City of St. Ignace
Phase I – Wastewater Improvements

Michigan Clean Water State Revolving Fund Project Plan
Volume 2 – Appendix

21-0085

April 5, 2022

c2ae
architecture • engineering

1211 Ludington Street
Escanaba, MI 49829

APPENDIX A

BASIS OF COST

Appendix A

Part 1: Estimated Project Construction Costs

City of St. Ignace Opinion of Cost: Phase 1 - Water and Wastewater USDA RD Improvements (21-0084 & 85)

Versions: ANH 2/7/2022

				C1		C2		A3		A4		A6		D2		B8		A15		C4		B5		C3		A14		A1		B2		A8	
				Antoine St. (I75 & East to Lake)		Lemotte St & Lake Ave to Lemotte St & Reagon St to Reagon St and I75		E Goudreau St from I75 to I75 BL and Mary St from Goudreau St North		N Marley St from E Goudrea St to Old Portage Rd		N 2nd St from Collins St to Spring St)		Graham Ave from S State St to Strats Park Access		S State St from Ferry Ln to Graham Ave		Dock 3 St from Graham Ave to Ferry Ln; From Ferry and Dock 3 St to Huron St		Bertrand St Hombach to Ferry Ln		Truckey St & Spring St from Marley to NI75 including sewer between streets		Keightley St from Church St to 500 ft east		S Marley Street from Spring St to Tank		Boundary Rd from S Airport Rd to 300 ft S		N 1st St from Collins St to North of Old Portage Rd		Fountain St. from Old Portage Rd to E Truckey St.	
Item	Description	Price	Unit	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost
General																																	
101	Mobilization, General Conditions, Bonds & Insurance (5% of Total Construction Cost)	5%			$ 6,642		$ 13,884		$ 43,337		$ 15,097		$ 39,655		$ 39,716		$ 19,557		$ 31,547		$ 13,884		$ 27,554		$ 5,201		$ 5,811		$ 1,623		$ 14,412		$ 12,399
102	Environmental Mitigation, Traffic Control, Etc. (2.5% of Total Construction Cost)	2.5%			$ 3,321		$ 6,942		$ 21,668		$ 7,549		$ 19,827		$ 19,858		$ 9,779		$ 15,774		$ 6,942		$ 13,777		$ 2,600		$ 2,905		$ 811		$ 7,206		$ 6,199
				Total	**$ 9,963**	**Total**	**$ 20,826**	**Total**	**$ 65,005**	**Total**	**$ 22,646**	**Total**	**$ 59,482**	**Total**	**$ 59,573**	**Total**	**$ 29,336**	**Total**	**$ 47,321**	**Total**	**$ 20,826**	**Total**	**$ 41,331**	**Total**	**$ 7,801**	**Total**	**$ 8,716**	**Total**	**$ 2,434**	**Total**	**$ 21,618**	**Total**	**$ 18,598**
Restoration																																	
201	3" Type 'E' HMA Pavement Replacement (Full Width of 24'w)	$14	SY	0	$ -	0	$ -	4,533	$ 61,880	1,600	$ 21,840	5,867	$ 80,080	0	$ -	0	$ -	0	$ -	0	$ -	2,667	$ 36,400	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
202	12" Gravel Base in Type 'E' Pavement Areas (Full Width of 24'w)	$11	SY	0	$ -	0	$ -	4,533	$ 47,600	1,600	$ 16,800	5,867	$ 61,600	0	$ -	0	$ -	0	$ -	0	$ -	2,667	$ 28,000	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
203	3" Type 'A' HMA Pavement Replacement (Half Width-Trench Only)	$30	LF	600	$ 18,000	1,200	$ 36,000	0	$ -	0	$ -	0	$ -	3,300	$ 99,000	1,330	$ 39,900	1,800	$ 54,000	1,200	$ 36,000	0	$ -	500	$ 15,000	0	$ -	0	$ -	1,000	$ 30,000	600	$ 18,000
204	12" Gravel Base in Type 'A' Pavement Areas (Half Width-Trench Only)	$22	LF	600	$ 13,200	1,200	$ 26,400	0	$ -	0	$ -	0	$ -	3,300	$ 72,600	1,330	$ 29,260	1,800	$ 39,600	1,200	$ 26,400	0	$ -	500	$ 11,000	0	$ -	0	$ -	1,000	$ 22,000	600	$ 13,200
205	3" Type 'B' HMA Pavement Replacement (3" Trench Plus 1.5" Full Width Cap)	$36	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	900	$ 32,400	400	$ 14,400	0	$ -	0	$ -
206	12" Gravel Base in Type 'B' Pavement Areas (Trench Only)	$22	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	900	$ 19,800	400	$ 8,800	0	$ -	0	$ -
207	6" Gravel Surface Replacement (15'w)	$13	SY	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
208	Pavement Marking	$1	LF	600	$ 630	1,200	$ 1,260	1,700	$ 1,785	600	$ 630	2,200	$ 2,310	3,300	$ 3,465	1,330	$ 1,397	1,800	$ 1,890	1,200	$ 1,260	1,000	$ 1,050	500	$ 525	900	$ 945	400	$ 420	1,000	$ 1,050	600	$ 630
209	Curb and Gutter Replacement (both sides)	$28	LF	0	$ -	0	$ -	400	$ 11,340	0	$ -	0	$ -	0	$ -	1,000	$ 28,350	2,600	$ 73,710	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
210	Curb and Gutter Removal (both sides)	$4	LF	0	$ -	0	$ -	400	$ 1,680	0	$ -	0	$ -	0	$ -	1,000	$ 4,200	2,600	$ 10,920	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
211	Storm Repair (1-48" Manhole with 15' of Storm Pipe & 2-36" Catch Basins with 30' Lead every 400')	$13,681	EA	0	$ -	0	$ -	4	$ 58,144	2	$ 20,522	6	$ 75,246	0	$ -	3	$ 45,489	5	$ 61,565	0	$ -	3	$ 34,203	0	$ -	0	$ -	0	$ -	0	$ -	2	$ 20,522
212	6" Concrete Driveway Replacement (every 800', 10sy)	$53	SY	8	$ 394	15	$ 788	21	$ 1,116	8	$ 394	28	$ 1,444	41	$ 2,166	17	$ 873	23	$ 1,181	15	$ 788	13	$ 656	6	$ 328	11	$ 591	5	$ 263	13	$ 656	8	$ 394
