hydrants:** 1,556 feet
Pipe Material: Ductile Iron **Year Installed:** 1972 **Pipe Age:** 33 years

Calculated C-Value: 91

Sketch:



Remarks:

C-VALUE TEST
Sister Bay Water Utility
Village of Sister Bay, Wisconsin

Test Number: C-2

Date: September 27, 2005

Time: 02:45 PM

Area of City: Central

FLOWING HYDRANT

Location: Spring Street Hydrant #52

RESIDUAL HYDRANT #1

Location: Spring Street Hydrant #50

VALVES CLOSED

Location: 1st valve north of flowing hydrant

RESIDUAL HYDRANT #2

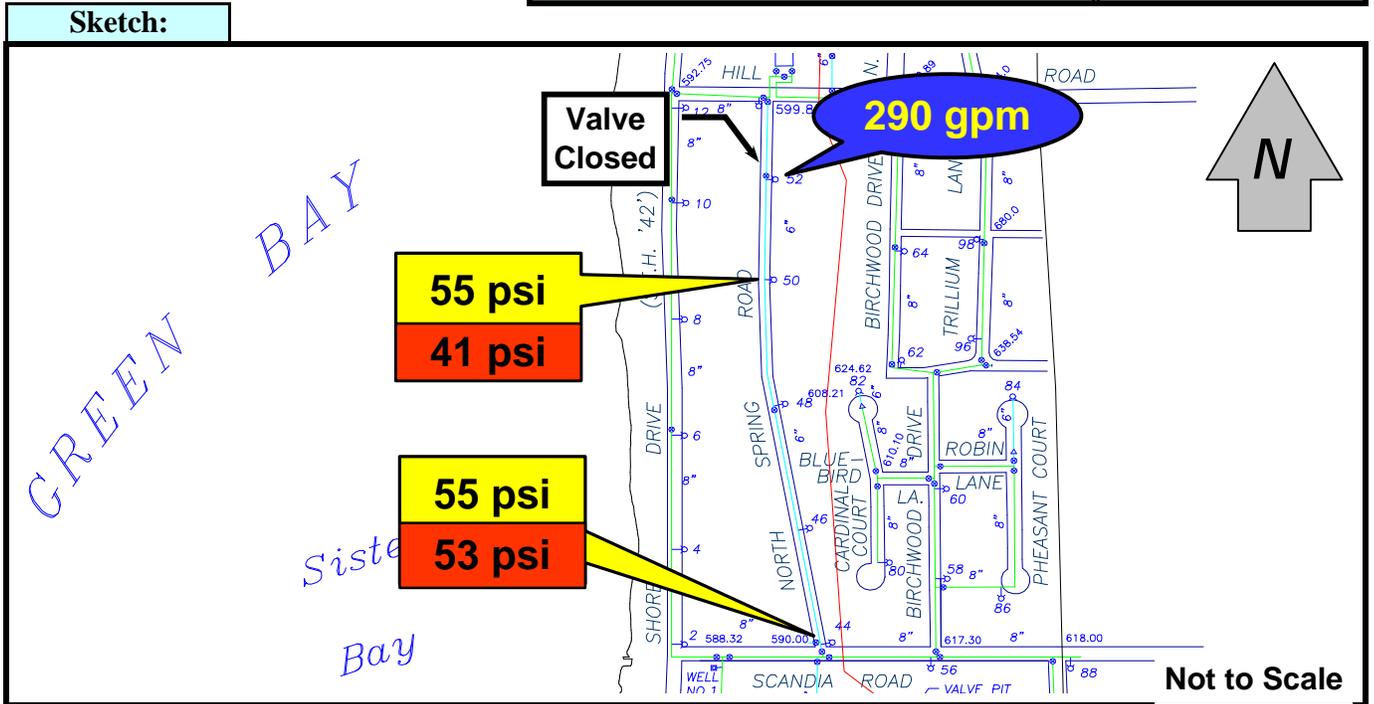
Location: Spring Street Hydrant #44

Hydrant	Pressure (psi)	Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydraulic Grade Line (feet)
Flowing: 2.5 inch Dia.	38	290			
Residual Hydrant #1			55	41	32.3
Residual Hydrant #2			55	53	4.6

Test Nozzle Size: 1 1/4 inches Number of Barrels: 1 (1 or 2)

Pipe Diameter: 6 inches **Distance Between Residual Hydrants:** 1,727 feet
Pipe Material: Ductile Iron **Year Installed:** 1972 **Pipe Age:** 33 years

Calculated C-Value: 86



Remarks:

APPENDIX C

H&H ANALYSIS SUMMARY

H&H ANALYSIS DATA SUMMARY
COMPREHENSIVE UTILITY PLANNING AREA
SISTER BAY, WISCONSIN

Storm Event Return Period (yrs)	Watershed Peak Discharge (cfs)						Natural Closed Depression Flood Information			
	Existing Conditions			Proposed Conditions			Elevations (USGS)			Escape Route
	2	10	100	2	10	100	Existing Low Adjacent Grade of Development	100 Year Poned Elevation		
2.4	3.6	4.9	2.4	3.6	4.9	Existing Conditions		Future Developed Conditions		
24 hour Rainfall Depth (inches)	2.4	3.6	4.9	2.4	3.6	4.9				
Watershed Number										
300	4.0	10.7	19.0	5.6	13.9	22.2	710	706.6	706.6	710
400	8.0	17.5	29.7	9.7	19.8	31.4	none	none	none	
500	11.7	24.7	40.1	14.0	27.7	43.5	678	676.2	676.3	678
600	6.1	16.3	29.3	8.5	19.8	33.8	none	none	none	
800	10.7	34.9	67.3	16.7	44.4	79.6	none	660.6	660.6	662
900	14.1	77.7	180.6	26.3	104.3	219.0	718	721.0	721.7	722
1000	16.5	64.0	137.0	28.7	88.4	172.0	644	646.2	646.3	646
1200	10.7	28.5	51.1	15.0	34.8	59.0	none	none	none	
1300	0.4	6.9	22.4	0.8	9.1	26.3		695.5	695.6	698
1400	11.7	30.0	54.0	16.0	36.5	61.5	none	none	none	
1900	2.0	8.0	52.0	8.0	26.0	76.0	none	637.3	637.5	637
2000	1.0	19.0	20.5	9.4	35.0	48.0	642	632.0	634.0	640
Sum 1400-2000	14.7	57.0	126.5	33.4	97.5	185.5				
1500	8.2	30.9	62.6	15.0	42.2	77.8	684	685.0	685.0	688
1600	8.3	40.6	88.3	17.9	58.0	112.4	none	694.0	694.3	696
2200	20.4	41.7	66.4	24.0	46.2	71.4	none	none	none	
2300	3.8	15.5	31.8	16.7	34.8	55.7	632	623.0	625.0	636
2500	0.0	1.5	6.9	1.0	6.5	14.6	590	589.0	589.0	590
2600	15.2	44.4	82.6	21.9	54.7	95.9	none	none	none	
2701	16.2	43.8	80.0	18.8	48.0	85.0	none	none	none	
2702	21.5	59.5	109.0	34.0	78.0	133.0	none	none	none	
2703	31.3	107.0	216.0	45.9	130.0	246.0	583	unknown	unknown	588
Total 2700	69.0	210.3	405.0	98.7	256.0	464.0				
2800	23.6	51.7	85.5	27.9	57.6	92.2		none	none	

Storm Event Return Period (yrs)	Watershed Peak Discharge (cfs)						Natural Closed Depression Flood Information			
	Existing Conditions			Proposed Conditions			Elevations (USGS)			
	2	10	100	2	10	100	Existing Low Adjacent Grade of Development	100 Year Poned Elevation		Escape Route
24 hour Rainfall Depth (inches)	2.4	3.6	4.9	2.4	3.6	4.9		Existing Conditions	Future Developed Conditions	
Watershed Number										
2900	4.0	17.5	39.5	8.5	27.0	53.4	614			618
3000	1.9	13.4	35.0	6.3	24.5	52.4	630	630.0	631.0	634
3101	28.2	107.0	221.0	47.7	142.0	268.0	600	600.0	600.0	600
3102	1.3	10.6	28.2	9.1	28.0	53.5	none	616.0	616.2	616
3103	0.6	7.6	19.7	11.0	25.7	43.7	none	none	none	
3104	2.7	19.0	49.6	15.6	48.2	93.5	none	none	none	
3105 & 3106	0.0	3.8	27.9	2.0	26.5	84.9	630	628.2	629.0	632
Total 3100	32.8	148.0	346.4	85.4	270.4	543.6				
3200	3.7	16.4	35.1	3.7	16.4	35.1	626	628.4	628.4	630
3300	16.6	50.9	61.2	26.4	66.9	118.0	none	none	none	
3400	Sheet flow to Green Bay						none	none	none	
3500	3.8	9.9	17.7	5.5	12.5	20.9	none	none	none	
3601	46.4	156.0	315.0	77.9	214.0	394.0	648	647.0	647.1	646
3602 & 3603	23.3	75.1	146.4	31.8	89.7	166.0	642	644.6	645.4	648
3602 & 3603	0.4	30.2	83.0	4.6	42.7	91.3				
3604	5.6	18.8	36.7	8.3	23.1	42.3	none	627.8	627.8	628
3605	0.0	0.1	0.8	0.1	2.4	7.8	none	601.0	601.0	600
3615	12.3	24.6	38.8	13.6	26.2	40.6	none	none	none	
3625	0.0	0.4	1.1	0.0	0.4	1.1	none	none	none	
3635	0.3	4.4	11.1	0.9	5.7	13.0	none	none	none	
3645 & 3655	3.4	11.3	22.2	4.3	13.0	24.4	none	none	none	
3665	1.5	4.8	9.1	1.8	5.2	9.6	622			622
3675 & 3685	9.0	25.0	45.7	11.4	28.8	50.7	none	none	none	
Total 3600	106.0	360.6	727.6	160.2	463.7	861.7				
3800	3.8	9.9	17.7	No change						

	Watershed Peak Discharge (cfs)						Natural Closed Depression Flood Information			
	Existing Conditions			Proposed Conditions			Elevations (USGS)			
	2	10	100	2	10	100	Existing Low Adjacent Grade of Development	100 Year Poned Elevation		Escape Route
24 hour Rainfall Depth (inches)	2.4	3.6	4.9	2.4	3.6	4.9		Existing Conditions	Future Developed Conditions	
Watershed Number										
3901	36.9	66.0	98.0	41.6	71.1	103.2	none	none	none	
3902	31.9	62.7	97.9	31.9	62.7	97.9	none	none	none	
3903	9.0	17.2	26.5	9.0	17.2	26.5	none	none	none	
Total 3901-3903	77.8	145.9	222.4	82.5	151.0	227.6				
4001	14.9	32.3	53.0	17.4	35.6	56.9	none	none	none	
4002	23.3	52.7	88.5	28.1	59.4	96.4	674	670.0	670.0	670
4002a			8.9			8.9	583	586.0	586.0	586+
Total 4000	38.2	85.0	141.5	45.5	95.0	153.3				
4401	12.7	35.2	64.6	31.6	62.0	97.0	684	683.0	683.0	682
4402	21.2	65.4	126.4	37.2	91.6	160.0	673	673.4	673.6	674
Total 4400	33.9	100.6	191.0	68.8	153.6	257.0				
5200	0.8	3.3	7.3	4.2	9.0	14.7	none	731.6	732.4	733
5500	60.9	152.0	266.0	88.4	191.0	314.0	none	none	none	
5800	1.7	4.5	8.2	4.5	8.3	12.6	none	none	none	
5900	0.8	1.7	2.7	No change			none	none	none	
6000	14.2	29.2	46.7	17.8	33.7	51.7	none	none	none	
6100	25.8	50.8	79.6	37.2	64.1	93.3	none	none	none	
6301	4.6	12.3	21.4	No change			584	582.4	582.4	586
6302	5.1	8.8	13.9	No change			none	none	none	
Total 6300	9.7	21.1	35.3	0.0	0.0	0.0				
6500	13.2	37.0	69.9	19.8	48.3	84.1	none	none	none	

STORM WATER STORAGE ZONE SUMMARY
COMPREHENSIVE UTILITY PLANNING AREA
SISTER BAY, WISCONSIN

Storm Water Storage Zones		
Watershed No.	Area	ELEVATION
	(acres)	feet NGVD 29
300	1.91	708
500	4.07	678
800	1.95	662
900	18.31	722
1002	5.07	648
1300	2.90	696
1500	6.46	686
1600	12.09	696
1900	1.84	638
2002	4.63	634
2302	2.23	626
2500	0.88	590
2703	19.44	588
3000	6.22	632
3101	17.69	602
3102	4.69	618
3105	19.07	630
3200	3.42	630
3603	18.55	646
4002a	0.72	586
4401	6.04	684
4402	16.23	674
5200	3.83	732
6301	6.14	586

APPENDIX D

MODEL STORM WATER ORDINANCES

AND

ILLICIT DISCHARGE PROGRAM PROPOSAL

**AN ORDINANCE TO CREATE CHAPTER 31 OF THE CODE OR ORDINANCES OF
SISTER BAY RELATING TO THE CONTROL OF POST-CONSTRUCTION RUNOFF**

FOREWORD

The Village Board of Sister Bay finds that land development or redevelopment construction projects and associated increases in impervious cover have altered the hydrologic responses of local watersheds by increasing storm water runoff rates and volumes, flooding, stream channel erosion, and sediment transport and deposition. This storm water runoff contributes to increased quantities of water-borne pollutants. Storm water runoff from development and redevelopment may adversely impact water bodies in the Village. Uncontrolled runoff has significant adverse impacts upon regional water resources and the health, safety, property and general welfare of the community, and diminish the public enjoyment and use of natural resources. Specifically, storm water runoff can:

1. Endanger water resources by reducing water quality;
2. Carry sediment, nutrients, pathogens, organic matter, heavy metals, toxins and other pollutants to lakes, streams and wetlands;
3. Degrade physical stream habitat by increasing stream bank erosion, increasing streambed scour, diminishing groundwater recharge, diminishing stream base flows and increasing stream temperature;
4. Undermine floodplain management efforts by increasing the incidence and levels of flooding;
5. Threaten public health, safety, property and general welfare by increasing major flood peaks and volumes;
6. Threaten public health, safety, property and general welfare by overtaxing storm sewers, drainage ways, and other minor drainage facilities;
7. Contaminate drinking water supplies;
8. Increase the risk of property damage and personal injury.

The purpose of the local regulation is to safeguard persons, protect property, prevent damage to the environment and promote the public welfare by guiding, regulating, and controlling the design, construction, use, and maintenance of any development, redevelopment or other activity which adversely impacts runoff in Sister Bay. The intent of this ordinance is several fold: 1. To require use of best management practices to reduce and control the hydrologic impacts and the amount storm water pollutants produced by land development or redevelopment activities, and 2. To allow Sister Bay to comply with non agricultural runoff performance standards for new development and redevelopment contained in subchapters III and IV of ch. NR 151, Wis. Adm. Code.

The Village Board of Sister Bay does hereby ordain that Chapter 31 of the Code of Ordinances of Sister Bay is created to read as follows:

CHAPTER 31

STORM WATER MANAGEMENT

- 31.01 Authority.
- 31.02 Findings of Fact.
- 31.03 Purpose and Intent.
- 31.04 Applicability and Jurisdiction.
- 31.05 Definitions.
- 31.06 Storm Water Technical Review Committee.
- 31.07 Technical Standards.
- 31.08 Performance Standards.
- 31.09 Permitting Requirements, Procedures and Fees.
- 31.10 Storm Water Management Plan.
- 31.11 Maintenance and Inspection Agreement.
- 31.12 Illegal Discharges and Illicit Connections.
- 31.13 Financial Guarantee.
- 31.14 Fee Schedule.
- 31.15 Enforcement.
- 31.16 Appeals.
- 31.17 Severability.
- 31.18 Effective Date.

POST-CONSTRUCTION STORM WATER MANAGEMENT

31.01 AUTHORITY.

- (1) This ordinance is adopted by the Village Board under the authority granted by s. 62.234 Wis. Stats. This ordinance supersedes all provisions of an ordinance previously enacted under s. 62.23 Wis. Stats., that relate to storm water management regulations. Except as otherwise specified in s. 62.234 Wis. Stats., s. 62.23, Wis. Stats., applies to this ordinance and to any amendments to this ordinance.
- (2) The provisions of this ordinance are deemed not to limit any other lawful regulatory powers of the same governing body.
- (3) The Village Board hereby designates the Public Works Department to administer and enforce the provisions of this ordinance.
- (4) The requirements of this ordinance do not pre-empt more stringent storm water management requirements that may be imposed by any of the following:
 - (a) Wisconsin Department of Natural Resources administrative rules, permits or approvals including those authorized under ss. 281.16 and 283.33, Wis. Stats.
 - (b) Targeted non-agricultural performance standards promulgated in rules by the Wisconsin Department of Natural Resources under s. NR 151.004, Wis. Adm. Code.

31.02 FINDINGS OF FACT.

The Village Board finds that uncontrolled, post-construction runoff has a significant impact upon water resources and the health, safety and general welfare of the community and diminishes the public enjoyment and use of natural resources.

31.03 PURPOSE AND INTENT.

- (1) **PURPOSE.** The general purpose of this ordinance is to establish long-term, post-construction runoff management requirements that will diminish the storm water related threats to public health, safety, welfare and the aquatic environment. Specific purposes are to:
 - (a) Further the maintenance of safe and healthful conditions.
 - (b) Prevent and control the adverse effects of storm water; prevent and control soil erosion; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth.
 - (c) Prevent exceedance of the safe capacity of existing drainage facilities and receiving water bodies; prevent undue channel erosion; control increases in the scouring and transportation of particulate matter; and prevent conditions that endanger downstream property.
- (2) **INTENT.** It is the intent of the Village Board that this ordinance regulates post-construction storm water discharges to waters of the state. This ordinance may be applied on a site-by-site basis. The Village Board recognizes, however, that the preferred method of achieving the storm water performance standards set forth in this ordinance is through the preparation and implementation of comprehensive, systems-level storm water management plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Such plans may prescribe regional storm water devices, practices or systems, any of which may be designed to treat runoff from more than one site prior to discharge to waters of the state. Where such plans are in conformance with the performance standards developed under s. 281.16, Wis. Stats., for regional storm water management measures and have been approved by the Village Board, it is the intent of this ordinance that the approved plan be used to identify post-construction management measures acceptable for the community.

31.04 APPLICABILITY AND JURISDICTION.

(1) APPLICABILITY.

- (a) Where not otherwise limited by law, this ordinance applies after final stabilization to a site of land disturbing construction activity meeting any of the criteria in this paragraph, unless the site is otherwise exempt under Chapter 31.04 (b).
 - 1. A post construction or redevelopment site that had any land disturbing construction activity.
- (b) A site that meets any of the criteria in this paragraph is exempt from the requirements of this ordinance.
 - 1. A redevelopment post–construction site with no increase in impervious area.
 - 2. A post–construction site with less than 10% connected imperviousness based on complete development of the post–construction site, provided the cumulative area of all parking lots and rooftops is less than one acre.
 - 3. Nonpoint discharges from agricultural facilities and practices.
 - 4. Nonpoint discharges from silviculture activities.
 - 5. Routine maintenance for project sites under 5 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.
 - 6. Underground utility construction such as water, sewer and fiberoptic lines. This exemption does not apply to the construction of any above ground structures associated with utility construction.
- (c) Notwithstanding the applicability requirements in Chapter 31.04(1) (a), this ordinance applies to post– construction sites of any size that, in the opinion of the Department of Public Works, is likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.

(2) JURISDICTION.

This ordinance applies to post construction sites within the corporate limits and jurisdiction of Sister Bay, as well as the extraterritorial division of land subject to an ordinance enacted pursuant to s. 236.45(2) and (3) Wis. Stats.

31.05 DEFINITIONS.

- (1) “Administering authority” means the Department of Public Works.
- (2) “Agricultural facilities and practices” has the meaning given in s. 281.16, Wis. Stats.
- (3) “Average annual rainfall” means a calendar year of precipitation, excluding snow, which is considered typical.
- (4) “Best management practice” or “BMP” means structural or non–structural measures, practices, techniques or devices employed to avoid or minimize sediment or pollutants carried in runoff to waters of the state.
- (5) “Business day” means a day the office of the Department of Public Works is routinely and customarily open for business.
- (6) “Cease and desist order” means a court–issued order to halt land disturbing construction activity that is being conducted without the required permit.
- (7) “Combined sewer system” means a system for conveying both sanitary sewage and storm water runoff.
- (8) “Connected imperviousness” means an impervious surface that is directly connected to a separate storm sewer or water of the state via an impervious flow path.

- (9) “Design storm” means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency, and total depth of rainfall.
- (10) “Development” means residential, commercial, industrial or institutional land uses and associated roads.
- (11) “Division of land” means the creation from one parcel of two or more parcels or building sites where such creation occurs at one time or through the successive partition within a 5 year period.
- (12) “Effective infiltration area” means the area of the infiltration system that is used to infiltrate runoff and does not include the area used for site access, berms or pretreatment.
- (13) “Erosion” means the process by which the land’s surface is worn away by the action of wind, water, ice or gravity.
- (14) “Exceptional resource waters” means waters listed in s. NR 102.11, Wis. Adm. Code.
- (15) “Extraterritorial” means the unincorporated area within 3 miles of Sister Bay corporate limits.
- (16) “Final stabilization” means that all land disturbing construction activities at the construction site have been completed and that a uniform, perennial, vegetative cover has been established, with a density of at least 70% of the cover, for the unpaved areas and areas not covered by permanent structures, or employment of equivalent permanent stabilization measures.
- (17) “Financial guarantee” means a performance bond, maintenance bond, surety bond, irrevocable letter of credit, or similar guarantees submitted to the Department of Public Works by the responsible party to assure that requirements of the ordinance are carried out in compliance with the storm water management plan.
- (18) “Governing body” means the Village council.
- (19) “Illegal discharge” means any direct or indirect non-storm water discharge to the storm water system.
- (20) “Illicit connections” means any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm water system including but not limited to any conveyances which allow any non-storm water discharges including sewage, process wastewater and wash water to enter the storm water system. Illicit connections also includes: 1. Connections to the storm water system from indoor drains and sinks regardless of whether the connection was previously allowed or permitted, and 2. Any drain or conveyance connected from a commercial, industrial or institutional land use to the storm water system which has not been documented in plans, maps or equivalent records and approved by the Village or Wisconsin Department of Natural Resources.
- (21) “Impervious surface” means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, parking lots and streets are examples of areas that typically are impervious.
- (22) “In-fill area” means an undeveloped area of land located within existing development.
- (23) “Infiltration” means the entry of precipitation or runoff into or through the soil.
- (24) “Infiltration system” means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.
- (25) “Karst feature” means an area or surficial geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps or swallets.
- (26) “Land disturbing construction activity” means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of sediment into

- waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.
- (27) "Maintenance agreement" means a legal document that provides for long-term maintenance of storm water management practices.
 - (28) "MEP" or "maximum extent practicable" means a level of implementing best management practices in order to achieve a performance standard specified in this ordinance which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. MEP allows flexibility in the way to meet the performance standards and may vary based on the performance standard and site conditions.
 - (29) "New development" means development resulting from the conversion of previously undeveloped land or agricultural land uses.
 - (30) "Non-storm water discharge" means any discharge to the storm drain system this is not composed entirely of storm water.
 - (31) "Off-site" means located outside the property boundary described in the permit application.
 - (32) "On-site" means located within the property boundary described in the permit application.
 - (33) "Ordinary high-water mark" has the meaning given in s. NR 115.03(6), Wis. Adm. Code.
 - (34) "Outstanding resource waters" means waters listed in s. NR 102.10, Wis. Adm. Code.
 - (35) "Percent fines" means the percentage of a given sample of soil, which passes through a #200 sieve.
 - (36) "Performance standard" means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.
 - (37) "Permit" means a written authorization made by the Department of Public Works to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.
 - (38) "Permit administration fee" means a sum of money paid to the Department of Public Works by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.
 - (39) "Pervious surface" means an area that releases as runoff a relatively small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or other similar vegetated areas are examples of surfaces that typically are pervious.
 - (40) "Pollutant" has the meaning given in s. 283.01(13), Wis. Stats.
 - (41) "Pollution" has the meaning given in s. 281.01(10), Wis. Stats.
 - (42) "Post-construction site" means a construction site following the completion of land disturbing construction activity and final site stabilization.
 - (43) "Pre-development condition" means the extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to development activity are managed in an environmentally sound manner.
 - (44) "Preventive action limit" has the meaning given in s. NR 140.05(17), Wis. Adm. Code.
 - (45) "Redevelopment" means areas where development is replacing older development.
 - (46) "Responsible party" means any entity holding fee title to the property or other person contracted or obligated by other agreement to implement and maintain post-construction storm water BMPs.
 - (47) "Runoff" means storm water or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.
 - (48) "Separate storm sewer" means a conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:
 - (a) Is designed or used for collecting water or conveying runoff.