213	3" Bituminous Driveway Replacement (every 300', 10sy)	$37	SY	20	$ 735	40	$ 1,470	57	$ 2,083	20	$ 735	73	$ 2,695	110	$ 4,043	44	$ 1,629	60	$ 2,205	40	$ 1,470	33	$ 1,225	17	$ 613	30	$ 1,103	13	$ 490	33	$ 1,225	20	$ 735
214	4" Concrete Sidewalk (5'w, Single Side)	$7	SF	0	$ -	0	$ -	8,500	$ 62,475	3,000	$ 22,050	0	$ -	0	$ -	0	$ -	6,500	$ 47,775	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
215	6" Concrete Sidewalk at Drive Crossings (every 200' @ 5'x15')	$9	SF	0	$ -	0	$ -	638	$ 6,024	225	$ 2,126	0	$ -	0	$ -	0	$ -	488	$ 4,607	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
216	6" Concrete ADA Ramps w/ Iron Warning Plate (every 400' @100sf)	$17	SF	0	$ -	0	$ -	425	$ 7,140	150	$ 2,520	0	$ -	0	$ -	0	$ -	325	$ 5,460	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
217	Adjust Existing Casting before Final Paving (2 ea @ 400')	$383	EA	3	$ 1,150	6	$ 2,300	9	$ 3,258	3	$ 1,150	11	$ 4,216	17	$ 6,324	7	$ 2,549	9	$ 3,449	6	$ 2,300	5	$ 1,916	3	$ 958	5	$ 1,725	2	$ 767	5	$ 1,916	3	$ 1,150
218	Miscellaneous Topsoil, Seed & Mulch / Sod Restoration	$2	LF	600	$ 1,260	1,200	$ 2,520	1,700	$ 3,570	600	$ 1,260	2,200	$ 4,620	3,300	$ 6,930	1,330	$ 2,793	1,800	$ 3,780	1,200	$ 2,520	1,000	$ 2,100	500	$ 1,050	900	$ 1,890	400	$ 840	1,000	$ 2,100	600	$ 1,260
219	Gravel Shoulder Replacement (6" d, 2' w)	$3	LF	600	$ 1,800	1,200	$ 3,600	1,700	$ 5,100	600	$ 1,800	2,200	$ 6,600	3,300	$ 9,900	1,330	$ 3,990	1,800	$ 5,400	1,200	$ 3,600	1,000	$ 3,000	500	$ 1,500	900	$ 2,700	400	$ 1,200	1,000	$ 3,000	600	$ 1,800
220	Excess Cut, (15% of Pipe LF)	$3	LF	90	$ 284	180	$ 567	255	$ 803	90	$ 284	330	$ 1,040	495	$ 1,559	200	$ 851	270	$ 628	180	$ 567	150	$ 473	75	$ 236	135	$ 425	60	$ 189	150	$ 473	90	$ 284
				Total	**$ 37,452**	**Total**	**$ 74,904**	**Total**	**$ 273,998**	**Total**	**$ 92,110**	**Total**	**$ 239,850**	**Total**	**$ 205,986**	**Total**	**$ 161,058**	**Total**	**$ 316,392**	**Total**	**$ 74,904**	**Total**	**$ 109,023**	**Total**	**$ 31,210**	**Total**	**$ 61,578**	**Total**	**$ 27,368**	**Total**	**$ 62,420**	**Total**	**$ 57,974**
Water Related Items																																	
301	Granular Fill Over Water Main (5% of Trench Length)	$21	LF	26	$ 546	56	$ 1,166	61	$ 1,271	24	$ 504	108	$ 2,258	161	$ 3,381	63	$ 1,323	86	$ 1,806	56	$ 1,166	44	$ 914	20	$ 420	13	$ 263	0	$ -	0	$ -	25	$ 515
302	12" Trench Undercut and Stone Refill for Water Main (25% of TL)	$12	LF	130	$ 1,556	278	$ 3,321	303	$ 3,620	120	$ 1,436	538	$ 6,432	805	$ 9,632	315	$ 3,769	430	$ 5,145	278	$ 3,321	218	$ 2,603	100	$ 1,197	63	$ 748	0	$ -	0	$ -	123	$ 1,466
303	12" CL 350 DI Water Main	$90	LF	0	$ -	0	$ -	920	$ 82,800	480	$ 43,200	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	250	$ 22,500	0	$ -	0	$ -	0	$ -
304	10" CL 350 DI Water Main	$80	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
305	8" CL 350 DI Water Main	$74	LF	520	$ 38,480	1,110	$ 82,140	290	$ 21,460	0	$ -	2,150	$ 159,100	3,220	$ 238,280	1,260	$ 93,240	1,720	$ 127,280	1,110	$ 82,140	870	$ 64,380	400	$ 29,600	0	$ -	0	$ -	0	$ -	490	$ 36,260
306	6" CL 350 DI Water Main (30' Hydrant Leads & Connection to Existing Main)	$68	LF	117	$ 7,985	250	$ 17,045	272	$ 18,581	108	$ 7,371	484	$ 33,016	725	$ 49,447	284	$ 19,349	387	$ 26,413	250	$ 17,045	196	$ 13,360	90	$ 6,143	56	$ 3,839	0	$ -	0	$ -	110	$ 7,525
307	8" to 10" Gate Valve and Box (4 Ea. @ 400')	$2,500	EA	5	$ 13,000	11	$ 27,750	12	$ 30,250	5	$ 12,000	22	$ 53,750	32	$ 80,500	13	$ 31,500	17	$ 43,000	11	$ 27,750	9	$ 21,750	4	$ 10,000	3	$ 6,250	0	$ -	0	$ -	5	$ 12,250
308	1" Type 'K' Copper Water Service (35 LF Ea. Every 100' Ea. Side)	$41	LF	364	$ 14,742	777	$ 31,469	847	$ 34,304	336	$ 13,608	1,505	$ 60,953	2,254	$ 91,287	882	$ 35,721	1,204	$ 48,762	777	$ 31,469	609	$ 24,665	280	$ 11,340	280	$ 11,340	105	$ 4,253	0	$ -	343	$ 13,892
309	1" Corp & Curb Stops & Connection (Every 100' Ea. Side)	$263	EA	10	$ 2,730	22	$ 5,828	24	$ 6,353	10	$ 2,520	43	$ 11,288	64	$ 16,905	25	$ 6,615	34	$ 9,030	22	$ 5,828	17	$ 4,568	8	$ 2,100	8	$ 2,100	3	$ 788	0	$ -	10	$ 2,573
310	Hydrant Assembly (Every 400')	$5,700	EA	1	$ 7,410	3	$ 15,818	3	$ 17,243	1	$ 6,840	5	$ 30,638	8	$ 45,885	3	$ 17,955	4	$ 24,510	3	$ 15,818	2	$ 12,398	1	$ 5,700	1	$ 3,563	0	$ -	0	$ -	1	$ 6,983
311	Dewatering (15% of Water Main)	$3	LF	78	$ 246	167	$ 524	182	$ 572	72	$ 227	323	$ 1,016	483	$ 1,521	189	$ 595	258	$ 813	167	$ 524	131	$ 411	60	$ 189	38	$ 118	0	$ -	0	$ -	74	$ 232
312	Connect to Existing Water Main (2 Ea @ 400')	$2,700	EA	3	$ 7,020	6	$ 14,985	6	$ 16,335	2	$ 6,480	11	$ 29,025	16	$ 43,470	6	$ 17,010	9	$ 23,220	6	$ 14,985	4	$ 11,745	2	$ 5,400	1	$ 3,375	0	$ -	0	$ -	2	$ 6,615
313	LSLR on Homeowner Side	$6,000	EA																														