- (b) Is not part of a combined sewer system.
 - (c) Is not draining to a storm water treatment device or system.
 - (d) Discharges directly or indirectly to waters of the state.
- (49) “Site” means the entire area included in the legal description of the land on which the land disturbing construction activity occurred.
- (50) “Stop work order” means an order issued by the Department of Public Works which requires that all construction activity on the site be stopped.
- (51) “Storm water management plan” means a comprehensive plan designed to reduce the discharge of pollutants in storm water and to control storm water discharge rates and volumes after the site has undergone final stabilization following completion of the construction activity.
- (52) “Storm water management system plan” is a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.
- (53) “Storm water system” means publicly owned facilities by which storm water is collected, conveyed or treated, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, retention and detention ponds, infiltration facilities, natural and human-made or altered water channels, and other drainage structures.
- (54) “Technical standard” means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.
- (55) “Top of the channel” means an edge, or point on the landscape, landward from the ordinary high– water mark of a surface water of the state, where the slope of the land begins to be less than 12% continually for at least 50 feet. If the slope of the land is 12% or less continually for the initial 50 feet, landward from the ordinary high–water mark, the top of the channel is the ordinary high–water mark.
- (56) “TR–55” means the United States Department of Agriculture, Natural Resources Conservation Service (previously Soil Conservation Service), Urban Hydrology for Small Watersheds, Second Edition, Technical Release 55, June 1986.
- (57) “Type II distribution” means a rainfall type curve as established in the “United States Department of Agriculture, Soil Conservation Service, Technical Paper 149, published 1973”. The Type II curve is applicable to all of Wisconsin and represents the most intense storm pattern.
- (58) “Waters of the state” has the meaning given in s. 281.01 (18), Wis. Stats.

31.06 STORM WATER TECHNICAL REVIEW COMMITTEE.

- (1) Sister Bay Storm Water Technical Review Committee shall consist of:
- (a) Voting Members
 1. The Village Engineer/Public Works Director, acting as committee chair.
 2. An appointed Alderperson
 3. The Village Inspector
 - (b) Advisory Committee:
 1. The Door County Liaison as appointed by the County Board Chairperson.
 2. A local representative from the Department of Natural Resources with expertise in storm water management.
 3. One member as appointed by the Board of Public Works, who has at least one of the following qualifications:
 - a. A professional engineer or registered hydrologist with a background in storm water management.

4. Three members at large who are citizens of Village to be appointed by the Mayor for a three-year term to represent the diverse interest groups of the Village.
 5. Street Manager
- (2) The purposes of Sister Bay Storm Water Technical Review Committee are the following:
- (a) Provide objective and scientific technical review of storm water management or construction site erosion control issues or permits to be issued by the Village and, when requested by the Board of Public Works, provide recommendations to grant or deny storm water management or construction site erosion control permits.
 - (b) Provide public involvement and education opportunities for Citizens of the Village.
- (3) Sister Bay Storm Water Technical Review Committee may retain a consultant to assist in the review of storm water management, storm water permit or construction site erosion control issues. Any cost incurred as part of the permit application review for storm water management or construction site erosion control permits shall be reimbursed by the applicant.

31.07 TECHNICAL STANDARDS.

The following methods shall be used in designing the water quality, peak flow shaving and infiltration components of storm water practices needed to meet the water quality standards of this ordinance:

- (1) Technical standards identified, developed or disseminated by the Wisconsin Department of Natural Resources under subchapter V of chapter NR 151, Wis. Adm. Code.
- (2) Where technical standards have not been identified or developed by the Wisconsin Department of Natural Resources, other technical standards may be used provided that the methods have been approved by the Department of Public Works.
- (3) In this ordinance, the following year and location has been selected as the average annual rainfall: Minneapolis, 1959 (Mar. 13–Nov. 4).

31.08 PERFORMANCE STANDARDS.

- (1) RESPONSIBLE PARTY. The responsible party shall implement a post–construction storm water management plan that incorporates the requirements of this section.
- (2) PLAN. A written storm water management plan in accordance with Chapter 31.10 shall be developed and implemented for each post–construction site.
- (3) REQUIREMENTS. The plan required under Chapter 31.08 (2) shall include the following:
 - (a) TOTAL SUSPENDED SOLIDS. BMPs shall be designed, installed and maintained to control total suspended solids carried in runoff from the post– construction site as follows:
 1. For new development, by design, reduce to the maximum extent practicable, the total suspended solids load by 80%, based on the average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this subdivision.
 2. For redevelopment, by design, reduce to the maximum extent practicable, the total suspended solids load by 40%, based on the average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed a 40% total suspended solids reduction to meet the requirements of this subdivision.
 3. For in–fill development under 5 acres that occurs within 10 years after October 1, 2002, by design, reduce to the maximum extent practicable, the total suspended solids load by 40%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed a 40% total suspended solids reduction to meet the requirements of this subdivision.

4. For in-fill development that occurs 10 or more years after October 1, 2002, by design, reduce to the maximum extent practicable, the total suspended solids load by 80%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this subdivision.
 5. Notwithstanding Chapter 31.08(3)(a) 1. to 4., if the design cannot achieve the applicable total suspended solids reduction specified, the storm water management plan shall include a written and site-specific explanation why that level of reduction is not attained and the total suspended solids load shall be reduced to the maximum extent practicable.
- (b) **PEAK DISCHARGE.**
1. By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development conditional the 2-year, 10-year, 25-year, and 100-year recurrence interval, 24-hour duration design storms applicable to the post-construction site. Pre-development conditions shall assume "good hydrologic conditions" for appropriate land covers as identified in TR-55 or an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. However, when pre-development land cover is cropland, rather than using TR-55 values for cropland, the runoff curve numbers in Table 1 shall be used.

Table 1
Maximum Pre-Development Runoff Curve Numbers for Cropland Areas

Hydrologic Soil Group	A	B	C	D
Runoff Curve Number	56	70	79	83

2. This subsection of the ordinance does not apply to any of the following:
 - a. A redevelopment post-construction site with no increase in impervious surface.
- (c) **INFILTRATION.** BMPs shall be designed, installed, and maintained to infiltrate runoff to the maximum extent practicable in accordance with the following, except as provided in Chapter 31.08(3)(c) 7. through 10.
1. Areas of the Village protected by the wellhead protection zoning:
 - a. All infiltration practices shall meet the requirements of Chapter XX of the Village Ordinances in areas of the Village designated as Zone 1 or Zone 2 wellhead protection areas.
 2. Areas of the Village are not served by storm sewers:
 - a. In areas of the Village not served by storm sewers, as determined by the Department of Public Works, all increases in runoff volume exceeding

predevelopment conditions must be captured and infiltrated for rain events less than or equal to the 100-year, 24-hour duration design storm.
 3. Areas of the Village served by storm sewers:
 - a. For residential developments one of the following shall be met:
 - (i) Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate

- infiltration systems to meet this requirement, no more than 1% of the project site is required as an effective infiltration area.
- (ii) Infiltrate 25% of the post-development runoff from the 2 year –24-hour design storm with a NRCS type II distribution. Separate curve numbers for pervious and impervious surfaces shall be used to calculate runoff volumes and not composite curve numbers as defined in TR-55. However, when designing appropriate infiltration systems to meet this requirement, no more than 1% of the project site is required as an effective infiltration area.
- b. For non-residential development, including commercial, industrial and institutional development, one of the following shall be met:
 - (i) Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.
 - (ii) Infiltrate 10% of the runoff from the 2 year – 24 hour design storm with a type II distribution. Separate curve numbers for pervious and impervious surfaces shall be used to calculate runoff volumes, and not composite curve numbers as defined in TR-55. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.
 - c. Pre-development condition shall be the same as in Chapter 31.08(3) (c)3.b.
4. Before infiltrating runoff, pretreatment shall be required. The pretreatment shall be designed to protect the infiltration system from clogging prior to scheduled maintenance and to protect groundwater quality in accordance with Chapter 31.08(3)(c) 10. Pretreatment options may include, but are not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips and must be designed and constructed to remove contaminants associated with the proposed land use to the maximum extent practicable.
 5. The sequence of construction at a site where infiltration practices will be constructed shall allow surface soils, disturbed during construction, to be stabilized with vegetation prior to final grading or construction of infiltration areas.
 6. Owners and operators of a construction activity which results in eroded soil clogging or other damage to an infiltration area shall restore the infiltration area to the condition existing prior to the damage.
 7. Exclusions. The runoff from the following areas are prohibited from meeting the requirements of this paragraph:
 - a. Areas associated with tier 1 industrial facilities identified in s. NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, rooftop and parking.
 - b. Storage and loading areas of tier 2 industrial facilities identified in s. NR 216.21(2)(b), Wis. Adm. Code. Runoff from tier 2 parking and rooftop areas may be infiltrated.
 - c. Fueling and vehicle maintenance areas.
 - d. Infiltration areas with less than 3 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock unless pretreatment is provided such that the requirements of Chapter 31.08(3)(c) 10 are met. Infiltration rate computations must include the effects of

- groundwater mounding which may occur under these conditions. Computations related to pretreatment pollutant removal rates and groundwater mounding must be provided to the Department of Public Works for review and approval. This subd. 7. d. does not prohibit infiltration of untreated roof runoff.
- e. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than 5 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock unless pretreatment is provided such that the requirements of Chapter 31.08(3)(c) 10 are met. Infiltration rate computations must include the effects of groundwater mounding which may occur under these conditions. Computations related to pretreatment pollutant removal rates and groundwater mounding must be provided to the Department of Public Works for review and approval
 - f. Areas within 400 feet of a community water system well as specified in s. NR 811.16(4), Wis. Adm. Code, or within 100 feet of a private well as specified in s. NR 812.08(4), Wis. Adm. Code, for runoff infiltrated from commercial, industrial and institutional land uses or regional devices for residential development.
 - g. Areas where contaminants of concern, as defined in s. NR 720.03(2), Wis. Adm. Code are present in the soil through which infiltration will occur.
8. Exemptions. The following are not required to meet the requirements of this paragraph:
- a. Areas where the infiltration rate of the infiltrating soil is less than 0.6 inches/hour measured at the site.
 - b. Parking areas and access roads less than 5,000 square feet for commercial and industrial development.
 - c. Redevelopment post-construction sites with no increase in impervious surface.
 - d. Infiltration areas during periods when the soil on the site is frozen.
9. Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternate use shall be given equal credit toward the infiltration volume required by this paragraph.
10. a. Infiltration systems designed in accordance with this paragraph shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with ch. NR 140, Wis. Adm. Code. However, if site-specific information indicates that compliance with a preventive action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.
- b. Notwithstanding Chapter 3108(3)(c) 10.a., the discharge from BMPs shall remain below the enforcement standard at the point of standards application.
- (d) **PROTECTIVE AREAS.**
1. "Protective area" means an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface. However, in this paragraph, "protective area" does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

- a. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 75 feet.
 - b. For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.
 - c. For lakes, 50 feet.
 - d. For highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins. Wetland boundary delineations shall be made in accordance with s. NR 103.08(1m). This paragraph does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed.
 - e. For less susceptible wetlands, 10 percent of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass.
 - f. In Chapter 31.08(3)(d) 1.a., d. and e., determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in s. NR 103.03.
 - g. For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.
2. This paragraph applies to post-construction sites located within a protective area, except those areas exempted pursuant to Chapter 31.08(3)(d) 4.
 3. The following requirements shall be met:
 - a. Impervious surfaces shall be kept out of the protective area to the maximum extent practicable. The storm water management plan shall contain a written site-specific explanation for any parts of the protective area that are disturbed during construction.
 - b. Where land disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Non-vegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.
 - c. Best management practices such as filter strips, swales, or wet detention basins, that are designed to control pollutants from non-point sources may be located in the protective area, subject to the proposed BMPs being permitted by the Wisconsin Department of Natural Resources and approved by the Department of Public Works.
 4. This paragraph does not apply to:
 - a. Redevelopment post-construction sites with no increase in impervious surface.

- b. Structures that cross or access surface waters such as boat landings, bridges and culverts.
 - c. Structures constructed in accordance with s. 59.692(1v), Wis. Stats.
 - d. Post-construction sites from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.
- (e) FUELING AND VEHICLE MAINTENANCE AREAS. Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum based compounds within runoff, such that the runoff that enters waters of the state contains no visible petroleum sheen.
- (f) SWALE TREATMENT FOR TRANSPORTATION FACILITIES.
1. Applicability. Except as provided in Chapter 31.08(3)(f) 2., transportation facilities that use swales for runoff conveyance and pollutant removal meet all of the requirements of this section, if the swales are designed to the maximum extent practicable to do all of the following:
 - a. Be vegetated. However, where appropriate, non-vegetative measures may be employed to prevent erosion or provide for runoff treatment, such as rock riprap stabilization or check dams.
 - b. Carry runoff through a swale for 200 feet or more in length that is designed with a flow velocity no greater than 1.5 feet per second for the peak flow generated using either a 2-year, 24-hour design storm or a 2-year storm with a duration equal to the time of concentration as appropriate. If a swale of 200 feet in length cannot be designed with a flow velocity of 1.5 feet per second or less, then the flow velocity shall be reduced to the maximum extent practicable.
 2. Exemptions. The Department of Public Works may, consistent with water quality standards, require other provisions of this section be met on a transportation facility with an average daily travel of vehicles greater than 2500 and where the initial surface water of the state that the runoff directly enters is any of the following:
 - a. An outstanding resource water.
 - b. An exceptional resource water.
 - c. Waters listed in s. 303(d) of the federal clean water act that are identified as impaired in whole or in part, due to nonpoint source impacts.
 - d. Waters where targeted performance standards are developed under s. NR 151.004, Wis. Adm. Code, to meet water quality standards.
- (4) GENERAL CONSIDERATIONS FOR ON-SITE AND OFF-SITE STORM WATER MANAGEMENT MEASURES. The following considerations shall be observed in managing runoff:
- (a) Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.
 - (b) Emergency overland flow for all storm water facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.
- (5) LOCATION AND REGIONAL TREATMENT OPTION.
- (a) The BMPs may be located on-site or off-site as part of a regional storm water device, practice or system.

- (b) Post-construction runoff within a non-navigable surface water that flows into a BMP, such as a wet detention pond, is not required to meet the performance standards of this ordinance. Post-construction BMPs may be located in non-navigable surface waters.
- (c) Except as allowed under Chapter 31.08(5) (d), post-construction runoff from new development shall meet the post-construction performance standards prior to entering a navigable surface water.
- (d) Post-construction runoff from any development within a navigable surface water that flows into a BMP is not required to meet the performance standards of this ordinance if:
 - 1. The BMP was constructed prior to the effective date of this ordinance and the BMP either received a permit issued under ch. 30, Stats., or the BMP did not require a ch. 30, Wis. Stats., permit; and
 - 2. The BMP is designed to provide runoff treatment from future upland development.
- (e) Runoff from existing development, redevelopment and in-fill areas shall meet the post-construction performance standards in accordance with this paragraph.
 - 1. To the maximum extent practicable, BMPs shall be located to treat runoff prior to discharge to navigable surface waters.
 - 2. Post-construction BMPs for such runoff may be located in a navigable surface water if allowable under all other applicable federal, state and local regulations such as ch. NR 103, Wis. Adm. Code and ch. 30, Wis. Stats.
- (f) The discharge of runoff from a BMP, such as a wet detention pond, or after a series of such BMPs is subject to this Chapter.
- (g) The Department of Public Works may approve off-site management measures provided that all of the following conditions are met:
 - 1. The Department of Public Works determines that the post-construction runoff is covered by a storm water management system plan that is approved by Sister Bay and that contains management requirements consistent with the purpose and intent of this ordinance.
 - 2. The off-site facility meets all of the following conditions:
 - a. The facility is in place.
 - b. The facility is designed and adequately sized to provide a level of storm water control equal to or greater than that which would be afforded by on-site practices meeting the performance standards of this ordinance.
 - c. The facility has a legally obligated entity responsible for its long-term operation and maintenance.
- (h) Where a regional treatment option exists such that the Department of Public Works exempts the applicant from all or part of the minimum on-site storm water management requirements, the applicant shall be required to pay a fee in an amount determined in

negotiation with the Department of Public Works. In determining the fee for post-construction runoff, the Department of Public Works shall consider an equitable distribution of the cost for land, engineering design, construction, and maintenance of the regional treatment option.

- (6) **ALTERNATE REQUIREMENTS.** The Department of Public Works may establish storm water management requirements more stringent than those set forth in this section if the Department of Public Works determines that an added level of protection is needed to protect sensitive resources.

31.09 PERMITTING REQUIREMENTS, PROCEDURES AND FEES.

- (1) PERMIT REQUIRED. No responsible party may undertake a land disturbing construction activity without receiving a post-construction runoff permit from the Department of Public Works prior to commencing the proposed activity.
- (2) PERMIT APPLICATION AND FEES. Unless specifically excluded by this ordinance, any responsible party desiring a permit shall submit to the Department of Public Works a permit application made on a form provided by the Department of Public Works for that purpose.
 - (a) Unless otherwise excepted by this ordinance, a permit application must be accompanied by a storm water management plan, a maintenance and inspection agreement and a non-refundable permit administration fee.
 - (b) The storm water management plan shall be prepared to meet the requirements of Chapter 31.08 and Chapter 31.10, the maintenance agreement shall be prepared to meet the requirements of Chapter 31.11, the financial guarantee shall meet the requirements of Chapter 31.13, and fees shall be those established by the Village Board as set forth in Chapter 31.14.
- (3) REVIEW AND APPROVAL OF PERMIT APPLICATION. The Department of Public Works shall review any permit application that is submitted with a storm water management plan, maintenance agreement, and the required fee. The following approval procedure shall be used:
 - (a) Within 30 business days of the receipt of a complete permit application, including all items as required by Chapter 31.09 (2), the Department of Public Works shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved based on the requirements of this ordinance.
 - (b) If the storm water permit application, plan and maintenance agreement are approved, or if an agreed upon payment of fees in lieu of storm water management practices is made, the Department of Public Works shall issue the permit.
 - (c) If the storm water permit application, plan or maintenance agreement is disapproved, the Department of Public Works shall detail in writing the reasons for disapproval.
 - (d) The Department of Public Works may request additional information from the applicant. If additional information is submitted, the Department of Public Works shall have 10 business days from the date the additional information is received to inform the applicant that the plan and maintenance agreement are either approved or disapproved.
 - (e) Failure by the Department of Public Works to inform the permit applicant of a decision within 30 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.
- (4) PERMIT REQUIREMENTS. All permits issued under this ordinance shall be subject to the following conditions, and holders of permits issued under this ordinance shall be deemed to have accepted these conditions. The Department of Public Works may suspend or revoke a permit for violation of a permit condition, following written notification of the responsible party. An action by the Department of Public Works to suspend or revoke this permit may be appealed in accordance with Chapter 31.16.
 - (a) Compliance with this permit does not relieve the responsible party of the responsibility to comply with other applicable federal, state, and local laws and regulations.
 - (b) The responsible party shall design and install all structural and non-structural storm water management measures in accordance with the approved storm water management plan and this permit.
 - (c) The responsible party shall notify the Department of Public Works at least 2 business days before commencing any work in conjunction with the storm water management plan, and within 14 business days upon completion of the storm water management practices. If

required as a special condition under Chapter 31.09 (5), the responsible party shall make additional notification according to a schedule set forth by the Department of Public Works so that practice installations can be inspected during construction.

- (d) Practice installations required as part of this ordinance shall be certified "as built" by a licensed professional engineer. Completed storm water management practices must pass a final inspection by the Department of Public Works or its designee to determine if they are in accordance with the approved storm water management plan and ordinance. The Department of Public Works or its designee shall notify the responsible party in writing of any changes required in such practices to bring them into compliance with the conditions of this permit.
 - (e) The responsible party shall notify the Department of Public Works of any significant modifications it intends to make to an approved storm water management plan. The Department of Public Works may require that the proposed modifications be submitted to it for approval prior to incorporation into the storm water management plan and execution by the responsible party.
 - (f) The responsible party shall maintain all storm water management practices in accordance with the storm water management plan until the practices either become the responsibility of Sister Bay, or are transferred to subsequent private owners as specified in the approved maintenance agreement.
 - (g) The responsible party authorizes the Department of Public Works to perform any work or operations necessary to bring storm water management measures into conformance with the approved storm water management plan, and consents to a special assessment or charge against the property as authorized under subch. VII of ch. 66, Wis. Stats., or to charging such costs against the financial guarantee posted under Chapter 31.13.
 - (h) If so directed by the Department of Public Works, the responsible party shall repair at the responsible party's own expense all damage to adjoining municipal facilities and drainage ways caused by runoff, where such damage is caused by activities that are not in compliance with the approved storm water management plan.
 - (i) The responsible party shall permit property access to the Department of Public Works or its designee for the purpose of inspecting the property for compliance with the approved storm water management plan and this permit.
 - (j) Where site development or redevelopment involves changes in direction, increases in peak rate and/or total volume of runoff from a site, the Department of Public Works may require the responsible party to make appropriate legal arrangements with affected property owners concerning the prevention of endangerment to property or public safety.
 - (k) The responsible party is subject to the enforcement actions and penalties detailed in Chapter 31.15, if the responsible party fails to comply with the terms of this permit.
- (5) PERMIT CONDITIONS. Permits issued under this subsection may include conditions established by Department of Public Works in addition to the requirements needed to meet the performance standards in Chapter 31.08 or a financial guarantee as provided for in Chapter 31.13.
- (6) PERMIT DURATION. Permits issued under this section shall be valid from the date of issuance through the date the Department of Public Works notifies the responsible party that all storm water management practices have passed the final inspection required under Chapter 31.09 (4)(d).