314	Utility Location Investigation (1 Ea. @ 1,000')	$730	EA	1	$ 730	1	$ 730	1	$ 730	0	$ -	2	$ 1,460	3	$ 2,190	1	$ 730	2	$ 1,460	1	$ 730	1	$ 730	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
315	Rock or Boulder Excavation (1% of Total Water/San	1.0%			$ 944		$ 2,008		$ 2,335		$ 942		$ 3,889		$ 5,825		$ 2,278		$ 3,114		$ 2,008		$ 1,575		$ 721		$ 541		$ 50		$ -		$ 883
				Total	**$ 95,389**	**Total**	**$ 202,782**	**Total**	**$ 235,852**	**Total**	**$ 95,128**	**Total**	**$ 392,823**	**Total**	**$ 588,324**	**Total**	**$ 230,086**	**Total**	**$ 314,553**	**Total**	**$ 202,782**	**Total**	**$ 159,097**	**Total**	**$ 72,809**	**Total**	**$ 54,636**	**Total**	**$ 5,090**	**Total**	**$ -**	**Total**	**$ 89,191**
Sanitary Sewer Items																																	
401	Granular Fill Over Sewer (5% of Trench Length)	$26	LF	0	$ -	0	$ -	74	$ 1,929	24	$ 617	33	$ 866	0	$ -	0	$ -	0	$ -	0	$ -	59	$ 1,549	0	$ -	0	$ -	0	$ -	44	$ 1,142	20	$ 525
402	12" Trench Undercut and Stone Refill for Sewer (25% of Trench)	$13	LF	0	$ -	0	$ -	368	$ 4,627	118	$ 1,479	165	$ 2,077	0	$ -	0	$ -	0	$ -	0	$ -	295	$ 3,714	0	$ -	0	$ -	0	$ -	218	$ 2,738	100	$ 1,259
403	12" Sanitary Sewer	$120	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	650	$ 78,000	0	$ -
404	10" Sanitary Sewer	$110	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	330	$ 36,300	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
405	8" Sanitary Sewer	$95	LF	0	$ -	0	$ -	1,470	$ 139,650	470	$ 44,650	660	$ 62,700	0	$ -	0	$ -	0	$ -	0	$ -	850	$ 80,750	0	$ -	0	$ -	0	$ -	220	$ 20,900	400	$ 38,000
406	6" Sanitary Sewer	$83	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
407	4" To 6" Sanitary Lateral Replacement (35 LF Ea. Every 100' Ea. Side)	$83	LF	0	$ -	0	$ -	1,029	$ 85,407	329	$ 27,307	462	$ 38,346	0	$ -	0	$ -	0	$ -	0	$ -	826	$ 68,558	0	$ -	0	$ -	0	$ -	609	$ 50,547	280	$ 23,240
408	Wye Branch (1 Every 100' Ea. Side)	$350	EA	0	$ -	0	$ -	29	$ 10,290	9	$ 3,290	13	$ 4,620	0	$ -	0	$ -	0	$ -	0	$ -	24	$ 8,260	0	$ -	0	$ -	0	$ -	17	$ 6,090	8	$ 2,800
409	By-pass Pumping Around Sewer Section Being Replaced	$11	LF	0	$ -	0	$ -	1,470	$ 15,435	470	$ 4,935	660	$ 6,930	0	$ -	0	$ -	0	$ -	0	$ -	1,180	$ 12,390	0	$ -	0	$ -	0	$ -	870	$ 9,135	400	$ 4,200
410	Dewatering	$14	LF	0	$ -	0	$ -	1,470	$ 20,066	470	$ 6,416	660	$ 9,009	0	$ -	0	$ -	0	$ -	0	$ -	1,180	$ 16,107	0	$ -	0	$ -	0	$ -	870	$ 11,876	400	$ 5,460
411	48" Pre-Cast Manhole Replacement	$7,000	EA	0	$ -	0	$ -	9	$ 63,000	3	$ 21,000	4	$ 28,000	0	$ -	0	$ -	0	$ -	0	$ -	6	$ 42,000	0	$ -	0	$ -	0	$ -	5	$ 35,000	3	$ 21,000
412	Connect to Existing Sanitary Sewer (2 Ea. @ 400')	$1,175	EA	0	$ -	0	$ -	7	$ 8,636	2	$ 2,761	3	$ 3,878	0	$ -	0	$ -	0	$ -	0	$ -	6	$ 6,933	0	$ -	0	$ -	0	$ -	4	$ 5,111	2	$ 2,350
413	Utility Location Investigation (1 Ea. @ 1,000')	$850	EA	0	$ -	0	$ -	1	$ 850	0	$ -	1	$ 850	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 850	0	$ -	0	$ -	0	$ -	1	$ 850	0	$ -
414	Rock or Boulder Excavation (2% of Total Water/Sanitary Cost)	2.0%			$ -		$ -		$ 6,998		$ 2,249		$ 3,146		$ -		$ -		$ -		$ -		$ 5,548		$ -		$ -		$ -		$ 4,428		$ 1,977
				Total	**$ -**	**Total**	**$ -**	**Total**	**$ 356,888**	**Total**	**$ 114,704**	**Total**	**$ 160,422**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ 282,958**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ 225,817**	**Total**	**$ 100,811**
Total Construction Costs																																	
General					$ 9,963		$ 20,826		$ 65,005		$ 22,646		$ 59,482		$ 59,573		$ 29,336		$ 47,321		$ 20,826		$ 41,331		$ 7,801		$ 8,716		$ 2,434		$ 21,618		$ 18,598
Restoration					$ 37,452		$ 74,904		$ 273,998		$ 92,110		$ 239,850		$ 205,986		$ 161,058		$ 316,392		$ 74,904		$ 109,023		$ 31,210		$ 61,578		$ 27,368		$ 62,420		$ 57,974
Water					$ 95,389		$ 202,782		$ 235,852		$ 95,128		$ 392,823		$ 588,324		$ 230,086		$ 314,553		$ 202,782		$ 159,097		$ 72,809		$ 54,636		$ 5,090		$ -		$ 89,191
Sanitary					$ -		$ -		$ 356,888		$ 114,704		$ 160,422		$ -		$ -		$ -		$ -		$ 282,958		$ -		$ -		$ -		$ 225,817		$ 100,811
Water Total (Restoration + General)					**$ 142,900**		**$ 298,600**		**$ 405,400**		**$ 152,600**		**$ 592,400**		**$ 853,900**		**$ 420,500**		**$ 678,300**		**$ 298,600**		**$ 234,300**		**$ 111,900**		**$ 125,000**		**$ 34,900**		**$ -**		**$ 127,500**
Sanitary Total (Restoration + General)					**$ -**		**$ -**		**$ 526,400**		**$ 172,100**		**$ 260,200**		**$ -**		**$ -**		**$ -**		**$ -**		**$ 358,200**		**$ -**		**$ -**		**$ -**		**$ 309,900**		**$ 139,100**
Total					**$ 142,900**		**$ 298,600**		**$ 931,800**		**$ 324,600**		**$ 852,600**		**$ 853,900**		**$ 420,500**		**$ 678,300**		**$ 298,600**		**$ 592,500**		**$ 111,900**		**$ 125,000**		**$ 34,900**		**$ 309,900**		**$ 266,600**