31.10 STORM WATER MANAGEMENT PLAN.

- (1) PLAN REQUIREMENTS. The storm water management plan required under Chapter 31.09 (2) shall contain at a minimum the following information:

- (a) Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of storm water management practices; and person(s) responsible for maintenance of storm water management practices prior to the transfer, if any, of maintenance responsibility to another party.
- (b) A proper legal description of the property proposed to be developed, referenced to the U.S. Public Land Survey system or to block and lot numbers within a recorded land subdivision plat.
- (c) Pre-development site conditions, including:
1. One or more site maps at a scale of not to exceed 1 inch equals 50 feet. The site maps shall show the following: site location and legal property description; predominant soil types and hydrologic soil groups; existing cover type and condition; topographic contours of the site at a scale not to exceed 2 feet; topography and drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all storm water conveyance sections; watershed boundaries used in hydrology determinations to show compliance with performance standards; lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site; limits of the 100 year floodplain; location of wells and wellhead protection areas covering the project area and delineated pursuant to s. NR 811.16, Wis. Adm. Code.
 2. Hydrology and pollutant loading computations as needed to show compliance with performance standards. All major assumptions used in developing input parameters shall be clearly stated. The geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
 3. Infiltration system design information as described in the Wisconsin Department of Natural Resources Infiltration System Site Evaluation Standard.
- (d) Post-development site conditions, including:
1. Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.
 2. Explanation of any restrictions on storm water management measures in the development area imposed by wellhead protection plans and ordinances.
 3. One or more site maps at a scale of not to exceed 1 inch equals 50 feet showing the following: post-construction pervious areas including vegetative cover type and condition; impervious surfaces including all buildings, structures, and pavement; post-construction topographic contours of the site at a scale not to exceed 2 feet; post-construction drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; locations and dimensions of drainage easements; locations of maintenance easements specified in the maintenance agreement; flow path and direction for all storm water conveyance sections; location and type of all storm water management conveyance and treatment practices, including the on-site and off-site tributary drainage area; location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm drain, or natural drainage way; watershed boundaries used in hydrology and pollutant loading calculations and any changes to lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.

4. Hydrology and pollutant loading computations as needed to show compliance with performance standards. The computations shall be made for each discharge point in the development, and the geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
 5. Results of investigations of soils and groundwater required for the placement and design of storm water management measures. Detailed drawings including cross-sections and profiles of all permanent storm water conveyance and treatment practices.
- (e) A description and installation schedule for the storm water management practices needed to meet the performance standards in Chapter 31.08.
 - (f) A maintenance and inspection plan developed for the life of each storm water management practice including the required inspection and maintenance activities, and anticipated maintenance activity schedule.
 - (g) Cost estimates for the construction, operation, and maintenance of each storm water management practice.
 - (h) Other information requested in writing by the Department of Public Works to determine compliance of the proposed storm water management measures with the provisions of this ordinance.
 - (i) All site investigations, plans, designs, computations, and drawings shall be certified by a licensed professional engineer to be prepared in accordance with accepted engineering practice and requirements of this ordinance.
- (2) ALTERNATE REQUIREMENTS. The Department of Public Works may prescribe alternative submittal requirements for applicants seeking an exemption to on-site storm water management performance standards under Chapter 31.08 (5).

31.11 MAINTENANCE AND INSPECTION AGREEMENT.

- (1) MAINTENANCE AND INSPECTION AGREEMENT REQUIRED. The maintenance and inspection agreement required under Chapter 31.09 (2) for storm water management practices shall be an agreement between the Department of Public Works and the responsible party to provide for maintenance of storm water practices beyond the duration period of this permit. The maintenance and inspection agreement shall be filed with the County Register of Deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the storm water management practices.
- (2) AGREEMENT PROVISIONS. The maintenance and inspection agreement shall contain the following information and provisions and be consistent with the maintenance and inspection plan required by Chapter 31.10(1)(f):
 - (a) Identification of the storm water facilities and designation of the drainage area served by the facilities.
 - (b) A schedule for regular inspection and maintenance of each aspect of the storm water management system consistent with the storm water management plan required under Chapter 31.09 (2).
 - (c) Identification of the responsible party(s), organization or Village, county, town or village responsible for long term inspection and maintenance of the storm water management practices identified in the storm water management plan required under Chapter 31.09 (2).
 - (d) Requirement that the responsible party(s), organization, or Village, county, town or village shall maintain storm water management practices in accordance with the schedule included in Chapter 31.11 (2) (b).

- (e) Authorization for the Department of Public Works to access the property to conduct inspections of storm water management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.
- (f) A requirement on the Department of Public Works to maintain public records of the results of the site inspections, to inform the responsible party responsible for maintenance of the inspection results, and to specifically indicate any corrective actions required to bring the storm water management practice into proper working condition.
- (g) Agreement that the party designated under Chapter 31.11 (2) (c), as responsible for long term maintenance of the storm water management practices, shall be notified by the Department of Public Works of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the Department of Public Works.
- (h) Authorization of the Department of Public Works to perform the corrected actions identified in the inspection report if the responsible party designated under Chapter 31.11 (2) (c) does not make the required corrections in the specified time period. The Department of Public Works shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to subch. VII of ch. 66, Wis. Stats.

31.12 ILLEGAL DISCHARGES AND ILLICIT CONNECTIONS.

- (1) **DISCHARGES PROHIBITED.** No person may discharge, spill or dump pollutants, substances or materials which are not entirely composed of storm water into waters of the state, storm sewers or drainage facilities, or onto driveways, sidewalks, parking lots or other areas that drain into the storm water system.
- (2) **EXCEPTIONS.** The following are exempt from the provisions of this section unless found to have an adverse impact on storm water:
 - (a) Discharges authorized by a permit issued by the Wisconsin Department of Natural Resources.
 - (b) Discharges resulting from fire fighting activities, excluding training activities.
 - (c) Discharges from uncontaminated groundwater, potable water source, roof drains, foundation drains and sump pumps, lawn watering, individual residential car washing, water main and hydrant flushing, and individual residential swimming pools if the water has been dechlorinated.
- (3) **ILLICIT CONNECTIONS PROHIBITED.** The construction, use, maintenance or continued existence of illicit connections to the storm water system is prohibited. The prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
 - (a) **VIOLATION.** A person is considered to be in violation of this ordinance if the person connects a line conveying sewage or other non storm water discharges not exempted by Chapter 31.12 (2) to the storm water system, or allows such a connection to continue.
- (4) **Notice of Violation.** Whenever the Department of Public Works finds that a person has violated a prohibition or failed to meet a requirement of this Section, the Department of Public Works may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:
 - (a) The performance of monitoring, analyses, and reporting;
 - (b) The elimination of illicit connections or discharges;

- (c) That violating discharges, practices, or operations shall cease and desist;
- (d) The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
- (e) Payment of a fine to cover administrative and remediation costs; and
- (f) The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

(5) Appeal of Notice of Violation.

Any person receiving a Notice of Violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within 10 business days from the date of the Notice of Violation. Hearing on the appeal before the appropriate authority or his/her designee shall take place within 15 business days from the date of receipt of the notice of appeal. The decision of the municipal authority or their designee shall be final.

(6) Enforcement Measures After Appeal.

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, 15 business days within days of the decision of the Department of Public Works upholding the decision of the authorized enforcement agency, then representatives of the Department of Public Works shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the Department of Public Works or designated contractor to enter upon the premises for the purposes set forth above.

(7) Cost of Abatement of the Violation.

Within 15 business days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within 15 business days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the Village by reason of such violation.

(8) Violations Deemed A Public Nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily

abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

31.13 FINANCIAL GUARANTEE.

- (1) ESTABLISHMENT OF THE GUARANTEE. The Department of Public Works may require the submittal of a financial guarantee, the form and type of which shall be acceptable to the Department of Public Works. The financial guarantee shall be in an amount determined by the Department of Public Works to be the estimated cost of construction and the estimated cost of

maintenance of the storm water management practices during the period which the designated party in the maintenance agreement has maintenance responsibility. The financial guarantee shall give the Department of Public Works the authorization to use the funds to complete the storm water management practices if the responsible party defaults or does not properly implement the approved storm water management plan, upon written notice to the responsible party by the administering authority that the requirements of this ordinance have not been met.

- (2) **CONDITIONS FOR RELEASE.** Conditions for the release of the financial guarantee are as follows:
- (a) The Department of Public Works shall release the portion of the financial guarantee established under this section, less any costs incurred by the Department of Public Works to complete installation of practices, upon submission of "as built plans" by a licensed professional engineer. The Department of Public Works may make provisions for a partial pro-rata release of the financial guarantee based on the completion of various development stages.
 - (b) The Department of Public Works shall release the portion of the financial guarantee established under this section to assure maintenance of storm water practices, less any costs incurred by the Department of Public Works, at such time that the responsibility for practice maintenance is passed on to another entity via an approved maintenance agreement.

31.14 FEE SCHEDULE.

The fees referred to in other sections of this ordinance shall be established by the Board of Public Works and may from time to time be modified by resolution. A schedule of the fees established by the Board of Public Works shall be available for review at the Department of Public Works.

31.15 ENFORCEMENT.

- (1) Any land disturbing construction activity or post-construction runoff initiated after the effective date of this ordinance by any person, firm, association, or corporation subject to the ordinance provisions shall be deemed a violation unless conducted in accordance with the requirements of this ordinance.
- (2) The Department of Public Works shall notify the responsible party by certified mail of any non-complying land disturbing construction activity or post-construction runoff. The notice shall describe the nature of the violation, remedial actions needed, a schedule for remedial action, and additional enforcement action which may be taken.
- (3) Upon receipt of written notification from the Department of Public Works under Chapter 31.15 (2), the responsible party shall correct work that does not comply with the storm water management plan or other provisions of this permit. The responsible party shall make corrections as necessary to meet the specifications and schedule set forth by the Department of Public Works in the notice.
- (4) If the violations to a permit issued pursuant to this ordinance are likely to result in damage to properties, public facilities, or waters of the state, the Department of Public Works may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the Department of Public Works plus interest and legal costs shall be billed to the responsible party.
- (5) The Department of Public Works is authorized to post a stop work order on all land disturbing construction activity that is in violation of this ordinance, or to request the municipal attorney to obtain a cease and desist order in any court with jurisdiction.
- (6) The Department of Public Works may revoke a permit issued under this ordinance for non-compliance with ordinance provisions.

- (7) Any permit revocation, stop work order, or cease and desist order shall remain in effect unless retracted by the Department of Public Works or by a court with jurisdiction.
- (8) The Department of Public Works is authorized to refer any violation of this ordinance, or of a stop work order or cease and desist order issued pursuant to this ordinance, to the municipal attorney for the commencement of further legal proceedings in any court with jurisdiction.
- (9) Any person, firm, association, or corporation who does not comply with the provisions of this ordinance shall be subject to a forfeiture of not less than 250.00 dollars or more than 500.00 dollars per offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.
- (10) Compliance with the provisions of this ordinance may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctive proceedings.
- (11) When the Department of Public Works determines that the holder of a permit issued pursuant to this ordinance has failed to follow practices set forth in the storm water management plan, or has failed to comply with schedules set forth in said storm water management plan, the Department of Public Works or a party designated by the Department of Public Works may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The Department of Public Works shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any financial security posted pursuant to Chapter 31.13 of this ordinance. Where such a security has not been established, or where such a security is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special charge against the property and collected with any other taxes levied thereon for the year in which the work is completed.

31.16 APPEALS.

- (1) **BOARD OF PUBLIC WORKS.** The board of public works, created pursuant to Chapter 1.17 of Sister Bay ordinances pursuant to s. 62.23(7)(e), Wis. Stats, shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the Department of Public Works in administering this ordinance. The board shall also use the rules, procedures, duties, and powers authorized by statute in hearing and deciding appeals. Upon appeal, the board may authorize variances from the provisions of this ordinance that are not contrary to the public interest, and where owing to special conditions a literal enforcement of the ordinance will result in unnecessary hardship.
- (2) **WHO MAY APPEAL.** Appeals to the board of public works may be taken by any aggrieved person or by an officer, department, board, or bureau of Sister Bay affected by any decision of the Department of Public Works.

31.17 SEVERABILITY.

If any section, clause, provision or portion of this ordinance is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of the ordinance shall remain in force and not be affected by such judgment.

31.18 EFFECTIVE DATE.

This ordinance shall be in force and effect from and after its adoption and publication. The above and foregoing ordinance was duly adopted by the Village Board of Sister Bay on the ____th day of _____, 200_.

First Reading _____
_____ Trustee

Second Reading _____

Adopted _____

Approved _____
President

Attest _____
Village Clerk

Published _____

SAMPLE

**AN ORDINANCE TO CREATE CHAPTER XX OF THE CODE OF ORDINANCES OF
SISTER BAY RELATING TO THE CONTROL OF CONSTRUCTION SITE EROSION
RESULTING FROM LAND DISTURBING CONSTRUCTION ACTIVITIES**

FOREWORD

The Village Board of Sister Bay finds that urbanizing land uses have accelerated the process of soil erosion and sediment deposition within water bodies in the Village. During the construction process, soil is the most vulnerable to erosion by wind and water. Soil erosion from land disturbing and land development activities have significant adverse impacts upon area water resources and the health, safety, property and general welfare of the community, and diminish the public enjoyment and use of natural resources. Specifically, soil erosion can:

1. Endanger water resources by reducing water quality;
2. Cause the siltation of streams, lakes, wetlands or aquatic habitat for fish and other desirable species;
3. Diminish the capacity of water resources to support protected uses and a natural diversity of plant and animal life.
4. Clog existing drainage systems, increasing maintenance problems and costs;
5. Clearing during construction causes the loss of native vegetation necessary for terrestrial and aquatic habitat;

The purpose of the local regulation is to safeguard persons, protect property, prevent damage to the environment and promote the public welfare by guiding, regulating, and controlling the design, construction, use, and maintenance of any development or other activity which disturbs the topsoil or results in the movement of earth on land in the Village. The intent of this ordinance is to require use of best management practices to reduce the amount of sediment and other pollutants resulting from land disturbing construction activities on sites. The intent of this ordinance is also to allow the Village to comply with construction site performance standards for new development and redevelopment contained in subchapters III and IV of ch. NR 151, Wis. Adm. Code.

The Village Board of Sister Bay does hereby ordain that Chapter 30 of the code of ordinances of the Sister Bay is created to read as follows:

CHAPTER 30

CONSTRUCTION SITE EROSION CONTROL ORDINANCE

- 30.01 Authority.
- 30.02 Findings of Fact.
- 30.03 Purpose.
- 30.04 Applicability and Jurisdiction.
- 30.05 Permitting or Causing Erosion Prohibited
- 30.06 Definitions.
- 30.07 Technical Standards.
- 30.08 Performance Standards.
- 30.09 Post Construction Storm Water Management
- 30.10 Permitting Requirements, Procedures and Fees.
- 30.11 Erosion and Sediment Control Plan, Statement, and Amendments.
- 30.12 Fee Schedule.
- 30.13 Inspection.
- 30.14 Enforcement.
- 30.15 Appeals.
- 30.16 Severability.
- 30.17 Effective Date.

CONSTRUCTION SITE EROSION**30.01 AUTHORITY.**

- (1) This ordinance is adopted under the authority granted by s. 62.234, Wis. Stats. Except as otherwise specified in s. 62.234 Wis. Stats., s. 62.23, Wis. Stats., applies to this ordinance and to any amendments to this ordinance.
- (2) The provisions of this ordinance are deemed not to limit any other lawful regulatory powers of the same governing body.
- (3) The Village Board hereby designates the administering authority for the Village to administer and enforce the provisions of this ordinance to be the Public Works Department for plan review and Village Inspector for construction oversight.
- (4) The requirements of this ordinance do not pre-empt more stringent erosion and sediment control or requirements that may be imposed by any of the following:
 - (a) Wisconsin Department of Natural Resources administrative rules, permits or approvals including those authorized under ss. 281.16 and 283.33, Wis. Stats.
 - (b) Targeted non-agricultural performance standards promulgated in rules by the Wisconsin Department of Natural Resources under s. NR 151.004, Wis. Adm. Code.

30.02 FINDINGS OF FACT.

The Village Board finds that runoff from land disturbing construction activity carries a significant amount of sediment and other pollutants to the waters of the state in Sister Bay.

30.03 PURPOSE.

It is the purpose of this ordinance to further the maintenance of safe and healthful conditions; prevent and control water pollution; prevent and control soil erosion; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth, by minimizing the amount of sediment and other pollutants carried by runoff or discharged from land disturbing construction activity to waters of the state in Sister Bay.

30.04 APPLICABILITY AND JURISDICTION.**(1) APPLICABILITY.**

- (a) This ordinance applies to the following land disturbing construction activities except as provided under Chapter 30.04(1) (b):
 1. A construction site, which has land disturbing construction activity.
 2. The disturbed area has a slope of twelve percent (12%) or greater regardless of the size of the site.
 3. Filling of one or more acres of land.
- (b) This ordinance does not apply to the following:
 1. A construction project that is exempted by federal statutes or regulations from the requirement to have a national pollutant discharge elimination system permit issued under chapter 40, Code of Federal Regulations, part 122, for land disturbing construction activity.
 2. Nonpoint discharges from agricultural facilities and practices.
 3. Nonpoint discharges from silviculture activities.
 4. Routine maintenance for project sites under 1 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility, unless land slopes are twelve percent (12%) or greater.

- (c) Notwithstanding the applicability requirements in paragraph (a), this ordinance applies to construction or fill sites of any size that, in the opinion of the Public Works Department, are likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.
- (2) JURISDICTION.
This ordinance applies to land disturbing construction activities on lands within the corporate limits and jurisdiction of Sister Bay as well as all lands located within the extraterritorial plat approval jurisdiction of Sister Bay.
- (3) EXCLUSIONS AND CLARIFICATIONS.
 - (a) The following activities are exempt from the construction site erosion control requirements of this Chapter:
 - 1. This ordinance is not applicable to construction activities conducted by a state agency for state owned projects, as defined under s. 227.01 (1), Wis. Stats., but also including the office of district attorney, which is subject to the state plan promulgated or a memorandum of understanding entered into under s. 281.33 (2), Wis. Stats.
 - (b) Notwithstanding the language of Chapter 30.04 (3)(a)1., the following activities are subject to the requirements of this ordinance:
 - 1. Development of ponds or infiltration facilities, storm water systems or sewers, channelized water courses and commercial or institutional parks. However, the Public Works Department may certify that an Erosion and Sediment Control Plan developed by a state agency meets the requirements of this ordinance.
 - (c) The following activities are subject to the requirements of this ordinance:
 - 1. Buildings and activities of municipalities
 - 2. Buildings and activities of the School District
 - 3. Local highway projects
 - 4. Municipal streets
 - 5. County roadways

30.05 PERMITTING OR CAUSING EROSION PROHIBITED

No person shall cause or permit erosion or the tracking or dropping of soil or sediment deposits on adjacent land, public streets or bodies of water from any land whether otherwise subject to this ordinance or not.

30.06 DEFINITIONS.

- (1) “Administering authority” means a Village employee that is designated by the Village Board to administer this ordinance. The Public Works Department is designated this authority for plan review and issuing the permit. The Village Inspector is designated this authority for construction oversight. In the absence of the Village Inspector the Public Works Department is designated for construction oversight.
- (2) “Agricultural facilities and practices ” has the meaning in s. 281.16(1), Wis. Stats.
- (3) “Average annual rainfall” means a calendar year of precipitation, excluding snow, which is considered typical.
- (4) ”Best management practice” or “BMP” means structural or non–structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.
- (5) “Business day” means a day the office of the [administering authority] is routinely and customarily open for business.

- (6) “Cease and desist order” means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit.
- (7) “Construction site” means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger Common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan.
- (8) “Division of land” means the creation from one parcel of two or more parcels or building sites where such creation occurs at one time or through the successive partition within a 5 year period.
- (9) “Erosion” means the process by which the land’s surface is worn away by the action of wind, water, ice or gravity.
- (10) “Erosion and sediment control plan” means a comprehensive plan developed to address pollution caused by erosion and sedimentation of soil particles or rock fragments during construction.
- (11) “Extraterritorial” means the unincorporated area within 3 miles of the Sister Bay corporate limits.
- (12) “Final stabilization” means that all land disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established, with a density of at least 70 percent of the cover, for the unpaved areas and areas not covered by permanent structures, or that employ equivalent permanent stabilization measures.
- (13) “Governing body” means the Village council.
- (14) “Land disturbing construction activity” means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non- vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.
- (15) “MEP” or “maximum extent practicable” means a level of implementing best management practices in order to achieve a performance standard specified in this Chapter which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. MEP allows flexibility in the way to meet the performance standards and may vary based on the performance standard and site conditions.
- (16) “Performance standard” means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.
- (17) “Permit” means a written authorization made by the Public Works Department to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.
- (18) “Pollutant” has the meaning given in s. 283.01 (13), Wis. Stats.
- (19) “Pollution” has the meaning given in s. 281.01 (10), Wis. Stats.
- (20) “Responsible party” means any entity holding fee title to the property or performing services to meet the performance standards of this ordinance through a contract or other agreement.
- (21) “Runoff” means storm water or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.
- (22) “Sediment” means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.
- (23) “Separate storm sewer” means a conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:
 - (a) Is designed or used for collecting water or conveying runoff.
 - (b) Is not part of a combined sewer system.
 - (c) Is not draining to a storm water treatment device or system.
 - (d) Discharges directly or indirectly to waters of the state.

- (24) "Site" means the entire area included in the legal description of the land on which the land disturbing construction activity is proposed in the permit application.
- (25) "Stop work order" means an order issued by the Village Inspector which requires that all construction activity on the site be stopped.
- (26) "Technical standard" means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.
- (27) "Waters of the state" has the meaning given in s. 281.01 (18), Wis. Stats.

30.07 TECHNICAL STANDARDS.

(1) STANDARDS AND SPECIFICATIONS.

All BMPs required to comply with this ordinance shall meet the design criteria, standards and specifications based on any of the following:

- (a) Applicable design criteria, standards and specifications identified in the Wisconsin Construction Site Best Management Practice Handbook, WDNR Pub. WR-222 November 1993 Revision, or its successors.
 - (b) Other design guidance and technical standards identified or developed by the Wisconsin Department of Natural Resources under subchapter V of chapter NR 151, Wis. Adm. Code.
 - (c) Conservation practice standards maintained by the Standards Oversight Council or cooperating agency.
 - (d) For this ordinance, average annual basis is calculated using the appropriate annual rainfall or runoff factor, also referred to as the R factor, or an equivalent design storm using a NRCS type II distribution, with consideration given to the period of disturbance.
 - (e) U.S. Natural Resources Conservation Service's "Field Office Technical Guide;" or its successor.
 - (f) U.S. Natural Resources Conservation Service's Engineering Field Manual for Conservation Practices.
 - (g) U.S. Natural Resources Conservation Service's Engineering Handbook.
- (2) DESIGN CRITERIA. The applicant for a permit may employ structural or nonstructural measures necessary to achieve all applicable standards set out in this ordinance. However, these measures will be evaluated to determine that they follow currently accepted design criteria and engineering standards. The following general principles shall be used when evaluating control plans and granting permits under this ordinance:
- (a) The smallest area of land shall be exposed for the shortest period at any given time during development.
 - (b) The rough grading of the lot shall include backfilling the basement. All excess earth shall be hauled off the lot before the end of construction.
 - (c) Control of the increased runoff and pollutants caused by changed soil and surface conditions during and after development.
 - (d) The plan of development shall relate to the topography and soils of the site so that the lowest potential for erosion is created.
 - (e) Clearing activities shall consider protection of natural resources such as trees, wetlands and water bodies.
 - (f) Grading shall retain natural drainage patterns.
 - (g) Phasing shall be required on all disturbed sites greater than thirty acres, with the size of each phase to be established during plan review.
 - (h) Soil must be stabilized within five days of clearing or inactivity in construction.
 - (i) Soil stockpiles must be stabilized or covered at the end of each work day.
 - (j) At the close of the construction season, the entire site must be stabilized using a method that does not require germination to control erosion.
 - (k) Techniques shall be employed to prevent the blowing of dust or sediment from the site.

- (1) Techniques that divert runoff around disturbed areas shall be employed.
- (3) OTHER TECHNICAL STANDARDS. Other technical standards not identified or developed in Chapter 30.07 (1), may be used provided that the methods have been approved by the Public Works Department.

30.08 PERFORMANCE STANDARDS.

- (1) RESPONSIBLE PARTY. The responsible party shall implement an erosion and sediment control plan, developed in accordance with Chapter 30.11, that incorporates the requirements of this section.
- (2) PLAN. A written plan shall be developed in accordance with Chapter 30.11 and implemented for each construction site.
- (3) EROSION AND OTHER POLLUTANT CONTROL REQUIREMENTS. The plan required under Chapter 30.08 (2) shall include the following:
 - (a) BMPs that, by design, achieve to the maximum extent practicable, a reduction of 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment or erosion controls until the construction site has undergone final stabilization. No person shall be required to exceed an 80% sediment reduction to meet the requirements of this paragraph. Erosion and sediment control BMPs may be used alone or in combination to meet the requirements of this paragraph. Credit toward meeting the sediment reduction shall be given for limiting the duration or area, or both, of land disturbing construction activity, or other appropriate mechanism.
 - 1. Soil loss prediction tools that estimate the sediment load leaving the construction site under varying land and management conditions, or methodology identified in subch. V. of ch. NR 151, Wis. Adm. Code, may be used to calculate sediment reduction.
 - (b) Notwithstanding Chapter 30.08 (3) (a), if BMPs cannot be designed and implemented to reduce the sediment load by 80%, on an average annual basis, the plan shall include a written and site-specific explanation as to why the 80% reduction goal is not attainable and the sediment load shall be reduced to the maximum extent practicable.
 - (c) Where appropriate, the plan shall include sediment controls to do all of the following to the maximum extent practicable:
 - 1. Prevent tracking of sediment from the construction site onto roads and other paved surfaces.
 - 2. Prevent the discharge of sediment as part of site de-watering.
 - 3. Protect the separate storm drain inlet structure from receiving sediment.
 - (d) The use, storage and disposal of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period, to prevent their entrance into waters of the state. However, projects that require the placement of these materials in waters of the state, such as constructing bridge footings or BMP installations, are not prohibited by this paragraph.
- (4) LOCATION. The BMPs used to comply with this section shall be located prior to runoff entering waters of the state.
- (5) ALTERNATE REQUIREMENTS. The Public Works Department may establish storm water management requirements more stringent than those set forth in this section if the Public Works Department determines that an added level of protection is needed for sensitive resources.

30.09 POST CONSTRUCTION STORM WATER MANAGEMENT

- (1) POST CONSTRUCTION STORM WATER MANAGEMENT. Construction sites required to meet the requirements of this ordinance shall also meet the requirements of Chapter 31, Storm Water Management, of the Village Code of Ordinances.

30.10 PERMITTING REQUIREMENTS, PROCEDURES AND FEES.

- (1) PERMIT REQUIRED. No responsible party may Commence a land disturbing construction activity subject to this ordinance without receiving prior approval of an erosion and sediment control plan for the site and a permit from the Public Works Department.
- (2) PERMIT APPLICATION AND FEES. At least one responsible party desiring to undertake a land disturbing construction activity subject to this ordinance shall submit an application for a permit and an erosion and sediment control plan that meets the requirements of Chapter 30.11 and shall pay an application fee that is determined by the Board of Public Works to the Public Works Department. By submitting an application, the applicant is authorizing the Public Works Department to enter the site to obtain information required for the review of the erosion and sediment control plan.
- (3) REVIEW AND APPROVAL OF PERMIT APPLICATION. The Public Works Department shall review any permit application that is submitted with an erosion and sediment control plan, and the required fee. The following approval procedure shall be used:
 - (a) Within 30 business days of the receipt of a complete permit application, as required by Chapter 30.10 (2), the Public Works Department shall inform the applicant whether the application and plan are approved or disapproved based on the requirements of this ordinance.
 - (b) If the permit application and plan are approved, the Public Works Department shall issue the permit.
 - (c) If the permit application or plan is disapproved, the Public Works Department shall state in writing the reasons for disapproval.
 - (d) The Public Works Department may request additional information from the applicant. If additional information is submitted, the Public Works Department shall have 10 business days from the date the additional information is received to inform the applicant that the plan is either approved or disapproved.
 - (e) Failure by the Public Works Department to inform the permit applicant of a decision within 30 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.
- (4) SURETY BOND. As a condition of approval and issuance of the permit, the Public Works Department shall require the applicant to deposit a surety bond or irrevocable letter of credit to guarantee a good faith execution of the approved erosion control plan and any permit conditions.
- (5) PERMIT REQUIREMENTS. All permits shall require the responsible party to:
 - (a) Notify the Village Inspector a minimum of 2 business days prior to Commencing any land disturbing construction activity.
 - (b) Notify the Village Inspector of completion of any BMPs within 7 days after their installation.
 - (c) Obtain permission in writing from the Public Works Department prior to any modification pursuant to Chapter 30.08(3) of the Erosion and Sediment Control Plan.
 - (d) Install all BMPs as identified in the approved erosion and sediment control plan.
 - (e) Maintain all road drainage systems, stormwater drainage systems, BMPs and other facilities identified in the erosion and sediment control plan.
 - (f) Repair any siltation or erosion damage to adjoining surfaces and drainage ways resulting from land disturbing construction activities and document repairs in a site erosion control log.
 - (g) Inspect the BMPs within 24 hours after each rain of 0.5 inches or more which results in runoff during active construction periods, and at least once each week make needed repairs and document the findings of the inspections in a site erosion control log with the date of

inspection, the name of the person conducting the inspection, and a description of the present phase of the construction at the site.

- (h) Allow the Public Works Department and Village Inspector to enter the site for the purpose of inspecting compliance with the erosion and sediment control plan or for performing any work necessary to bring the site into compliance with the control plan. Keep a copy of the erosion and sediment control plan at the construction site.
- (6) PERMIT CONDITIONS. Permits issued under this section may include conditions established by Public Works Department in addition to the requirements set forth in Chapter 30.10 (5), where needed to assure compliance with the performance standards in Chapter 30.08.
- (7) PERMIT DURATION. Permits issued under this section shall be valid for a period of 180 days, or the length of the building permit or other construction authorizations, whichever is longer, from the date of issuance. The Public Works Department may extend the period one or more times for up to an additional 180 days. The Public Works Department may require additional BMPs as a condition of the extension if they are necessary to meet the requirements of this ordinance.
- (8) MAINTENANCE. The responsible party throughout the duration of the construction activities shall maintain all BMPs necessary to meet the requirements of this ordinance until the site has undergone final stabilization.
- (9) PERMIT TRANSFERS. A permit may be transferred to a new Responsible Party according to the following conditions:
 - (a) When a permittee and landowner act to transfer an interest in property subject to an approved plan prior to completion of the proposed steps to attain soil stabilization, the permittee must secure approval from the Administrative Authority.
 - (b) When a permittee and landowner transfers ownership, possession or control of real estate subject to either or both an uncompleted erosion control plan or stormwater management plan, the successor in interest to any portion of the real estate shall be responsible to control soil erosion and runoff and shall comply with the minimum standards provided in this ordinance.
 - (c) When ownership, possession or control of property subject to an uncompleted erosion control or stormwater management plan, or both, is transferred, the former owner (seller) shall notify the new owner (buyer) as to the current status of compliance with notice to the Administrative Authority, and provide a copy of the erosion control plan.
 - (d) Transfers of interest in real estate subject to an approved, uncompleted plan may be conducted consistent with this ordinance under any of the following arrangements.
 - 1. The transferee shall file a new, approved erosion control plan with the Administrative Authority;
 - 2. The transferee shall obtain an approved assignment from the Administrative Authority as sub-permittee to complete that portion of the approved plan regulating soil erosion and runoff on the transferee's property;
 - 3. The permittee shall provide the Administrative Authority with a duly completed and executed continuing surety bond or certified check in an amount sufficient to complete the work proposed in the approved plan; at the time of transfer the permittee may seek to reduce the surety bond or certified check to the appropriate amount to complete remaining work. If the transferor enters into escrow agreements with transferees to complete an approved plan, these funds shall be available to the Administrative Authority to attain plan compliance. When an approved erosion control plan and, if required, a stormwater management plan is or are not completed as proposed, the Administrative Authority may use the surety bond to complete remaining work to achieve plan compliance.

30.11 EROSION AND SEDIMENT CONTROL PLAN, STATEMENT, AND AMENDMENTS.

(1) EROSION AND SEDIMENT CONTROL PLAN.

- (a) An erosion and sediment control plan shall be prepared and submitted to the Public Works Department.
- (b) The erosion and sediment control plan shall be designed to meet the performance standards in Chapter 30.08 and other requirements of this ordinance.
- (c) The erosion and sediment control plan shall address pollution caused by soil erosion and sedimentation during construction and up to final stabilization of the site. The erosion and sediment control plan shall include, at a minimum, the following items:
 1. The name(s) and address(es) of the owner or developer of the site, and of any consulting firm retained by the applicant, together with the name of the applicant's principal contact at such firm. The application shall also include start and end dates for construction.
 2. Description of the site and the nature of the construction activity, including representation of the limits of land disturbance on a Village street map, or, for extraterritorial plat reviews, a United States Geological Service 7.5 minute series topographic map.
 3. A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
 4. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by construction activities.
 5. Estimates, including calculations, if any, of the runoff coefficient of the site before and after construction activities are completed.
 6. Calculations to show the expected percent reduction in the average annual sediment load carried in runoff as compared to no sediment or erosion controls.
 7. Existing data describing the surface soil as well as subsoils.
 8. Depth to groundwater, as indicated by existing information.
 9. Name of the immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps.
- (d) The erosion and sediment control plan shall include a site map. The site map shall include the following items and shall be at a scale not greater than 50 feet per inch and at a contour interval not to exceed two feet.
 1. Existing topography, vegetative cover, natural and engineered drainage systems, roads and surface waters. Lakes, streams, wetlands, channels, ditches and other watercourses on and immediately adjacent to the site shall be shown. Any identified 100-year flood plains, flood fringes and floodways shall also be shown.
 2. Boundaries of the construction site.
 3. Limits of disturbed areas.
 4. Limits of impervious surfaces.
 5. Drainage patterns and approximate slopes anticipated after major grading activities.
 6. Areas of soil disturbance.
 7. Location of structural and non-structural controls identified in the plan including dewatering measures.
 8. Location of areas where stabilization practices will be employed.
 9. Cross sections and profiles within road ditches.

10. Kinds of utilities and areas of installation, including special erosion control practices for utility installation.
 11. Culvert sizes.
 12. Plans and cross sections for storm water facilities.
 13. Watershed size for each drainage area.
 14. Design discharges for ditches and structural measures.
 15. Runoff velocities.
 16. Areas which will be vegetated following construction.
 17. Fertilizer and seed types, rates of applications and recommendations.
 18. Time schedule for stabilization of ditches and slopes.
 19. Provision for sequential steps mitigating erosive effect of land disturbing activities to be followed in appropriate order and in a manner consistent with accepted erosion control methodology suitable to proposed sites and amenable to prompt revegetation.
 20. Provisions such as stone access drives to prevent mud-tracking off-site onto public thoroughfares during the construction period and all incidental mud tracking shall be cleaned up and removed by the end of each working day using proper cleaning and disposal methods.
 21. Provision to provide protection of existing infiltration facilities from sedimentation, whether publicly or privately owned.
 22. Areal extent of wetland acreage on the site and locations where storm water is discharged to a surface water or wetland.
 23. Locations of all surface waters and wetlands within one mile of the construction site as depicted on existing maps.
 24. An alphanumeric or equivalent grid overlying the entire construction site map.
 25. Any other information necessary to reasonably determine the location, nature and condition of any physical or environmental features of the site.
- (e) Each erosion and sediment control plan shall include a description of appropriate controls and measures that will be performed at the site to prevent pollutants from reaching waters of the state. The plan shall clearly describe the appropriate control measures for each major activity and the timing during the construction process that the measures will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:
1. Description of interim and permanent stabilization practices, including a practice implementation schedule. Site plans shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized.
 2. Description of structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Unless otherwise specifically approved in writing by the Public Works Department, structural measures shall be installed on upland soils.
 3. Management of overland flow at all sites, unless otherwise controlled by outfall controls.
 4. Trapping of sediment in channelized flow.
 5. Staging construction to limit bare areas subject to erosion.
 6. Protection of downslope drainage inlets where they occur.
 7. Minimization of tracking at all sites.
 8. Clean up of off-site sediment deposits.
 9. Proper disposal of building and waste materials at all sites.
 10. Stabilization of drainage ways.
 11. Control of soil erosion from dirt stockpiles.

12. Installation of permanent stabilization practices as soon as possible after final grading.
13. Minimization of dust to the maximum extent practicable.
- (f) The erosion and sediment control plan shall require that velocity dissipation devices be placed at discharge locations and along the length of any outfall channel, as necessary, to provide a non-erosive flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.
- (2) EROSION AND SEDIMENT CONTROL PLAN STATEMENT. For each construction site identified under Chapter 30.04 (1), an erosion and sediment control plan statement shall be prepared. This statement shall be submitted to the Public Works Department. The control plan statement shall briefly describe the site, including a site map. Further, it shall also include the best management practices that will be used to meet the requirements of the ordinance, including the site development schedule.
- (3) AMENDMENTS. The applicant shall amend the plan if any of the following occur:
 - (a) There is a change in design, construction, operation or maintenance at the site which has the reasonable potential for the discharge of pollutants to waters of the state and which has not otherwise been addressed in the plan.
 - (b) The actions required by the plan fail to reduce the impacts of pollutants carried by construction site runoff.
 - (c) The Public Works Department notifies the applicant of changes needed in the plan.

30.12 FEE SCHEDULE.

The fees referred to in other sections of this ordinance shall be established by the Board of Public Works and may from time to time be modified by resolution. A schedule of the fees established by the Board of Public Works shall be available for review in the Village Engineers office.

30.13 INSPECTION.

If land disturbing construction activities are being carried out without a permit required by this ordinance, the Public Works Department or Village Inspector may enter the land pursuant to the provisions of ss. 66.0119(1), (2), and (3), Wis. Stats.

30.14 ENFORCEMENT.

- (1) The Village Inspector may post a stop-work order if any of the following occurs:
 - (a) Any land disturbing construction activity regulated under this ordinance is being undertaken without a permit.
 - (b) The erosion and sediment control plan is not being implemented in a good faith manner.
 - (c) The conditions of the permit are not being met.
- (2) If the responsible party does not cease activity as required in a stop-work order posted under this section or fails to comply with the erosion and sediment control plan or permit conditions, the Village Inspector or the Public Works Department may revoke the permit.
- (3) If the responsible party, where no permit has been issued, does not cease the activity after being notified by the Village Inspector, or if a responsible party violates a stop-work order posted under sub. (1), the Village Inspector may request the Village attorney to obtain a cease and desist order in any court with jurisdiction.
- (4) The Village Inspector may retract the stop-work order issued under Chapter 30.14 (1) or the permit revocation under Chapter 30.14 (2). Completion of or changes to the Erosion and Sediment Control required for permit compliance must be approved by the Public Works Department prior to retraction of the stop-work order.
- (5) After posting a stop-work order under Chapter 30.14 (1), the Village Inspector may issue a notice of intent to the responsible party of its intent to perform work necessary to comply with

this ordinance. The Public Works Department or Village Inspector may go on the land and Commence the work after issuing the notice of intent. The costs of the work performed under this subsection by the Sister Bay, plus interest at the rate authorized by the Sister Bay shall be billed to the responsible party. In the event a responsible party fails to pay the amount due, the clerk shall enter the amount due on the tax rolls and collect as a special assessment against the property pursuant to subch. VII of ch. 66, Wis. Stats.

- (6) Any person violating any of the provisions of this ordinance shall be subject to a forfeiture of not less than \$250.00 nor more than \$500.00 and the costs of prosecution for each violation. Each day a violation exists shall constitute a separate offense.
- (7) Compliance with the provisions of this ordinance may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctive proceedings.

30.15 APPEALS.

- (1) BOARD OF PUBLIC WORKS. The board of public works created pursuant to Chapter 1 of the Village's ordinance pursuant to s. 62.23(7)(e), Wis. Stats.:
 - (a) Shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the administering authority in administering this ordinance except for cease and desist orders obtained under Chapter 30.14 (3).
 - (b) Upon appeal, may authorize variances from the provisions of this ordinance which are not contrary to the public interest and where owing to special conditions a literal enforcement of the provisions of the ordinance will result in unnecessary hardship; and
 - (c) Shall use the rules, procedures, duties and powers authorized by statute in hearing and deciding appeals and authorizing variances.
- (2) WHO MAY APPEAL. Appeals to the board of public works may be taken by any aggrieved person or by any office, department, board, or bureau of the Sister Bay affected by any decision of the administering authority.

30.16 SEVERABILITY.

If a court of competent jurisdiction judges any section, clause, provision or portion of this ordinance unconstitutional or invalid, the remainder of the ordinance shall remain in force and not be affected by such judgment.

30.17 EFFECTIVE DATE.

This ordinance shall be in force and effect from and after its adoption and publication. The above and foregoing ordinance was duly adopted by the Village Board of the Sister Bay on the ___ day of _____ 200_.

Dated this ___ day of _____ 200_.

First Reading _____

Trustee

Second Reading _____

Adopted _____

Approved _____
President

Attest _____
Village Clerk

Published _____

SAMPLE

ILLCIT DISCHARGE PROGRAM PROPOSAL

I. PURPOSE

- Screening of storm water and system outfalls to identify possible illicit connections to the municipal storm water conveyance system.

II. PROGRAM GUIDELINES

- All inspections of the municipal storm water conveyance system for illicit discharges will be done during a low-flow period. (No rain events for the previous 72 hours).
- All known outfalls will be inspected on a periodic basis by Village Staff under the low flow conditions to determine if any unknown cross connections are present.
- The inspection reports will be logged and analyzed for changes that are occurring within the system.

III. DETECTION PROCEDURES

- During the annual inspections, if any unusual flow or possible contaminated discharge is observed, the following steps will be taken:
 - Identify the outfall, and possible connections to conveyance system.
 - If needed, collect a grab sample of the discharge and make observations that are pertinent for determination of the discharge.
 - If feasible, identify the cross connection point, or business and notify the appropriate person of the cross connection.
 - Determine a remediation process or method, and at this point the Wisconsin Department of Natural Resources will be advised of the illicit connection.
 - If someone can be held responsible for the illicit connections, they will have to take the appropriate actions or steps to correct the problem, if no person or group can be identified, the Village of Sister Bay or appropriate agency will begin the remediation process.