City of St. Ignace Opinion of Cost: Phase 1 -

Versions: ANH 2/7/2022

		A7		B6		B7		A12		A9		A10		A11		A5		A13		B4		B3		B1		D1		LSLR ALLOWANCE		A2 PRV on S Airport Rd		Totals	
		Fountain St from E Truckey St to E Spring St		E Truckey St from Marley St to Fountain St		E Truckey St from Fountain St to Dickinson St		E Truckey St from Dickinson St to Chambers St		Joseph St from Old Portage St to E Truckey St		Dickinson St from Joseph St to E Truckey St		Dickinson St from E Truckey St to E Spring St		Mary St from Goudrea to Old Portage Rd		McCann St from Chambers St to West of Dickinson St		Spring St from S 2nd St to S 1st St(I75)		Goudreau St from N 2nd to 1st St		Alley South of Collins St from N 2nd to 1st St		S Marley St from the Marley Tank to Chambers St							
Item	Description	No. of Units	Cost	No. of Units	Cost	No. of Units		No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost
General																																	
101	Mobilization, General Conditions, Bonds & Insurance (5% of Total Construction Cost)		$ 4,252		$ 7,279		$ 9,786		$ 15,592		$ 11,519		$ 12,591		$ 4,252		$ 14,598		$ 8,995		$ 14,590		$ 8,855		$ 5,707		$ 28,974		$ -		$ 500		$ 437,808
102	Environmental Mitigation, Traffic Control, Etc. (2.5% of Total Construction Cost)		$ 2,126		$ 3,640		$ 4,893		$ 7,796		$ 5,759		$ 6,296		$ 2,126		$ 7,299		$ 4,498		$ 7,295		$ 4,427		$ 2,854		$ 14,487		$ -		$ 250		$ 218,904
		Total	**$ 6,378**	**Total**	**$ 10,919**	**Total**	**$ 14,678**	**Total**	**$ 23,388**	**Total**	**$ 17,278**	**Total**	**$ 18,887**	**Total**	**$ 6,378**	**Total**	**$ 21,897**	**Total**	**$ 13,493**	**Total**	**$ 21,886**	**Total**	**$ 13,282**	**Total**	**$ 8,561**	**Total**	**$ 43,460**	**Total**	**$ -**	**Total**	**$ 750**	**Total**	**$ 656,712**
Restoration																																	
201	3" Type 'E' HMA Pavement Replacement (Full Width of 24'w)	0	$ -	0	$ -	0	$ -	1,600	$ 21,840	1,600	$ 21,840	1,600	$ 21,840	0	$ -	1,333	$ 18,200	0	$ -	1,867	$ 25,480	1,067	$ 14,560	0	$ -	6,133	$ 83,720	0	$ -	0	$ -	29,867	$ 407,680
202	12" Gravel Base in Type 'E' Pavement Areas (Full Width of 24'w)	0	$ -	0	$ -	0	$ -	1,600	$ 16,800	1,600	$ 16,800	1,600	$ 16,800	0	$ -	1,333	$ 14,000	0	$ -	1,867	$ 19,600	1,067	$ 11,200	0	$ -	6,133	$ 64,400	0	$ -	0	$ -	29,867	$ 313,600
203	3" Type 'A' HMA Pavement Replacement (Half Width-Trench Only)	400	$ 12,000	600	$ 18,000	700	$ 21,000	0	$ -	0	$ -	0	$ -	400	$ 12,000	0	$ -	800	$ 24,000	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	14,430	$ 432,900
204	12" Gravel Base in Type 'A' Pavement Areas (Half Width-Trench Only)	400	$ 8,800	600	$ 13,200	700	$ 15,400	0	$ -	0	$ -	0	$ -	400	$ 8,800	0	$ -	800	$ 17,600	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	14,430	$ 317,460
205	3" Type 'B' HMA Pavement Replacement (3" Trench Plus 1.5" Full Width Cap)	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1,300	$ 46,800
206	12" Gravel Base in Type 'B' Pavement Areas (Trench Only)	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1,300	$ 28,600
207	6" Gravel Surface Replaement (15'w)	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
208	Pavement Marking	400	$ 420	600	$ 630	700	$ 735	600	$ 630	600	$ 630	600	$ 630	400	$ 420	500	$ 525	800	$ 840	700	$ 735	400	$ 420	0	$ -	2,300	$ 2,415	0	$ -	0	$ -	26,930	$ 28,277
209	Curb and Gutter Replacement (both sides)	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	4,000	$ 113,400
210	Curb and Gutter Removal (both sides)	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	4,000	$ 16,800
211	Storm Repair (1-48" Manhole with 15' of Storm Pipe & 2-36" Catch Basins with 30' Lead every 400')	0	$ -	0	$ -	0	$ -	2	$ 20,522	0	$ -	0	$ -	0	$ -	1	$ 17,101	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	26	$ 353,312
212	6" Concrete Driveway Replacement (every 800', 10sy)	5	$ 263	8	$ 394	9	$ 459	8	$ 394	8	$ 394	8	$ 394	5	$ 263	6	$ 328	10	$ 525	9	$ 459	5	$ 263	0	$ -	29	$ 1,509	0	$ -	0	$ -	337	$ 17,673
213	3" Bituminous Driveway Replacement (every 300', 10sy)	13	$ 490	20	$ 735	23	$ 858	20	$ 735	20	$ 735	20	$ 735	13	$ 490	17	$ 613	27	$ 980	23	$ 858	13	$ 490	0	$ -	77	$ 2,818	0	$ -	0	$ -	898	$ 32,989
214	4" Concrete Sidewalk (5'w, Single Side)	0	$ -	0	$ -	3,500	$ 25,725	6,000	$ 44,100	1,500	$ 11,025	0	$ -	0	$ -	5,000	$ 36,750	0	$ -	0	$ -	2,000	$ 14,700	0	$ -	0	$ -	0	$ -	0	$ -	36,000	$ 264,600
215	6" Concrete Sidewalk at Drive Crossings (every 200' @ 5'x15')	0	$ -	0	$ -	263	$ 2,481	450	$ 4,253	113	$ 1,063	0	$ -	0	$ -	375	$ 3,544	0	$ -	0	$ -	150	$ 1,418	0	$ -	0	$ -	0	$ -	0	$ -	2,700	$ 25,515
216	6" Concrete ADA Ramps w/ Iron Warning Plate (every 400' @100sf)	0	$ -	0	$ -	175	$ 2,940	300	$ 5,040	75	$ 1,260	0	$ -	0	$ -	250	$ 4,200	0	$ -	0	$ -	100	$ 1,680	0	$ -	0	$ -	0	$ -	0	$ -	1,800	$ 30,240
217	Adjust Existing Casting before Final Paving (2 ea @ 400')	2	$ 767	3	$ 1,150	4	$ 1,341	3	$ 1,150	3	$ 1,150	3	$ 1,150	2	$ 767	3	$ 958	4	$ 1,533	4	$ 1,341	2	$ 767	0	$ -	12	$ 4,407	0	$ -	0	$ -	135	$ 51,605
218	Miscellaneous Topsoil, Seed & Mulch / Sod Restoration	400	$ 840	600	$ 1,260	700	$ 1,470	600	$ 1,260	600	$ 1,260	600	$ 1,260	400	$ 840	500	$ 1,050	800	$ 1,680	700	$ 1,470	400	$ 840	0	$ -	2,300	$ 4,830	0	$ -	0	$ -	26,930	$ 56,553
219	Gravel Shoulder Replacement (6" d, 2' w)	400	$ 1,200	600	$ 1,800	700	$ 2,100	600	$ 1,800	600	$ 1,800	600	$ 1,800	400	$ 1,200	500	$ 1,500	800	$ 2,400	700	$ 2,100	400	$ 1,200	0	$ -	2,300	$ 6,900	0	$ -	0	$ -	26,930	$ 80,790
220	Excess Cut, (15% of Pipe LF)	60	$ 189	90	$ 284	105	$ 331	90	$ 284	90	$ 284	90	$ 284	60	$ 189	75	$ 236	120	$ 378	105	$ 331	60	$ 189	0	$ -	345	$ 1,087	0	$ -	0	$ -	4,040	$ 12,724
		Total	**$ 24,968**	**Total**	**$ 37,452**	**Total**	**$ 74,840**	**Total**	**$ 118,806**	**Total**	**$ 58,240**	**Total**	**$ 44,892**	**Total**	**$ 24,968**	**Total**	**$ 99,005**	**Total**	**$ 49,936**	**Total**	**$ 52,374**	**Total**	**$ 47,726**	**Total**	**$ -**	**Total**	**$ 172,086**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ 2,631,517**
Water Related Items																																	
301	Granular Fill Over Water Main (5% of Trench Length)	17	$ 347	30	$ 620	33	$ 693	26	$ 546	25	$ 515	25	$ 525	17	$ 347	24	$ 504	36	$ 746	30	$ 620	17	$ 357	15	$ 315	112	$ 2,342	0	$ -	0	$ -	1,143	$ 24,003
302	12" Trench Undercut and Stone Refill for Water Main (25% of TL)	83	$ 987	148	$ 1,765	165	$ 1,974	130	$ 1,556	123	$ 1,466	125	$ 1,496	83	$ 987	120	$ 1,436	178	$ 2,124	148	$ 1,765	85	$ 1,017	75	$ 897	558	$ 6,671	0	$ -	0	$ -	5,715	$ 68,385
303	12" CL 350 DI Water Main	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1,650	$ 148,500
304	10" CL 350 DI Water Main	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
305	8" CL 350 DI Water Main	330	$ 24,420	590	$ 43,660	660	$ 48,840	520	$ 38,480	490	$ 36,260	500	$ 37,000	330	$ 24,420	480	$ 35,520	710	$ 52,540	590	$ 43,660	340	$ 25,160	300	$ 22,200	2,230	$ 165,020	0	$ -	0	$ -	21,210	$ 1,569,540
306	6" CL 350 DI Water Main (30' Hydrant Leads & Connection to Existing Main)	74	$ 5,068	133	$ 9,060	149	$ 10,135	117	$ 7,985	110	$ 7,525	113	$ 7,678	74	$ 5,068	108	$ 7,371	160	$ 10,903	133	$ 9,060	77	$ 5,221	68	$ 4,607	502	$ 34,244	0	$ -	0	$ -	5,144	$ 351,044
307	8" to 10" Gate Valve and Box (4 Ea. @ 400')	3	$ 8,250	6	$ 14,750	7	$ 16,500	5	$ 13,000	5	$ 12,250	5	$ 12,500	3	$ 8,250	5	$ 12,000	7	$ 17,750	6	$ 14,750	3	$ 8,500	3	$ 7,500	22	$ 55,750	0	$ -	1	$ 10,000	229	$ 581,500
308	1" Type 'K' Copper Water Service (35 LF Ea. Every 100' Ea. Side)	231	$ 9,356	413	$ 16,727	462	$ 18,711	364	$ 14,742	343	$ 13,892	350	$ 14,175	231	$ 9,356	336	$ 13,608	497	$ 20,129	413	$ 16,727	238	$ 9,639	210	$ 8,505	1,561	$ 63,221	0	$ -	0	$ -	16,212	$ 656,586
309	1" Corp & Curb Stops & Connection (Every 100' Ea. Side)	7	$ 1,733	12	$ 3,098	13	$ 3,465	10	$ 2,730	10	$ 2,573	10	$ 2,625	7	$ 1,733	10	$ 2,520	14	$ 3,728	12	$ 3,098	7	$ 1,785	6	$ 1,575	45	$ 11,708	0	$ -	0	$ -	463	$ 121,590
310	Hydrant Assembly (Every 400')	1	$ 4,703	1	$ 8,408	2	$ 9,405	1	$ 7,410	1	$ 6,983	1	$ 7,125	1	$ 4,703	1	$ 6,840	2	$ 10,118	1	$ 8,408	1	$ 4,845	1	$ 4,275	6	$ 31,778	0	$ -	0	$ -	57	$ 325,755
311	Dewatering (15% of Water Main)	50	$ 156	89	$ 279	99	$ 312	78	$ 246	74	$ 232	75	$ 236	50	$ 156	72	$ 227	107	$ 335	89	$ 279	51	$ 161	45	$ 142	335	$ 1,054	0	$ -	0	$ -	3,429	$ 10,801
312	Connect to Existing Water Main (2 Ea @ 400')	2	$ 4,455	3	$ 7,965	3	$ 8,910	3	$ 7,020	2	$ 6,615	3	$ 6,750	2	$ 4,455	2	$ 6,480	4	$ 9,585	3	$ 7,965	2	$ 4,590	2	$ 4,050	11	$ 30,105	0	$ -	0	$ -	114	$ 308,610
313	LSLR on Homeowner Side																											5	$ 30,000			0	$ 30,000
314	Utility Location Investigation (1 Ea. @ 1,000')	0	$ -	1	$ 730	1	$ 730	1	$ 730	0	$ -	1	$ 730	0	$ -	0	$ -	1	$ 730	1	$ 730	0	$ -	0	$ -	2	$ 1,460	0	$ -	0	$ -	21	$ 15,330
315	Rock or Boulder Excavation (1% of Total Water/Sar		$ 595		$ 1,071		$ 1,197		$ 944		$ 883		$ 908		$ 595		$ 865		$ 1,287		$ 1,071		$ 613		$ 541		$ 4,034		$ -		$ -	0	$ 41,716