IV. PUBLIC AWARENESS

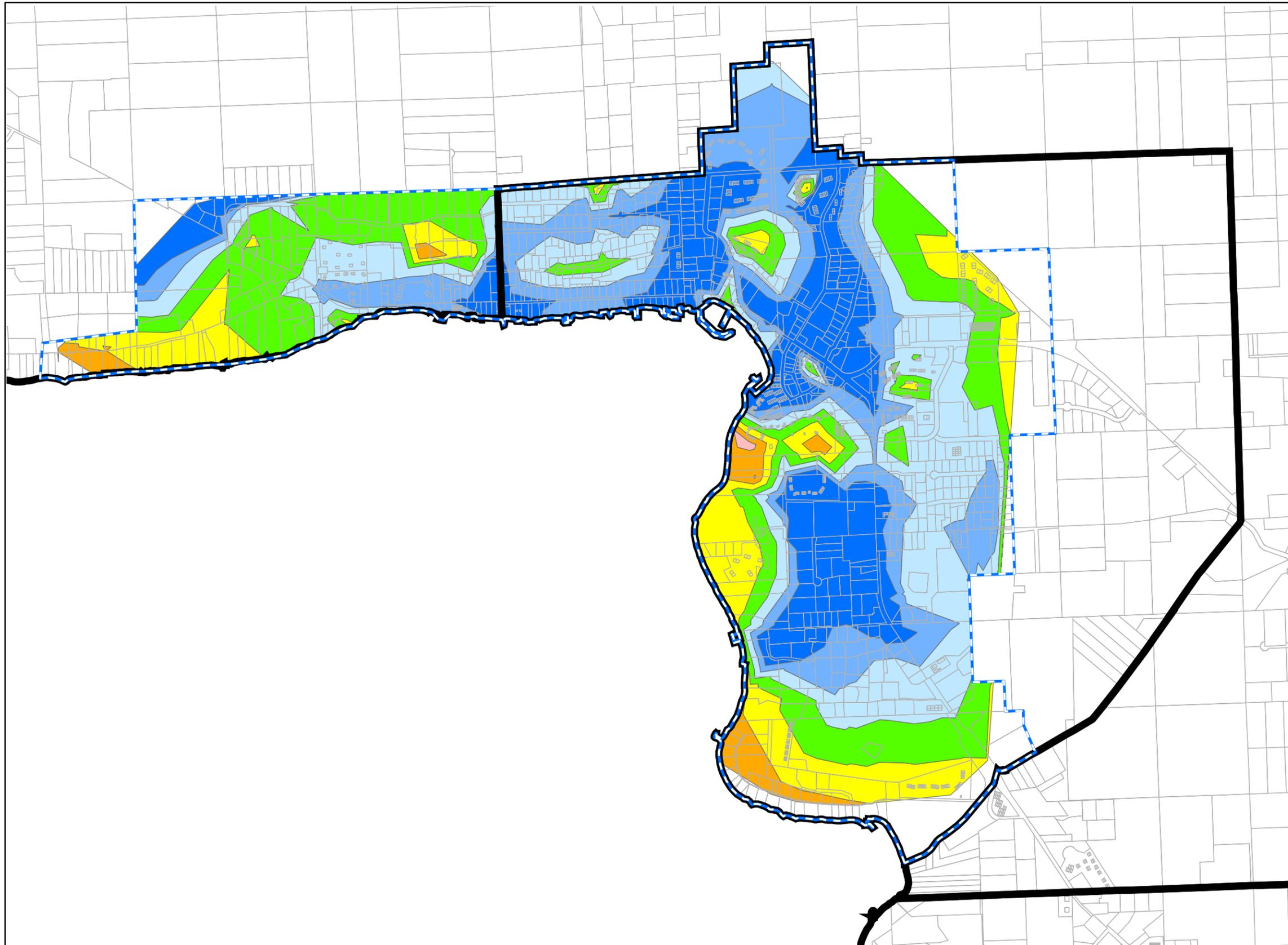
- Pamphlets will be made available on what to do when a member of the public finds an illicit discharge.
- Building inspections and general inspections will be done in areas where possible illicit connections could be present.
- During the building permit process, builders and contractors will be advised to contact the municipality if any illicit connections are found during the course of the projects.

SAMPLE

APPENDIX E

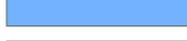
WATER SYSTEM PRESSURE AND FIRE FLOW MAPS

ALTERNATE NEW TOWER LOCATIONS



Legend

Maximum Day Fire Flow

-  0-500 gpm
-  500-1000 gpm
-  1000-1500 gpm
-  1500-2000 gpm
-  2000-2500 gpm
-  2500-3000 gpm
-  3000-3500 gpm
-  3500+ gpm
-  Municipal Boundaries
-  Parcels
-  Existing Water Service Area

Conditions:
 -Proposed Water Tower at Northern Site
 -Combined Pressure Zone



0 750 1,500
 Feet

Source:
 Door County and Bay Lake RPC.
 Projection:
 Wisconsin State Plane
 Map by:
 SEH

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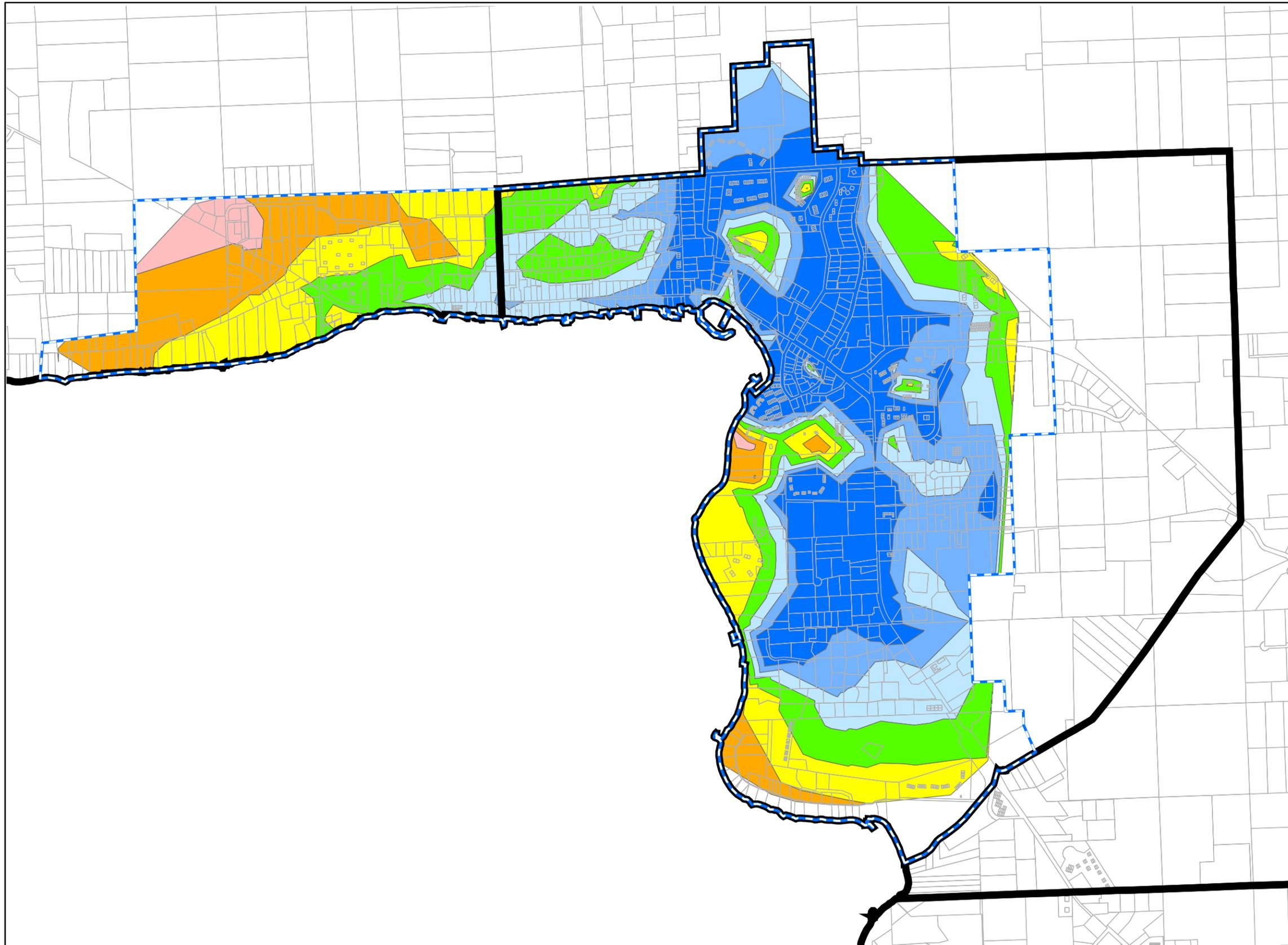
DATE:
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Maximum Day Available Fire Flow

Figure 1



Legend

Maximum Day Fire Flow

- 0-500 gpm
- 500-1000 gpm
- 1000-1500 gpm
- 1500-2000 gpm
- 2000-2500 gpm
- 2500-3000 gpm
- 3000-3500 gpm
- 3500+ gpm
- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at Standpipe Site
 -Combined Pressure Zone



0 750 1,500
 Feet

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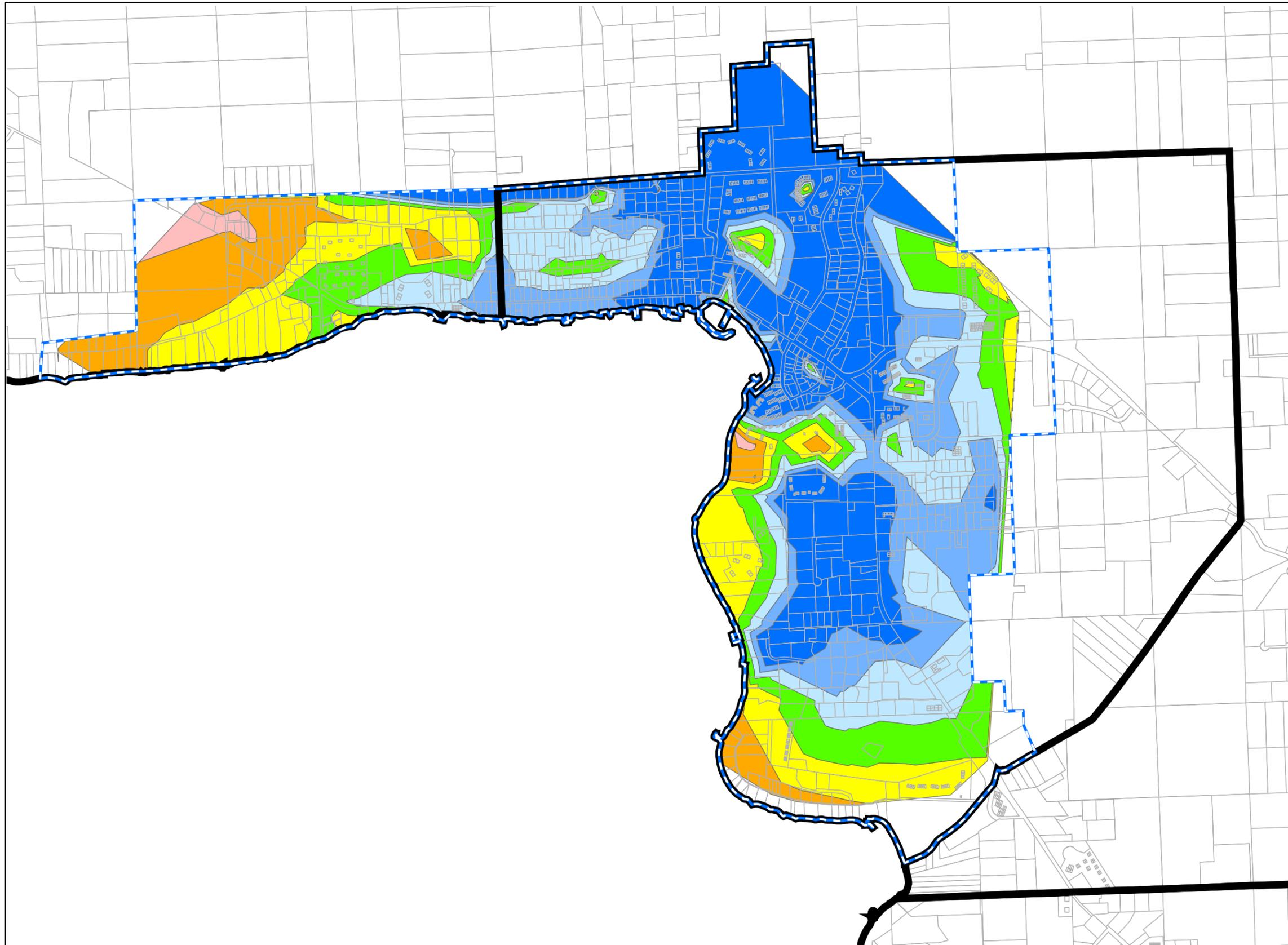
DATE:
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Maximum Day Available Fire Flow

Figure 2



Legend

Maximum Day Fire Flow

- 0-500 gpm
- 500-1000 gpm
- 1000-1500 gpm
- 1500-2000 gpm
- 2000-2500 gpm
- 2500-3000 gpm
- 3000-3500 gpm
- 3500+ gpm
- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at
 WWTP Site
 -Combined Pressure Zone



0 750 1,500
 Feet

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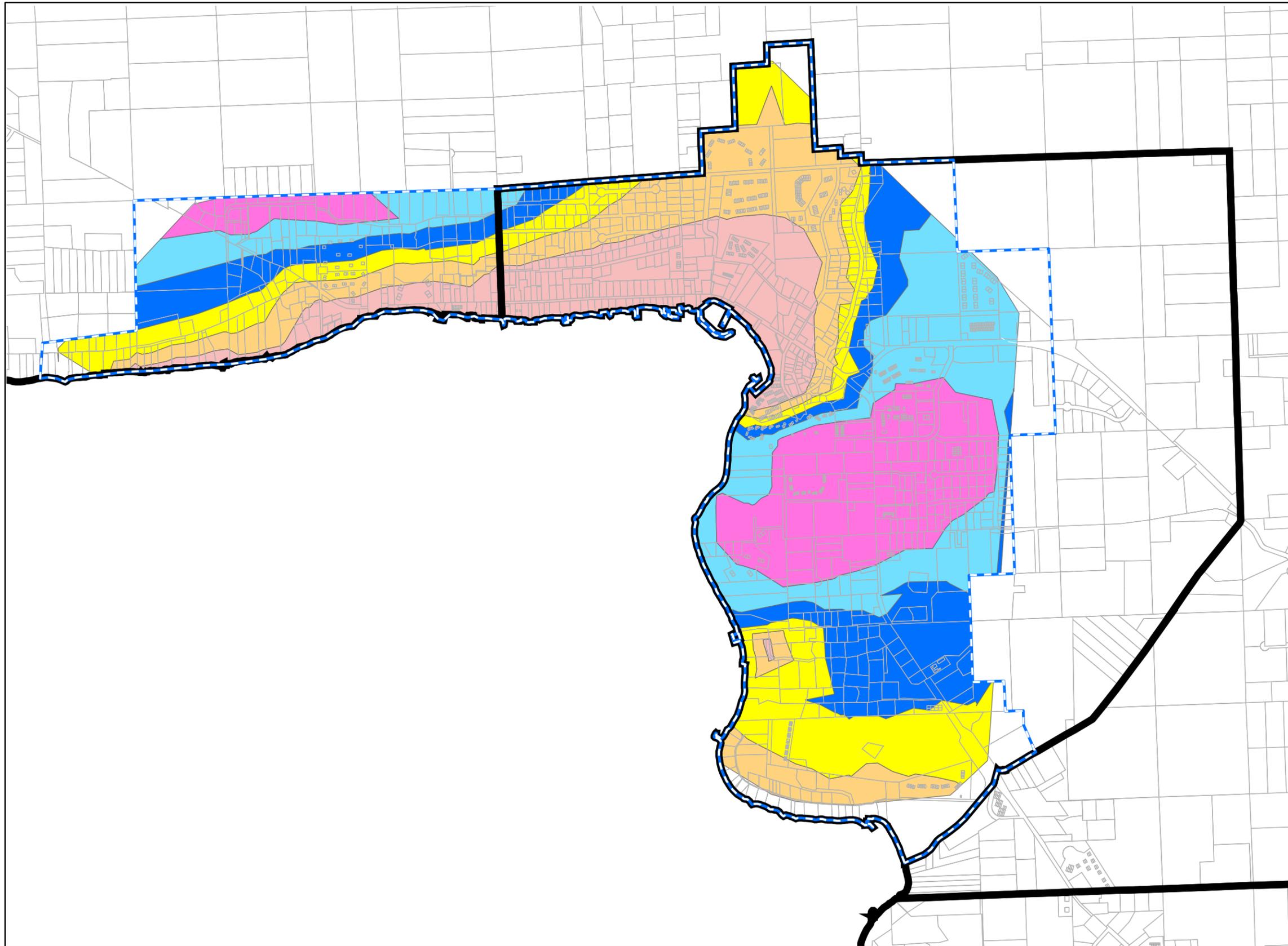
DATE:
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

**Maximum Day
 Available
 Fire Flow**

**Figure
 3**



Legend

Peak Hour Pressure

-  40-50 psi
-  50-60 psi
-  60-70 psi
-  70-80 psi
-  80-90 psi
-  90-100 psi
-  Municipal Boundaries
-  Parcels
-  Existing Water Service Area

Conditions:

- Proposed Water Tower at Northern Site
- Combined Pressure Zone



0 750 1,500
Feet

Source:
Door County and Bay Lake RPC.
Projection:
Wisconsin State Plane
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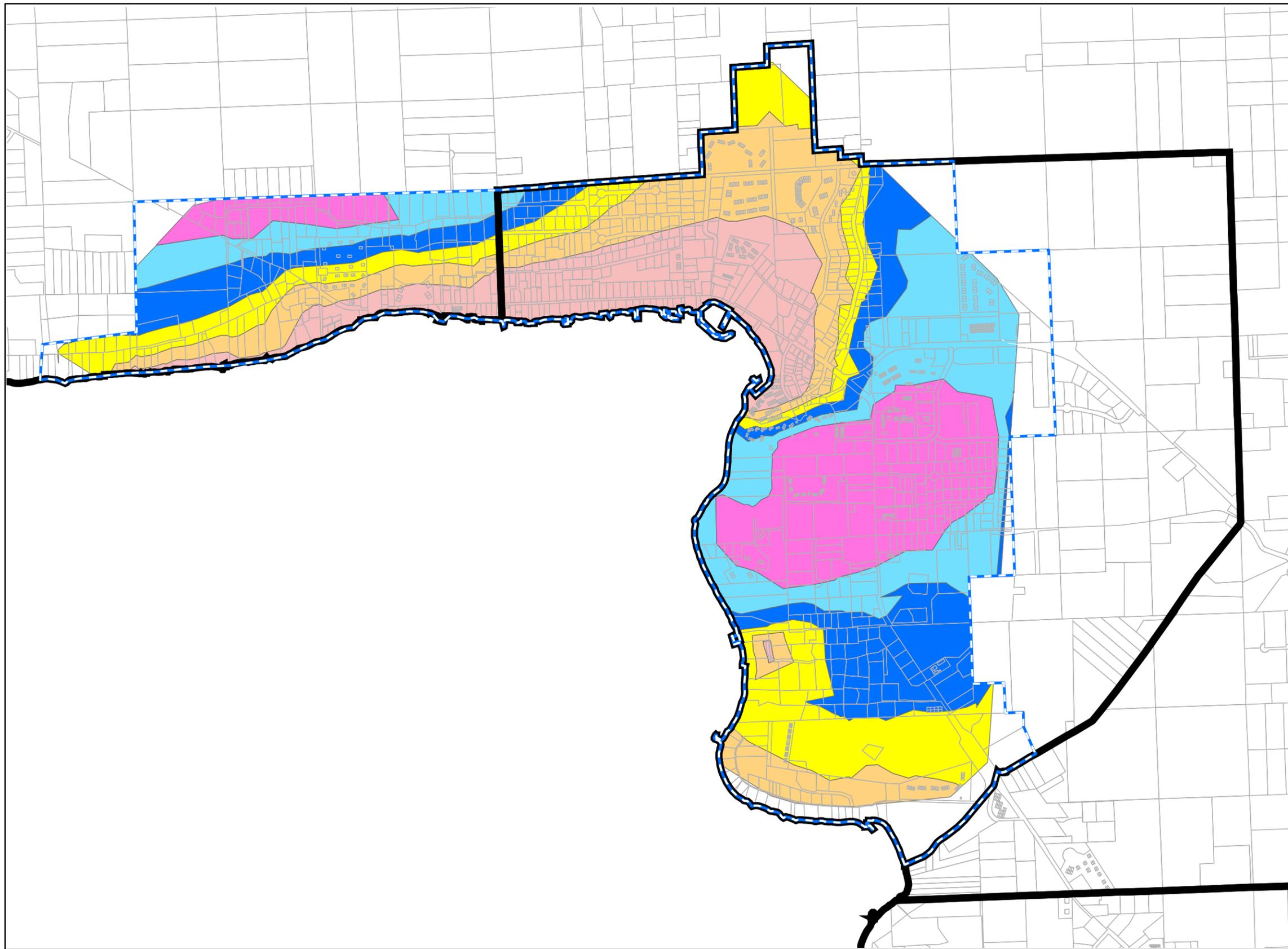
COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Peak Hour Pressure

Figure

4



Legend

Peak Hour Pressure

-  40-50 psi
-  50-60 psi
-  60-70 psi
-  70-80 psi
-  80-90 psi
-  90-100 psi
-  Municipal Boundaries
-  Parcels
-  Existing Water Service Area

Conditions:

- Proposed Water Tower at Standpipe Site
- Combined Pressure Zone



0 750 1,500
Feet

Source:
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Projection:
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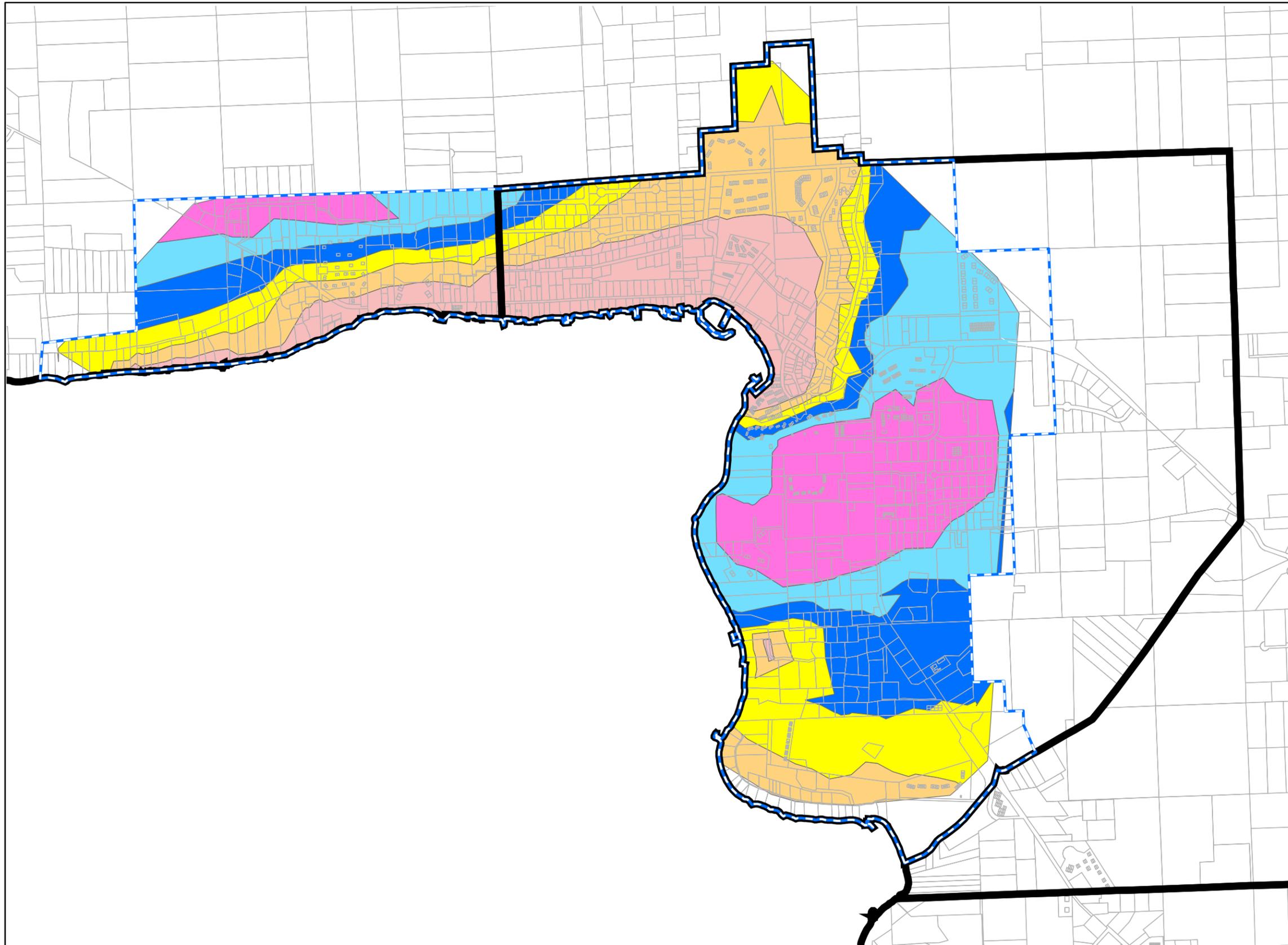
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Peak Hour Pressure

Figure 5



Legend

Peak Hour Pressure

- 40-50 psi
- 50-60 psi
- 60-70 psi
- 70-80 psi
- 80-90 psi
- 90-100 psi
- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at
 WWTP Site
 -Combined Pressure Zone



0 750 1,500
 Feet

Source:
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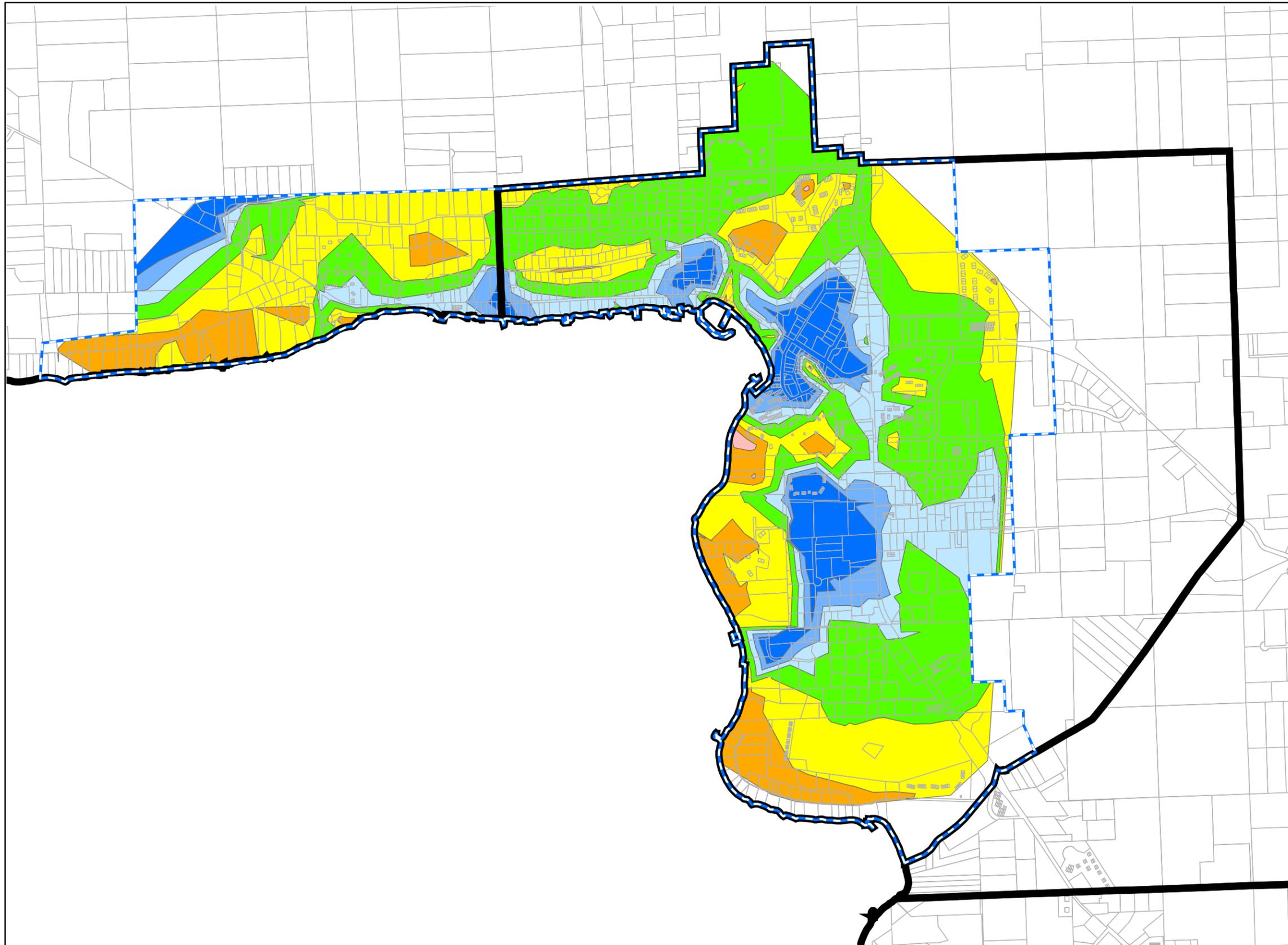
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

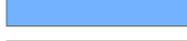
**Peak Hour
 Pressure**

**Figure
 6**



Legend

Maximum Day Fire Flow

-  0-500 gpm
-  500-1000 gpm
-  1000-1500 gpm
-  1500-2000 gpm
-  2000-2500 gpm
-  2500-3000 gpm
-  3000-3500 gpm
-  3500+ gpm
-  Municipal Boundaries
-  Parcels
-  Existing Water Service Area

Conditions:
 -Proposed Water Tower at Northern Site
 -Separated Pressure Zones



0 750 1,500
 Feet

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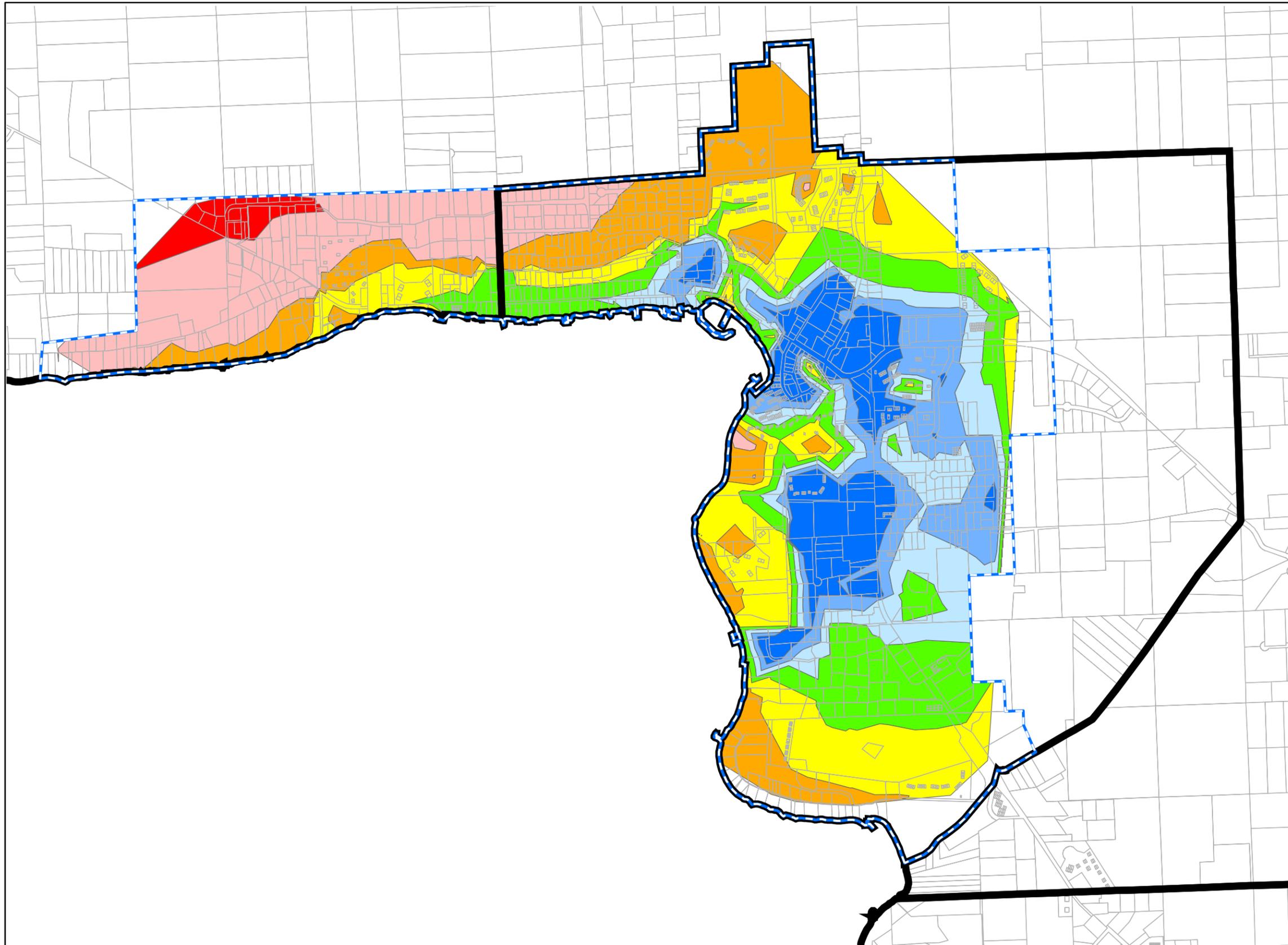
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COMPREHENSIVE UTILITIES PLAN
 Village of Sister Bay

Maximum Day Available Fire Flow

Figure 7



Legend

Maximum Day Fire Flow

- 0-500 gpm
- 500-1000 gpm
- 1000-1500 gpm
- 1500-2000 gpm
- 2000-2500 gpm
- 2500-3000 gpm
- 3000-3500 gpm
- 3500+ gpm
- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at Standpipe Site
 -Separated Pressure Zones



0 750 1,500
 Feet

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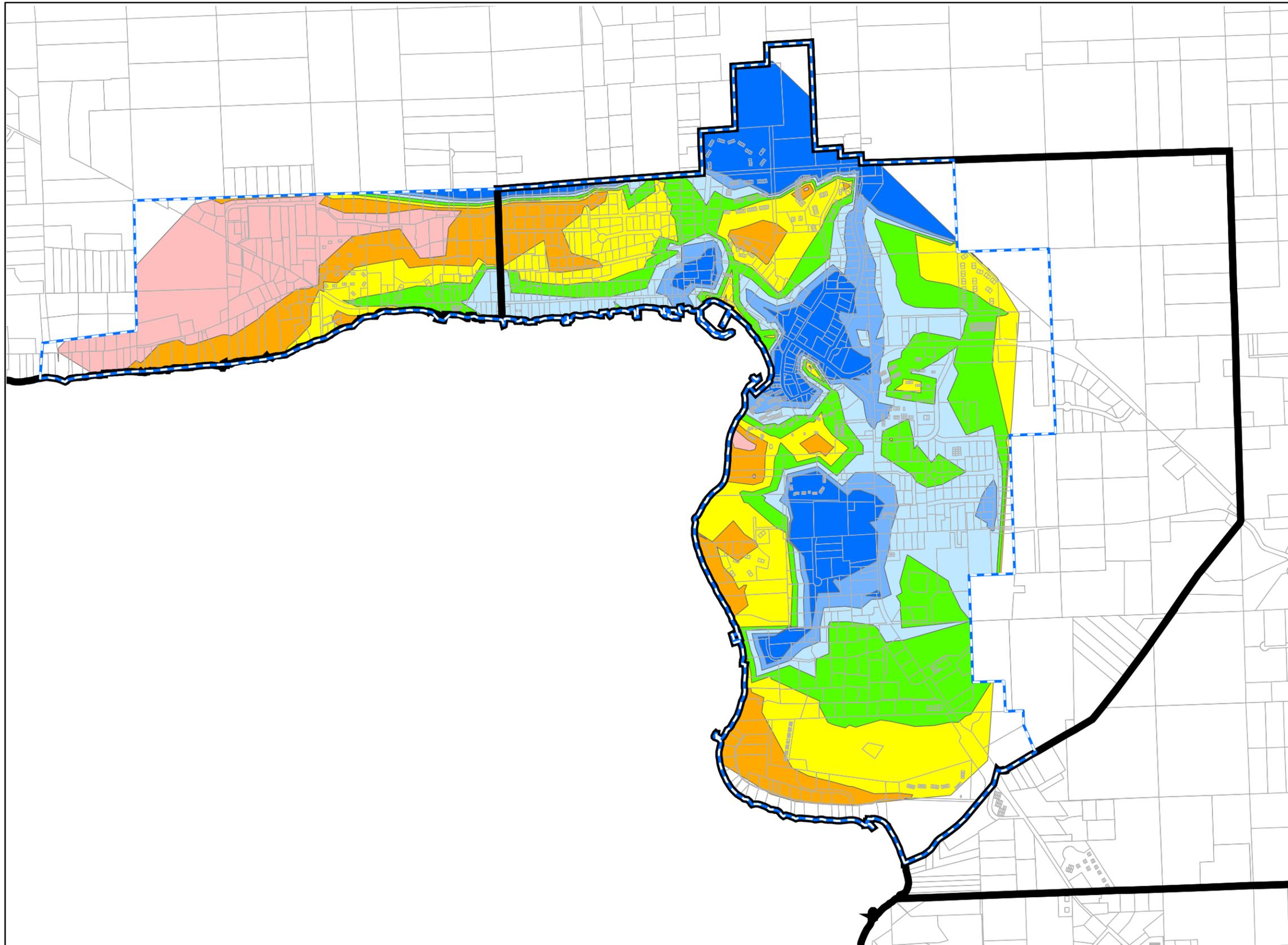
DATE:
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Maximum Day Available Fire Flow

Figure 8



Legend

Maximum Day Fire Flow

- 0-500 gpm
- 500-1000 gpm
- 1000-1500 gpm
- 1500-2000 gpm
- 2000-2500 gpm
- 2500-3000 gpm
- 3000-3500 gpm
- 3500+ gpm
- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at
 WWTP Site
 -Separated Pressure Zones



0 750 1,500
 Feet

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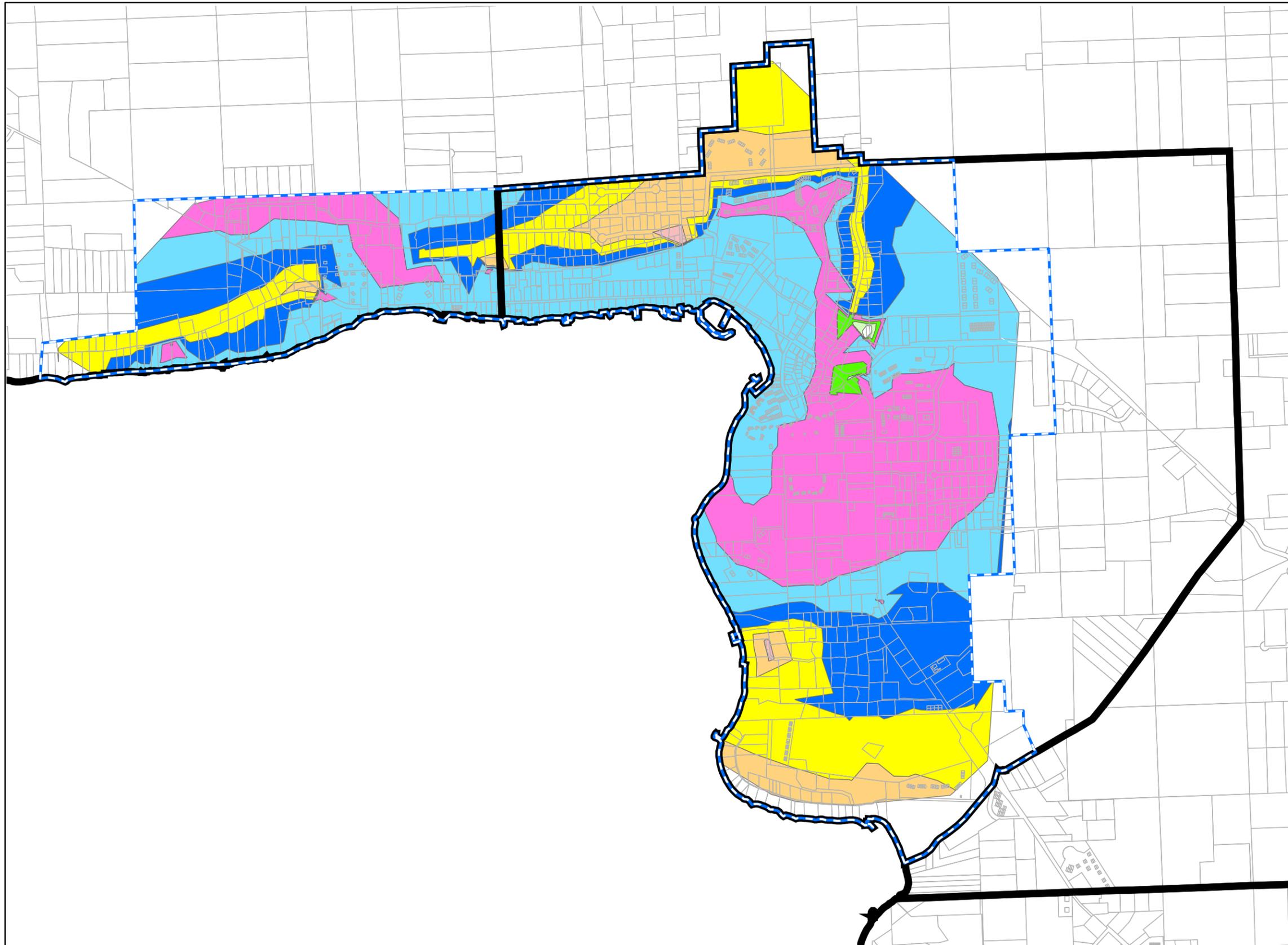
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COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

**Maximum Day
 Available
 Fire Flow**

**Figure
 9**



Legend

Peak Hour Pressure

- 20-30 psi
- 30-40 psi
- 40-50 psi
- 50-60 psi
- 60-70 psi
- 70-80 psi
- 80-90 psi
- 90-100 psi

- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at Northern Site
 -Separated Pressure Zones



0 750 1,500
 Feet

Source:
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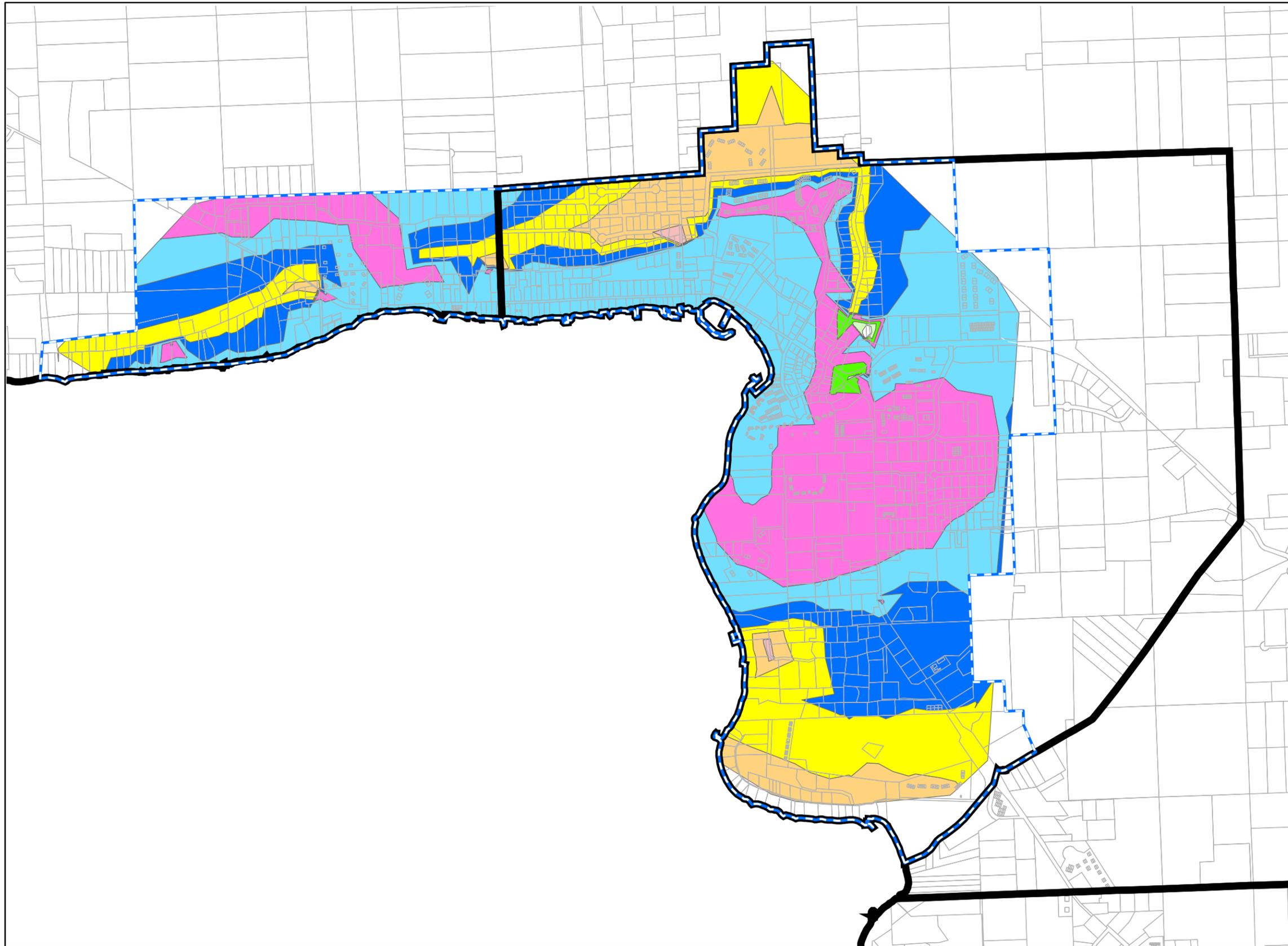
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 10/18/2006

COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

**Peak Hour
 Pressure**

**Figure
 10**



Legend

Peak Hour Pressure

- 20-30 psi
- 30-40 psi
- 40-50 psi
- 50-60 psi
- 60-70 psi
- 70-80 psi
- 80-90 psi
- 90-100 psi

- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at Standpipe Site
 -Separated Pressure Zones