		Total	**$ 60,067**	**Total**	**$ 108,131**	**Total**	**$ 120,872**	**Total**	**$ 95,389**	**Total**	**$ 89,191**	**Total**	**$ 91,749**	**Total**	**$ 60,067**	**Total**	**$ 87,371**	**Total**	**$ 129,973**	**Total**	**$ 108,131**	**Total**	**$ 61,888**	**Total**	**$ 54,607**	**Total**	**$ 407,385**	**Total**	**$ 30,000**	**Total**	**$ 10,000**	**Total**	**$ 4,253,360**
Sanitary Sewer Items																																	
401	Granular Fill Over Sewer (5% of Trench Length)	0	$ -	0	$ -	0	$ -	21	$ 551	16	$ 407	27	$ 709	0	$ -	23	$ 604	0	$ -	27	$ 696	17	$ 446	15	$ 394	0	$ -	0	$ -	0	$ -	398	$ 10,434
402	12" Trench Undercut and Stone Refill for Sewer (25% of Trench)	0	$ -	0	$ -	0	$ -	105	$ 1,322	78	$ 976	135	$ 1,700	0	$ -	115	$ 1,448	0	$ -	133	$ 1,668	85	$ 1,070	75	$ 944	0	$ -	0	$ -	0	$ -	1,988	$ 25,022
403	12" Sanitary Sewer	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	650	$ 78,000
404	10" Sanitary Sewer	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	250	$ 27,500	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	580	$ 63,800
405	8" Sanitary Sewer	0	$ -	0	$ -	0	$ -	420	$ 39,900	310	$ 29,450	540	$ 51,300	0	$ -	460	$ 43,700	0	$ -	280	$ 26,600	340	$ 32,300	300	$ 28,500	0	$ -	0	$ -	0	$ -	6,720	$ 638,400
406	6" Sanitary Sewer	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
407	4" To 6" Sanitary Lateral Replacement (35 LF Ea. Every 100' Ea. Side)	0	$ -	0	$ -	0	$ -	294	$ 24,402	217	$ 18,011	378	$ 31,374	0	$ -	322	$ 26,726	0	$ -	371	$ 30,793	238	$ 19,754	210	$ 17,430	0	$ -	0	$ -	0	$ -	5,565	$ 461,895
408	Wye Branch (1 Every 100' Ea. Side)	0	$ -	0	$ -	0	$ -	8	$ 2,940	6	$ 2,170	11	$ 3,780	0	$ -	9	$ 3,220	0	$ -	11	$ 3,710	7	$ 2,380	6	$ 2,100	0	$ -	0	$ -	0	$ -	159	$ 55,650
409	By-pass Pumping Around Sewer Section Being Replaced	0	$ -	0	$ -	0	$ -	420	$ 4,410	310	$ 3,255	540	$ 5,670	0	$ -	460	$ 4,830	0	$ -	530	$ 5,565	340	$ 3,570	300	$ 3,150	0	$ -	0	$ -	0	$ -	7,950	$ 83,475
410	Dewatering	0	$ -	0	$ -	0	$ -	420	$ 5,733	310	$ 4,232	540	$ 7,371	0	$ -	460	$ 6,279	0	$ -	530	$ 7,235	340	$ 4,641	300	$ 4,095	0	$ -	0	$ -	0	$ -	7,950	$ 108,518
411	48" Pre-Cast Manhole Replacement	0	$ -	0	$ -	0	$ -	2	$ 14,000	3	$ 21,000	1	$ 7,000	0	$ -	2	$ 14,000	0	$ -	3	$ 21,000	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	41	$ 287,000
412	Connect to Existing Sanitary Sewer (2 Ea. @ 400')	0	$ -	0	$ -	0	$ -	2	$ 2,468	2	$ 1,821	3	$ 3,173	0	$ -	2	$ 2,703	0	$ -	3	$ 3,114	2	$ 1,998	2	$ 1,763	0	$ -	0	$ -	0	$ -	40	$ 46,706
413	Utility Location Investigation (1 Ea. @ 1,000')	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 850	0	$ -	0	$ -	0	$ -	1	$ 850	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	6	$ 5,100
414	Rock or Boulder Excavation (2% of Total Water/Sanitary Cost)		$ -		$ -		$ -		$ 1,915		$ 1,626		$ 2,259		$ -		$ 2,070		$ -		$ 2,575		$ 1,323		$ 1,168		$ -		$ -		$ -	0	$ 37,280
		Total	**$ -**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ 97,640**	**Total**	**$ 82,948**	**Total**	**$ 115,184**	**Total**	**$ -**	**Total**	**$ 105,579**	**Total**	**$ -**	**Total**	**$ 131,305**	**Total**	**$ 67,482**	**Total**	**$ 59,543**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ -**	**Total**	**$ 1,901,280**
Total Construction Costs																																	
General			$ 6,378		$ 10,919		$ 14,678		$ 23,388		$ 17,278		$ 18,887		$ 6,378		$ 21,897		$ 13,493		$ 21,886		$ 13,282		$ 8,561		$ 43,460		$ -		$ 750		$ 656,712
Restoration			$ 24,968		$ 37,452		$ 74,840		$ 118,806		$ 58,240		$ 44,892		$ 24,968		$ 99,005		$ 49,936		$ 52,374		$ 47,726		$ -		$ 172,086		$ -		$ -		$ 2,631,517
Water			$ 60,067		$ 108,131		$ 120,872		$ 95,389		$ 89,191		$ 91,749		$ 60,067		$ 87,371		$ 129,973		$ 108,131		$ 61,888		$ 54,607		$ 407,385		$ 30,000		$ 10,000		$ 4,253,360
Sanitary			$ -		$ -		$ -		$ 97,640		$ 82,948		$ 115,184		$ -		$ 105,579		$ -		$ 131,305		$ 67,482		$ 59,543		$ -		$ -		$ -		$ 1,901,280
Water Total (Restoration + General)			**$ 91,500**		**$ 156,600**		**$ 210,400**		**$ 166,500**		**$ 127,000**		**$ 123,700**		**$ 91,500**		**$ 147,900**		**$ 193,500**		**$ 145,300**		**$ 92,400**		**$ 58,900**		**$ 623,000**		**$ 30,000**		**$ 10,800**		**$ 6,745,800**
Sanitary Total (Restoration + General)			**$ -**		**$ -**		**$ -**		**$ 168,800**		**$ 120,800**		**$ 147,100**		**$ -**		**$ 166,100**		**$ -**		**$ 168,500**		**$ 98,000**		**$ 63,900**		**$ -**		**$ -**		**$ -**		**$ 2,699,100**
Total			**$ 91,500**		**$ 156,600**		**$ 210,400**		**$ 335,300**		**$ 247,700**		**$ 270,800**		**$ 91,500**		**$ 313,900**		**$ 193,500**		**$ 313,700**		**$ 190,400**		**$ 122,800**		**$ 623,000**		**$ 30,000**		**$ 10,800**		**$ 9,444,500**