0 750 1,500
 Feet

Source:
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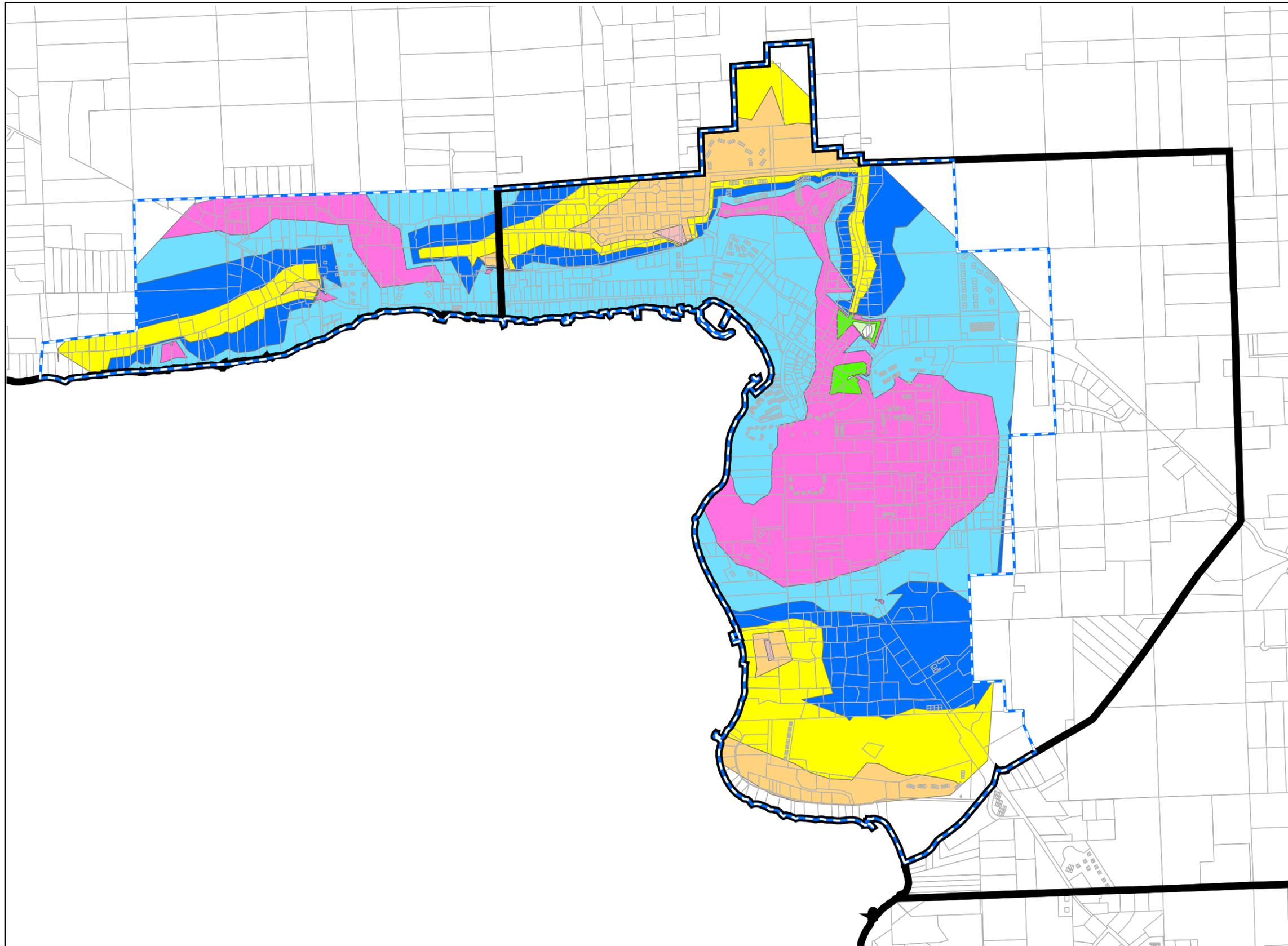
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COMPREHENSIVE UTILITIES PLAN
 Village of Sister Bay

**Peak Hour
 Pressure**

**Figure
 11**



Legend

Peak Hour Pressure

- 20-30 psi
- 30-40 psi
- 40-50 psi
- 50-60 psi
- 60-70 psi
- 70-80 psi
- 80-90 psi
- 90-100 psi

- Municipal Boundaries
- Parcels
- Existing Water Service Area

Conditions:
 -Proposed Water Tower at WWTP Site
 -Separated Pressure Zones



0 750 1,500
 Feet

Source:
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 Projection:
 Wisconsin State Plane
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COMPREHENSIVE UTILITIES PLAN
 Village of Sister Bay

**Peak Hour
 Pressure**

**Figure
 12**

APPENDIX F

**MEMORANDUMS ON ALTERNATIVES FOR SERVING
REGION H WITH SANITARY SEWER**



MEMORANDUM

TO: Bob Kufirin, Village Administrator

FROM: David F. Simons, P.E., SEH

DATE: November 30, 2006

RE: Supplemental Analysis requested at Nov. 6, 2006 CUP Workshop on Sanitary Sewer
SEH No. ASISTB0502

This memorandum documents the results of the supplemental analysis which was requested at the November 6, 2006 CUP Workshop on Sanitary Sewer. Supplemental analysis was requested on 2 items:

1. What is the Maximum Size Temporary Lift Station Which Could be Installed in the NE part of Region H and Routed Through the Existing System Without Surcharging the Existing Piping?

Based on the model assumptions, it is projected that the existing system could accommodate a small temporary lift station located in the NE part of Region H as an interim way to provide service in this area. This would only be a temporary solution until such time as Lift Station H and the associated downstream improvements were constructed.

If the diversion were constructed from MH 39 to MH 193, it is estimated that a temporary lift station with dual 100 gpm pumps could be constructed somewhere in the NE part of Region H. The maximum pumping rate of the station should not exceed 150 gpm with both pumps operating simultaneously. The flow could be temporarily pumped to MH 317, which is located on the south end of Smith Drive. For comparison, this is the approximate size of the Fieldcrest Lift Station.

If the diversion were not constructed, there would not be capacity in the Mill Road sewer to accommodate this additional flow, so the diversion must be constructed first.

In addition, as part of the design on this temporary lift station, a detailed feasibility study would be required to confirm that the downstream system is adequate to accept the flows resulting from the specific pumps and pumping conditions being proposed for that lift station.

Finally, if the station were to be constructed, it is recommended that flow monitors be periodically installed in the downstream system to monitor the flow levels after the station comes on line. This would allow the Village to observe the flow levels and take appropriate action if the levels become too high. The monitors should be installed on the critical segments of both sides of the diversion (i.e., the Maple/Mill Road side and the Claflin/South Spring side). Lift Station 1 should also be monitored for any capacity issues.

2. What is the Feasibility and Approximate Cost for the Following Alternative Alignment: Route Future Flows From Region H Along Bay Shore Drive to Lift Station 1 Instead of Piping them Directly to the Treatment Plant Via a Future Trunk Sewer Constructed Around the East Side of the Village?

This alternative would involve running the future force main from Lift Station H north along Hwy 57 to the crest of the hill north of Country Walk Drive. At the crest of the hill, the force main could discharge into a new gravity pipe that could run down Hwy 57 and Bay Shore Drive to Lift Station 1. Flows at Maple Drive and Mill Road could be picked up by this new pipe. In addition, the existing sewer pipe located through the back yards east of Bay Shore Drive could be abandoned (but would not necessarily need to be). Lift Station 1 would need to be upgraded, but the existing force mains pumping to the WWTP appear to have sufficient capacity to accommodate the additional flow.

Under this alternative, the force main from Lift Station H to the crest of the hill would be an 8 inch diameter pipe. The downstream trunk sewer to Lift Station 1 would steadily increase in size as it proceeds downstream, and would range from approximately a 10” pipe to an 18” pipe, depending on the location along the route and the number of connections to the existing system which are made.

Lift Station 1 would need to be upgraded by enlarging the pumps. More study would be needed to determine the exact improvements needed at the station, but at this time it is estimated that the total pumping capacity at the station would need to increase by approximately 50%. As the service area fills in and the existing system expands in other areas, Lift Station 1 may need to be expanded even further in the future.

The net cost difference between this alternative and routing pipes around the east side of the Village is listed in the table below. Although this alternative is more expensive than routing pipes around the east side of the Village (due to the additional length of pipe), there could be other advantages to the Village of considering this alternative:

- This alternative may allow more development to occur faster in the southern part of the service area, because it would not be dependent on development in Regions I and J.
- It would provide additional capacity in the downtown area.
- It would provide a level of redundancy that currently does not exist in the downtown area. This would allow some of the existing mains to be taken out of service for maintenance if needed, while still providing service to customers.
- If the project is done concurrently with the State’s resurfacing project, there may be cost sharing opportunities with the State on the surface restoration.

Detailed feasibility studies should be conducted to confirm the preliminary findings before any improvements are designed or constructed.

**Preliminary Opinion of Cost
Comparison Between Options**

<u>Improvement</u>	<u>Route Around East Side Village</u>	<u>Route Down Bay Shore Drive</u>
FM. H	\$1,368,900	\$1,095,200
P147	\$860,100	\$793,000
LS. J	\$301,100	\$249,600
FM. J	\$418,000	\$400,200
New Trunk to LS 1	N/A	\$775,200
Upgrade of LS 1	N/A	\$218,400
Totals	\$2,948,100	\$3,531,600



MEMORANDUM

TO: Bob Kufrin, Village Administrator

FROM: David F. Simons, P.E., SEH

DATE: December 27, 2006

RE: Supplemental Sanitary Sewer Analysis requested at December 4, 2006 CUPAC Meeting
SEH No. ASISTB0502

This memorandum documents the results of the supplemental sanitary sewer analysis which was requested at the December 4, 2006 CUPAC Meeting. Supplemental analysis was requested on the following items:

1. What would be the approximate service boundary of a temporary sanitary sewer lift station which could be located in the northeast part of Region H and routed through the existing sewer system without surcharging the existing piping?

As discussed in our November 30, 2006 memorandum, it is projected that the existing system could accommodate a small temporary lift station located in the northeast part of Region H as an interim way to provide sanitary sewer service in this area. This would only be a temporary solution until such time as the recommended Lift Station H and the associated downstream improvements were constructed.

If the recommended sewer diversion is constructed from MH 39 to MH 193, it is estimated that a temporary lift station with dual 100 gallon per minute (gpm) pumps could be constructed to serve the northeast part of Region H. If the diversion is not constructed, there would not be capacity in the Mill Road sanitary sewer to accommodate this additional flow, so the diversion must be constructed first. The maximum pumping rate of the temporary station should not exceed 150 gpm, with both pumps operating simultaneously. The flow could be temporarily pumped to MH 317, which is located on the south end of Smith Drive. For comparison, this is the approximate size of the Fieldcrest Lift Station.

Using the flow rates assumed in the CUP draft report, the maximum pumping rate of 150 gpm translates into approximately 150 single family homes. Although the minimum lot size for R-1 is 20,000 square feet (approx. 0.5 acre), the amount of land typically attributed to each new lot is significantly more if roadways, ponding areas, and open spaces are also included. For example, depending on the development layout, it would not be uncommon for each lot to consume 1 acre or more of land. Under this scenario, 150 residential units might require 150 acres of land.

Exhibits A and B show two different options for serving the northeast part of Region H. The approximate sewer service boundary for each option is shown based on the existing topography. Areas beyond the limits shown would be difficult to serve without additional lift stations.

Option A shown in Exhibit A illustrates providing service to only the undeveloped land north of Hwy 57. The service area represents approximately 45 acres. The temporary lift station is located northeast of Northwoods Drive in the lowest part of the service area to save costs on sewer pipe depth. The force main would pump northeast along Hwy 57 to MH 317.

Option B shown in Exhibit B illustrates serving areas both north and south of Hwy 57. The Option B service area represents about 165 acres. The temporary lift station is located along Orchard Drive in one of the lowest parts of the service area to reduce pipe depth and the associated cost. The force main would pump north along Orchard Drive to MH 317.

2. What is the estimated cost for a temporary lift station?

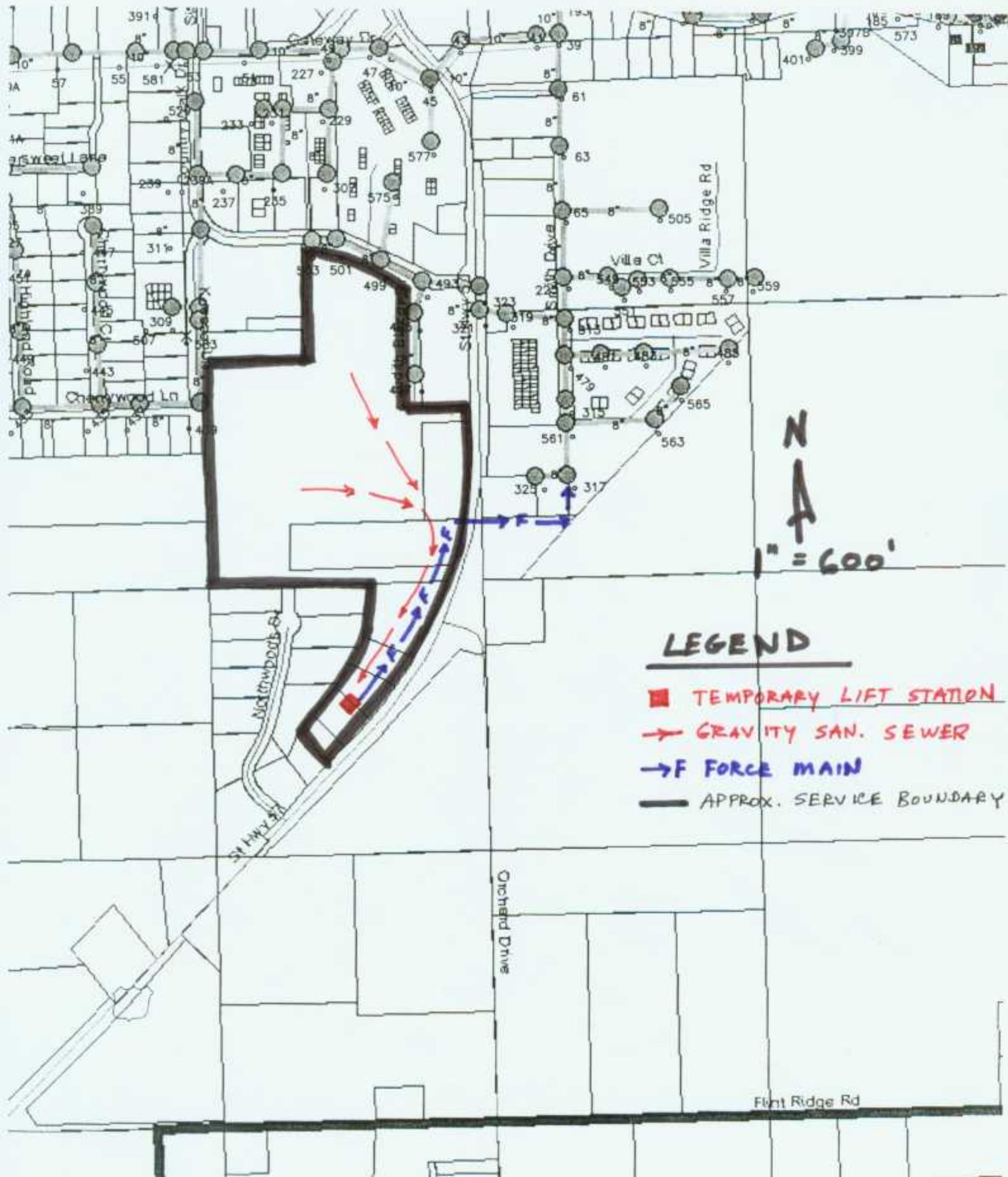
For the purposes of this cost estimate, it has been assumed that the size of the lift station will be the same for both Option A and Option B. A cheaper grinder pump system was considered for Option A due to the smaller design flows, but it was determined that the flows could exceed the recommended threshold for a grinder pump. In addition, using a 100 gpm duplex station for each option would provide the Village with the most flexibility for providing sanitary sewer service to this developing area.

Planning level costs are summarized below for each option. The force main cost is based on an assumed 6 inch diameter force main, and contains a significant allowance for rock excavation, restoration and contingencies. Detailed feasibility studies should be conducted to confirm the preliminary findings before any improvements are designed or constructed.

Planning Level Cost Estimate for Temporary Lift Station

<u>Improvement</u>	<u>Option A</u>	<u>Option B</u>
Lift Station	\$135,000	\$135,000
Force Main	\$370,500	\$530,400
Totals	\$506,000	\$666,000

EXHIBIT A



LEGEND

- TEMPORARY LIFT STATION
- GRAVITY SAN. SEWER
- FORCE MAIN
- APPROX. SERVICE BOUNDARY



MEMORANDUM

TO: Bob Kufrin, Village Administrator

FROM: David F. Simons, P.E., SEH

DATE: December 5, 2007

RE: December 10, 2007 CUPAC meeting
SEH No. ASISTB0502

In preparation for the December 10th CUPAC meeting, I have provided a few thoughts related to the following questions that you asked:

“New survey information has shown that there would be no additional developable land freed up east of Bay Shore Drive and north of Mill Road as a result of the relocation of the sewer and water from behind the businesses to Bay Shore Drive. If there is no economic value to relocating these utilities, what are the Village’s options?”

Gaining additional developable land behind these businesses was not the original reason for considering the relocations. The primary reason for considering the sewer relocation was to provide additional capacity for development growth to the south, and to take advantage of the State resurfacing project by getting the sewer installed while there is an opportunity. Since the existing sewer pipes are too small to handle new development to the south, the other option is to build a new trunk main from the future southern expansion area to the northeast, all the way around the existing system and directly to the WWTP. This option would involve waiting to install sewer until downstream areas become developed, or building downstream utilities prematurely across undeveloped land, neither of which are ideal situations.

The alternative option (referred to below as the Alternative Concept) would involve running the future force main from Lift Station H north along Hwy 57 to the crest of the hill north of Country Walk Drive. At the crest of the hill, the force main could discharge into a new gravity pipe that could run down Hwy 57 and Bay Shore Drive to Lift Station 1. Flows at Maple Drive and Mill Road could be picked up by this new pipe. In addition, the existing sewer pipe located through the back yards east of Bay Shore Drive could be abandoned (but would not necessarily need to be). Lift Station 1 would need to be upgraded, but the existing force mains pumping to the WWTP appear to have sufficient capacity to accommodate the additional flow.

The net cost difference between the options is described in our November 30, 2006 memorandum to the Village. Although the Alternative Concept is slightly more expensive than the option shown in the original report (due to the additional length of pipe), there are other advantages to the Village of considering this alternative:

- This alternative may allow more development to occur faster in the southern part of the service area, because it would not be dependent on development in Regions I and J.
- It would provide additional capacity in the downtown area.
- It would provide a level of redundancy that currently does not exist in the downtown area. This would allow some of the existing mains to be taken out of service for maintenance if needed, while still providing service to customers.

- If the project is done concurrently with the State's resurfacing project, there may be cost sharing opportunities with the State on the surface restoration.

In response to the question listed above, we believe that the relocation of the sewer line to Bay Shore Drive is still an attractive option for the Village, regardless of whether the relocation frees up any developable land behind the businesses.

“What should the Village consider as next steps with regard to the sanitary sewer relocation issue?”

We suggest that the Village consider the following steps:

1. Meet with the State to discuss the possible inclusion of the utility relocation work in the State resurfacing project. Discuss the timing, cost sharing responsibilities, and other parameters.
2. Televisé the existing sanitary sewer main to determine its current condition and remaining life expectancy. If the pipe has less than 20 years of remaining life expectancy, the relocation as part of the resurfacing project should be strongly considered.
3. Determine the expected timing and extent of future development within Region H (to the best of the Village's ability). Timing and extent of development in this area will drive the decision making process.
4. If items 1 – 3 above appear to point toward relocation being the best option, then the Village should authorize that a preliminary plan and cost estimate be prepared for the relocation work. This will be needed in order to continue discussions with the State and to allow the Village to properly budget for the improvements.
5. If additional development is expected to occur south and west of the relocation area prior to the state resurfacing project, then the Village should consider constructing the diversion between MH 39 and MH 193 as soon as possible (on Maple Dr. at the cemetery). This would provide interim sewer capacity for up to an additional 150 homes prior to and during the state resurfacing project.
6. If the Village decides to relocate the sewer, but if no additional development is expected to occur south and west of the relocation area prior to the state resurfacing project, then the diversion between MH 39 and MH 193 is not necessary because the relocated sewer will provide additional capacity.
7. If development pressure occurs in the northeast part of Region H (near Northwoods Drive), the Village should consider an interim lift station and force main as described in the CUP.



MEMORANDUM

TO: Bob Kufirin, Village Administrator
FROM: David F. Simons, P.E., SEH
DATE: March 6, 2008
RE: March 17, 2008 CUPAC meeting
SEH No. ASISTB0502

In preparation for the March 17th CUPAC meeting, we are submitting cost estimates and sketches for the 3 sanitary sewer routing options that were discussed at the December 10, 2007 CUPAC meeting. A summary of the initial costs for each option is shown below.

Table with 2 columns: Option, Initial Cost. Rows include Option 1 - STH 57 and North Shore Drive (\$585,000), Option 2 - Maple to Mill Between Lots Then Down Spring (\$759,000), and Option 3 - Maple to Mill Between Lots Then Behind Businesses (\$699,000).

Option 1 has the lowest initial cost because the pavement removal and replacement cost on Bay Shore Drive would be paid for by the State as part of their resurfacing project. In addition to evaluating the initial cost for each option, we also evaluated the future cost of each option over the next 20 years. This was done so that the 3 options could be compared on an equal basis, by comparing the total cost to the Village over time.

Option 1 and Option 2 have a high future maintenance cost because they do not replace the old 12" concrete line behind the businesses. Therefore, additional costs will be expended in the future under Options 1 and 2 in order to maintain and eventually replace the 12" line.

The future cost of the old 12" concrete pipe was assumed to include regular cleaning, regular minor repairs (which will get more frequent and costly as the pipe ages), and eventual replacement of the pipe in 20 years. The future maintenance costs on the new pipes were assumed to include only periodic cleaning and occasional minor repairs. The old pipe on Spring Road is made of PVC, and has a longer life expectancy than the 12" concrete pipe.

When the future costs are added to the initial costs for each option, the resulting total present worth costs over a 20 year period change significantly.

Table with 2 columns: Option, Total Present Worth Cost. Rows include Option 1 - STH 57 and North Shore Drive (\$716,000), Option 2 - Maple to Mill Between Lots Then Down Spring (\$891,000), and Option 3 - Maple to Mill Between Lots Then Behind Businesses (\$714,000).

Another factor to consider is the inconvenience of the various routes. Option 1 would likely result in the highest level of inconvenience to the community, followed by Option 2 and then by Option 3.

I will be available at the March 17th CUPAC meeting to review these options with the Commission.