Appendix A

Part 2: Bond Schedule

Bond Schedule

Date: ***02/04/22***

Borrower Name:	**City of St. Ignace**	***Type of Bond:***	**30**
Interest Rate:	2.125%		
Yrs Deferred Principle	0		
Principal:	**$3,500,000** (round to nearest $1000)		
Ammort. Factor	0.0454		
Ammortized Payment:	$158,973		
Monthly Debt Service	$13,248		
Estimated System EDUs	3194		
User Rate Impact	$4.15		

Year	1st Interest	2nd Interest	Principal Paid	Total Year Payment	Loan Balance
					3,500,000
1	37,188	37,188	85,000	159,375	3,415,000
2	36,284	36,284	86,000	158,569	3,329,000
3	35,371	35,371	88,000	158,741	3,241,000
4	34,436	34,436	90,000	158,871	3,151,000
5	33,479	33,479	92,000	158,959	3,059,000
6	32,502	32,502	94,000	159,004	2,965,000
7	31,503	31,503	96,000	159,006	2,869,000
8	30,483	30,483	98,000	158,966	2,771,000
9	29,442	29,442	100,000	158,884	2,671,000
10	28,379	28,379	102,000	158,759	2,569,000
11	27,296	27,296	104,000	158,591	2,465,000
12	26,191	26,191	107,000	159,381	2,358,000
13	25,054	25,054	109,000	159,108	2,249,000
14	23,896	23,896	111,000	158,791	2,138,000
15	22,716	22,716	114,000	159,433	2,024,000
16	21,505	21,505	116,000	159,010	1,908,000
17	20,273	20,273	118,000	158,545	1,790,000
18	19,019	19,019	121,000	159,038	1,669,000
19	17,733	17,733	124,000	159,466	1,545,000
20	16,416	16,416	126,000	158,831	1,419,000
21	15,077	15,077	129,000	159,154	1,290,000
22	13,706	13,706	132,000	159,413	1,158,000
23	12,304	12,304	134,000	158,608	1,024,000
24	10,880	10,880	137,000	158,760	887,000
25	9,424	9,424	140,000	158,849	747,000
26	7,937	7,937	143,000	158,874	604,000
27	6,418	6,418	146,000	158,835	458,000
28	4,866	4,866	149,000	158,733	309,000
29	3,283	3,283	152,000	158,566	157,000
30	1,668	1,668	156,000	159,336	1,000