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OPINION OF COSTS - OPTION 1

STH 57 and North Bay Shore Drive to Main Lift Station

Item No.	Item	Unit	Est. Quantity	Unit Price	Total Price
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SCHEDULE 1 - SANITARY SEWER

1	12-INCH SANITARY SEWER	LF	900	\$28	\$25,200
2	15-INCH SANITARY SEWER	LF	900	\$32	\$28,800
3	18- INCH SANITARY SEWER	LF	1800	\$36	\$64,800
4	4- INCH SAN SERVICE	LF	700	\$4	\$2,450
5	48-INCH MANHOLE W/ CASTING	EA	12	\$2,400	\$28,800
6	CONNECT TO EXISTING MANHOLE	EA	2	\$1,000	\$2,000
7	CONNECT TO EXISTING PIPE	EA	8	\$500	\$4,000
8	CRUSHED ROCK PIPE FOUNDATION	TON	200	\$30	\$6,000
9	EXCESS MANHOLE DEPTH	LF	30	\$100	\$3,000
10	PAVEMENT RESTORATION	SY	2700	\$26	\$70,200
11	RECONNECT SERVICES	EA	14	\$125	\$1,750
12	REMOVE ASPHALTIC SURFACE	SF	25000	\$0	\$7,500
13	REMOVE EXISTING STRUCTURES	EA	9	\$300	\$2,700
14	REMOVE SAN SEWER	LF	1600	\$4	\$6,400
15	ROCK EXCAVATION	CY	300	\$50	\$15,000
16	TELEVISED SEWER INSPECTION	LF	3500	\$1	\$3,500
17	TEMP SEWER SERVICE	LS	1	\$7,500	\$7,500
18	WYES	EA	14	\$125	\$1,750

SCHEDULE 1 - SANITARY SEWER TOTAL \$281,350

SCHEDULE 2 - WATER MAIN

1	1-INCH COPPER SERVICE	LF	800	\$14	\$11,200
2	1-INCH CORPORATION	EA	14	\$110	\$1,540
3	1-INCH CURB STOP & BOX	EA	14	\$110	\$1,540
4	6-INCH DIP WATER MAIN	LF	300	\$32	\$9,600
5	6-INCH GATE VALVE & BOX	EA	9	\$800	\$7,200
6	8-INCH DIP WATER MAIN	LF	3600	\$22	\$79,200
7	8-INCH GATE VALVE & BOX	EA	6	\$1,100	\$6,600
8	CONNECT TO EXISTING WATERMAIN	EA	12	\$250	\$3,000
9	DIP FITTINGS	LB	1300	\$4	\$4,550
10	HYDRANT	EA	9	\$2,200	\$19,800
11	RECONNECT SERVICES	EA	14	\$125	\$1,750
12	REMOVE VALVES	EA	10	\$200	\$2,000
13	REMOVE WATERMAIN	LF	2000	\$3	\$6,000
14	TEMP WATER SERVICE	LS	1	\$5,000	\$5,000
15	TRAFFIC CONTROL	LS	1	\$2,500	\$2,500

SCHEDULE 2 - WATER TOTAL \$161,480

SUBTOTAL OPTION 1 \$442,800

10% CONTINGENCY \$44,300

20% ENGINEERING \$97,400

OPTION 1 TOTAL OPINION OF COST \$584,500

OPINION OF COSTS - OPTION 2

Maple to Mill Between Lots Then Down Spring to Main LS

Item No.	Item	Unit	Est. Quantity	Unit Price	Total Price
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SCHEDULE 1 - SANITARY SEWER

1	12-INCH SANITARY SEWER	LF	800	\$28	\$22,400
2	15-INCH SANITARY SEWER	LF	800	\$32	\$25,600
3	18-INCH SANITARY SEWER	LF	2300	\$36	\$82,800
4	48-INCH MANHOLE W/ CASTING	EA	12	\$2,400	\$28,800
5	4-INCH SERVICE	LF	350	\$15	\$5,250
6	CONNECT TO EXISTING MANHOLE	EA	2	\$1,000	\$2,000
7	CONNECT TO EXISTING SANITARY PIPE	EA	7	\$500	\$3,500
8	CRUSHED ROCK PIPE FOUNDATION	TON	200	\$30	\$6,000
9	EXCESS MANHOLE DEPTH	LF	25	\$100	\$2,500
10	PAVEMENT RESTORATION	SY	4000	\$26	\$104,000
11	RECONNECT SERVICES	EA	12	\$125	\$1,500
12	REMOVE ASPHALTIC PAVEMENT	SF	52000	\$0	\$15,600
13	REMOVE EXISTING SAN SEWER	LF	3000	\$4	\$12,000
14	REMOVE EXISTING STRUCTURES	EA	16	\$300	\$4,800
15	ROCK EXCAVATION	CY	300	\$50	\$15,000
16	TELEVISED SEWER INSPECTION	LF	3900	\$1	\$3,900
17	TEMP SEWER SERVICE	LS	1	\$15,000	\$15,000
18	TURF ESTABLISHMENT	SY	8000	\$1	\$11,200
19	WYES	EA	12	\$125	\$1,500

SCHEDULE 1 - SANITARY SEWER TOTAL \$363,350

SCHEDULE 2 - WATER MAIN

1	1-INCH COPPER SERVICE	LF	800	\$14.00	\$11,200.00
2	1-INCH CORPORATION	EA	12	\$110	\$1,320
3	1-INCH CURB STOP AND BOX	EA	12	\$110	\$1,320
4	6-INCH DIP WATER MAIN	LF	300	\$32	\$9,600
5	6-INCH GATE VALVE AND BOX	EA	9	\$800	\$7,200
6	8-INCH DIP WATERMAIN	LF	3700	\$32	\$118,400
7	8-INCH GATE VALVE AND BOX	EA	6	\$1,100	\$6,600
8	CONNECT TO EXISTING WATERMAIN	EA	9	\$250	\$2,250
9	DIP FITTINGS	LB	1500	\$4	\$5,250
10	HYDRANT	EA	9	\$2,200	\$19,800
11	REMOVE GATE VALVE & BOX	EA	8	\$75	\$600
12	REMOVE WATER MAIN	LF	3000	\$3	\$9,000
13	RECONNECT SERVICES	EA	12	\$125	\$1,500
14	TEMP WATER SERVICE	LS	1	\$10,000	\$10,000
15	TRAFFIC CONTROL	LS	1	\$8,000	\$8,000

SCHEDULE 2 - WATER TOTAL \$212,040

SUBTOTAL OPTION 2 \$575,400

10% CONTINGENCY \$57,500

20% ENGINEERING \$126,600

OPTION 2 TOTAL OPINION OF COST \$759,500

OPINION OF COSTS - OPTION 3

Maple to Mill Between Lots Then Down Behind the Businesses to Main LS

Item No.	Item	Unit	Est. Quantity	Unit Price	Total Price
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SCHEDULE 1 - SANITARY SEWER

1	12-INCH SANITARY SEWER	LF	1000	\$28	\$28,000
2	15-INCH SANITARY SEWER	LF	1000	\$32	\$32,000
3	18-INCH SANITARY SEWER	LF	1700	\$36	\$61,200
4	48-INCH MANHOLE W/ CASTING	EA	14	\$2,400	\$33,600
5	4-INCH PVC SERVICE PIPE	LF	600	\$15	\$9,000
6	CONNECT TO EXISTING MANHOLE	EA	2	\$1,000	\$2,000
7	CONNECT TO EXISTING SANITARY PIPE	EA	7	\$500	\$3,500
8	CRUSHED ROCK PIPE FOUNDATION	TON	200	\$30	\$6,000
9	EXCESS MANHOLE DEPTH	LF	25	\$100	\$2,500
10	PAVEMENT RESTORATION	SY	2700	\$26	\$70,200
11	RECONNECT SERVICES	EA	12	\$125	\$1,500
12	REMOVE ASPHALTIC SURFACE	SF	30000	\$0	\$9,000
13	REMOVE SANITARY SEWER PIPE	LF	3000	\$4	\$12,000
14	REMOVE STRUCTURES	EA	15	\$250	\$3,750
15	ROCK EXCAVATION	CY	250	\$50	\$12,500
16	TELEVISED SEWER INSPECTION	LF	3700	\$1	\$3,700
17	TEMP SEWER SERVICE	LS	1	\$15,000	\$15,000
18	TURF ESTABLISHMENT	SY	10000	\$1	\$14,000
19	WYES	EA	12	\$125	\$1,500

SCHEDULE 1 - SANITARY SEWER TOTAL \$320,950

SCHEDULE 2 - WATER MAIN

1	1-INCH COPPER SERVICE	LF	800	\$14	\$11,200
2	1-INCH CORPORATION	EA	12	\$110	\$1,320
3	1-INCH CURB STOP AND BOX	EA	12	\$110	\$1,320
4	6-INCH DIP WATER MAIN	LF	300	\$32	\$9,600
5	6-INCH GATE VALVE AND BOX	EA	9	\$800	\$7,200
6	8-INCH DIP WATERMAIN	LF	3500	\$32	\$112,000
7	8-INCH VALVE AND BOX	EA	12	\$1,100	\$13,200
8	CONNECT TO EXISTING WATERMAIN	EA	12	\$250	\$3,000
9	DIP FITTINGS	LB	1300	\$4	\$4,550
10	HYDRANT	EA	9	\$2,200	\$19,800
11	RECONNECT SERVICES	EA	12	\$125	\$1,500
12	REMOVE VALVES	EA	15	\$200	\$3,000
13	REMOVING WATERMAIN	LF	3000	\$3	\$9,000
14	TEMP WATER SERVICE	LS	1	\$10,000	\$10,000
15	TRAFFIC CONTROL	LS	1	\$2,500	\$2,500

SCHEDULE 2 - WATER TOTAL \$209,190

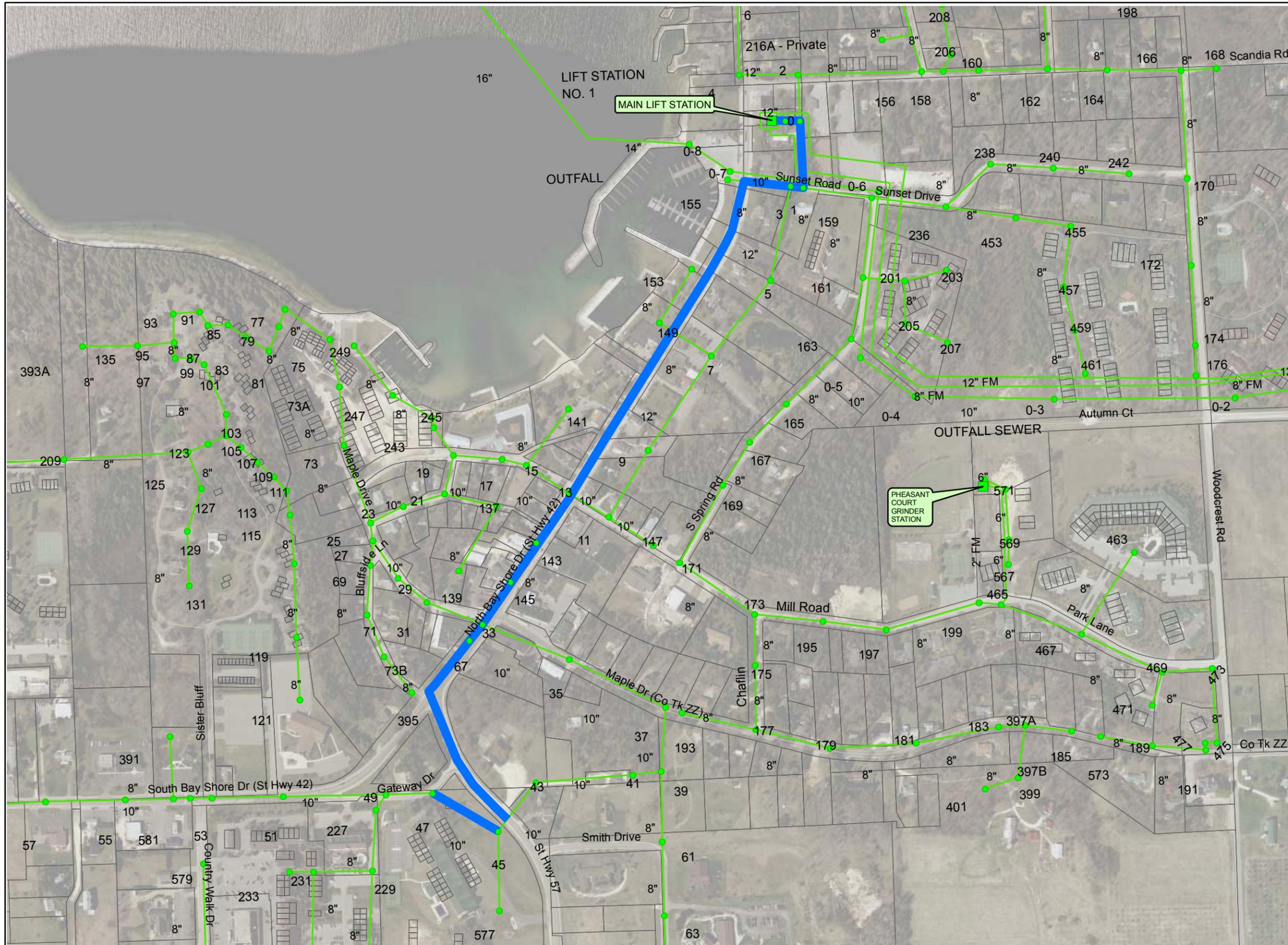
SUBTOTAL OPTION 3 \$530,100

10% CONTINGENCY \$53,000

20% ENGINEERING \$116,600

OPTION 3 TOTAL OPINION OF COST \$699,700

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Legend

-  Proposed Sewer System Improvements - Option 1
-  Existing Sewer System
-  Existing Lift Stations
-  Existing Manhole



0 400 800 Feet

Source:
Door County and Bay Lake RPC.
Projection:
Wisconsin State Plane
Map by:
SEH

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ASISTB0502.00

DATE:
02/20/2008

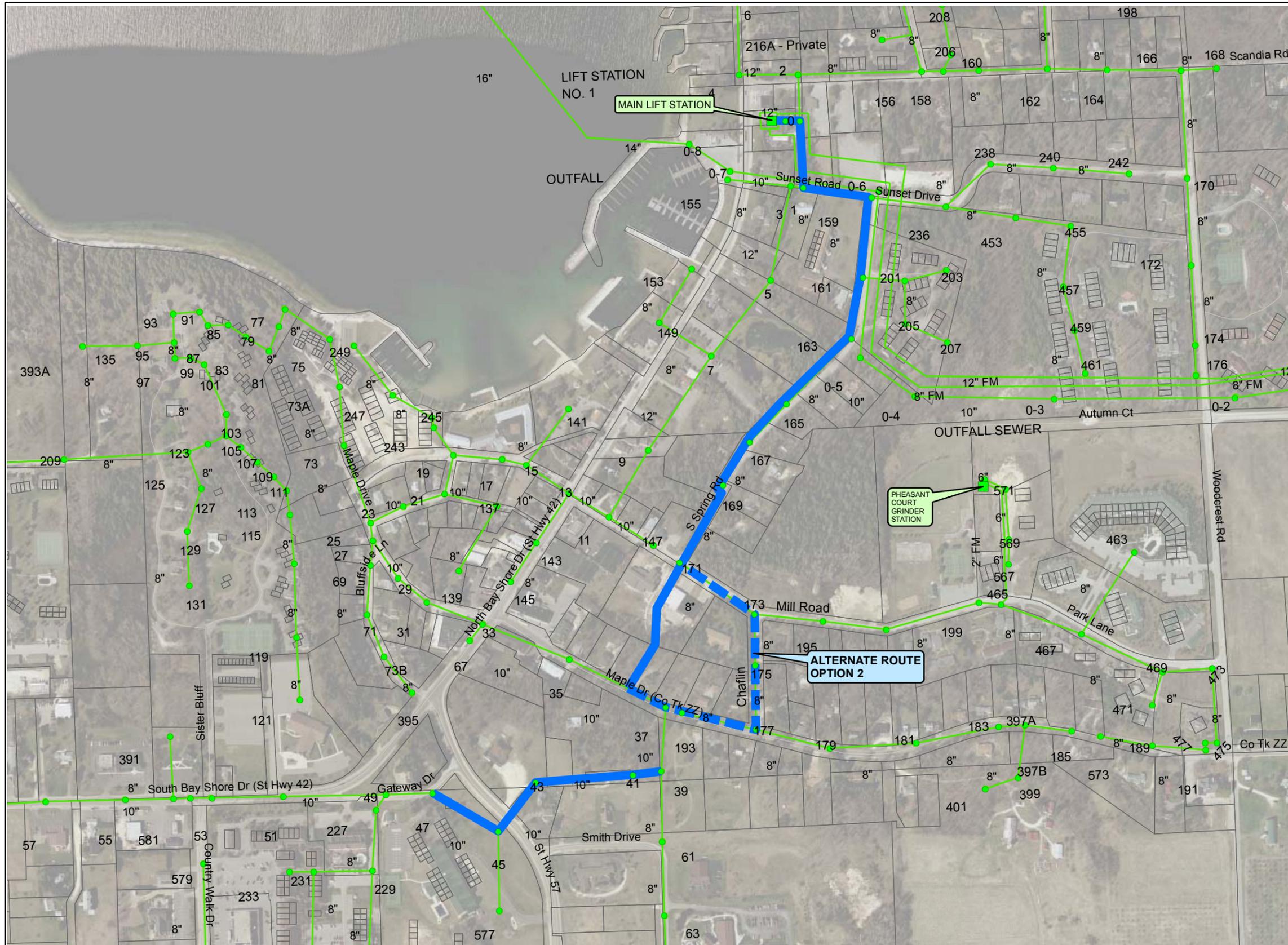
COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

Sanitary Sewer
Routing Option 1

Figure
F-1

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Legend

- Proposed Sewer System Improvements - Option 2
- - - - - Proposed Sewer System Improvements - Alternate Option 2
- Existing Sewer System
- Existing Lift Stations
- Existing Manhole



0 400 800 Feet

Source:
 Door County and Bay Lake RPC.
 Projection:
 Wisconsin State Plane
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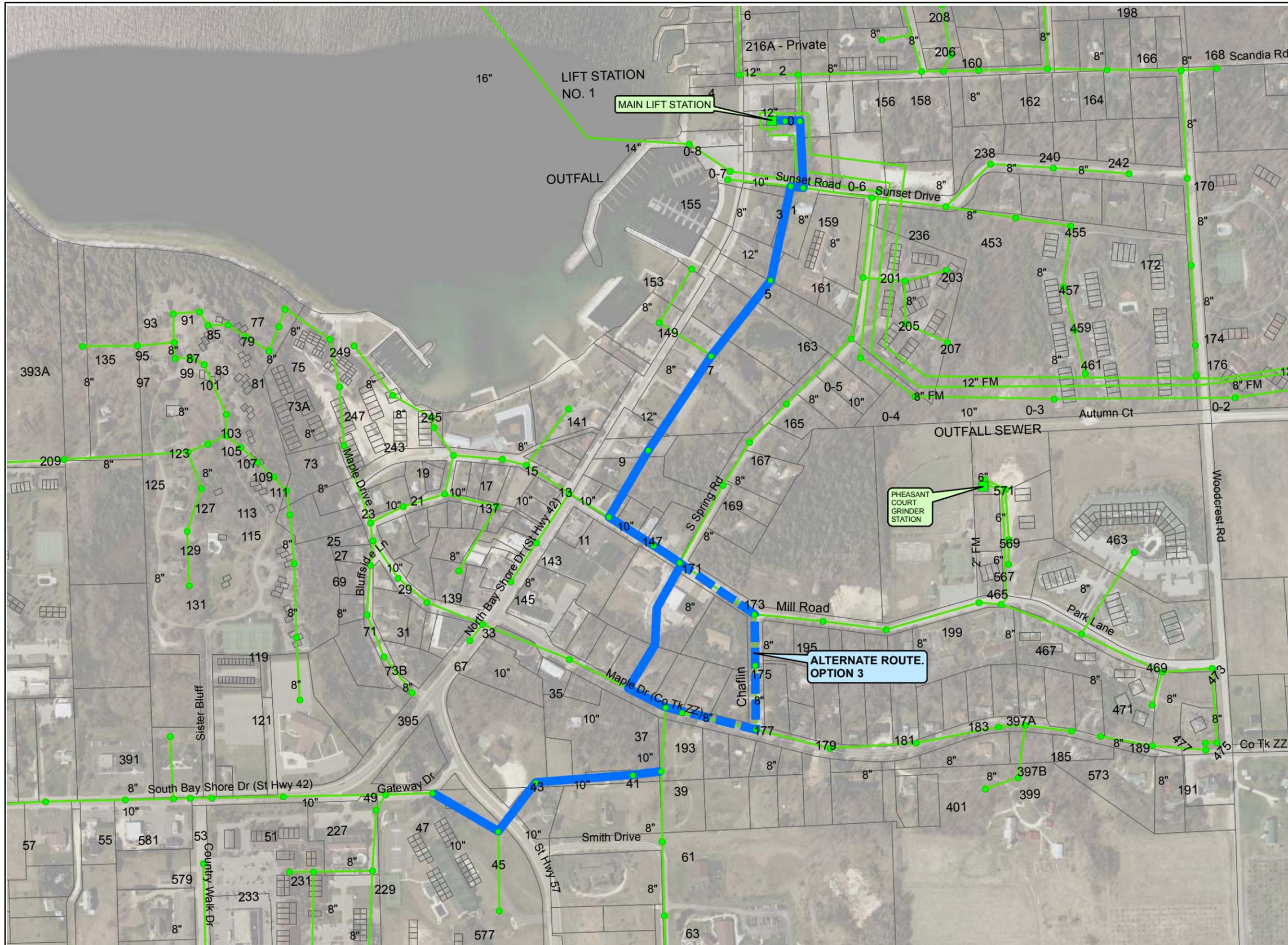
COMPREHENSIVE UTILITIES PLAN

Village of Sister Bay

**Sanitary Sewer
 Routing Option 2**

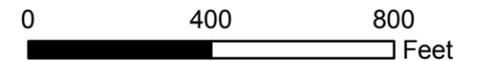
**Figure
 F-2**

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Legend

- ▬ Proposed Sewer System Improvements - Option 3
- ▬▬▬ Proposed Sewer System Improvements - Alternate Option 3
- ▬ Existing Sewer System
- Existing Lift Stations
- Existing Manhole



Source:
 Door County and Bay Lake RPC.
 Projection:
 Wisconsin State Plane
 Map by:
 SEH

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DATE:
 02/20/2008

COMPREHENSIVE UTILITIES PLAN
 Village of Sister Bay

**Sanitary Sewer
 Routing Option 3**

**Figure
 F-3**