Appendix A

Part 3: Operating Budget (2020)

Wastewater Fund Revenue (590)

		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-000-447.000	PENALTY	$ 5,588.20	$ 5,714.00	$ 7,401.00	$ 5,714.00
590-000-609.000	CONN FEE/SWR	$ 300.00	$ 300.00	$ 300.00	$ 300.00
590-000-610.000	SWR RTS CITY	$ 460,028.30	$ 460,031.00	$ 460,031.00	$ 524,435.00
590-000-613.000	MORAN TWP SWR RTS	$ 39,558.36	$ 39,589.00	$ 39,589.00	$ 39,589.00
590-000-614.000	ST. IGNACE TWP. RTS	$ 35,004.13	$ 43,531.00	$ 43,531.00	$ 43,531.00
590-000-624.000	MORAN TWP COMM	$ 54,387.82	$ 54,172.00	$ 54,172.00	$ 54,172.00
590-000-625.000	SWR COMMODITY CITY	$ 457,529.10	$ 491,278.00	$ 491,278.00	$ 491,278.00
590-000-626.000	ST. IGNACE TWP. COMMODITY	$ 87,724.59	$ 90,440.00	$ 90,440.00	$ 90,440.00
590-000-642.000	CHG FOR SERV SALES	$ 4,538.96	$ 1,869.00	$ 2,572.00	$ 1,869.00
590-000-664.000	INTEREST	$ 3,233.63	$ 2,845.00	$ 2,845.00	$ 2,845.00
590-000-695.000	MISC. INCOME	$ 2,361.58	$ 2,158.00	$ 2,158.00	$ 2,158.00
590-000-699.013	TRANS IN FROM ARPA FUNDS	$ -	$ -	$ -	$ 5,250.00
	Totals	$ 1,150,254.67	$ 1,191,927.00	$ 1,194,317.00	$ 1,261,581.00

Water Fund Revenue (591)

		Actual 2020	Original 2021	Amended 2021	Proposed 2022
591-000-446.000	PENALTY WTR	$ 5,061.75	$ 5,196.00	$ 6,650.00	$ 5,196.00
591-000-585.000	ST TWP-MDOT PROJ 2017-32- PYMT	$ 18,513.51	$ 13,884.00	$ 17,040.00	$ 13,884.00
591-000-605.000	ST. IGNACE TWP CONN FEES	$ 25.00	$ 25.00	$ 25.00	$ 25.00
591-000-608.000	CONNECTION FEES/WTR	$ -	$ -	$ 1,475.00	
591-000-611.000	WATER RTS CITY	$ 403,365.77	$ 403,309.00	$ 403,309.00	$ 403,309.00
591-000-612.000	MORAN TWP WTR RTS	$ 95,645.14	$ 95,644.00	$ 95,644.00	$ 95,644.00
591-000-613.000	ST. IGNACE TWP. RTS	$ 50,618.00	$ 50,675.00	$ 50,675.00	$ 50,675.00
591-000-623.000	MORAN TWP WTR COMMODITY WTR	$ 100,764.48	$ 106,994.00	$ 106,994.00	$ 106,994.00
591-000-624.000	ST IGNACE TWP COMM	$ 75,986.67	$ 78,249.00	$ 78,249.00	$ 78,249.00
591-000-626.000	WTR COMMODITY CITY	$ 444,166.23	$ 477,988.00	$ 477,988.00	$ 477,988.00
591-000-629.001	TWP CONTRI HYDRANT RENTAL	$ 15,600.00	$ 15,600.00	$ 15,600.00	$ 15,600.00
591-000-642.000	CHG FOR SERV SALES	$ 15,671.98	$ 12,858.00	$ 12,858.00	$ 12,858.00
591-000-643.000	TURN-ON CHGE	$ 1,870.00	$ 1,170.00	$ 3,640.00	$ 1,170.00
591-000-664.000	INTEREST	$ 2,499.97	$ 1,644.00	$ 1,644.00	$ 1,644.00
591-000-678.000	TOWER RENT (REP)	$ 25,539.66	$ 26,695.00	$ 26,695.00	$ 26,695.00
591-000-695.000	MISC. INCOME	$ 23,332.15	$ 452.00	$ 452.00	$ 452.00
591-000-699.013	TRANS IN FROM ARPA FUNDS	$ -	$ -	$ -	$ 10,500.00
	Totals	$ 1,278,660.31	$ 1,290,383.00	$ 1,298,938.00	$ 1,300,883.00

Detailed Budget Request
Wastewater (590)

SWR Administration (540)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-540-706.000	WAGES	$ 31,735.22	$ 30,000.00	$ 30,000.00	$ 30,000.00
590-540-706.001	COVID PREMIUM PAY	$ -	$ -	$ -	$ 5,250.00
590-540-715.000	SOCIAL SECURITY	$ 2,392.61	$ 2,400.00	$ 2,400.00	$ 2,400.00
590-540-716.000	HEALTH FRINGES	$ 8,349.62	$ 8,100.00	$ 8,100.00	$ 8,100.00
590-540-716.001	SELF FUNDING HEALTH PREIMUM	$ 1,063.69	$ 800.00	$ 800.00	$ 800.00
590-540-717.000	LIFE INS	$ 169.60	$ 190.00	$ 190.00	$ 190.00
590-540-718.000	RETIREMENT	$ 26,845.89	$ 25,000.00	$ 25,000.00	$ 27,000.00
590-540-721.000	MESC	$ 208.81	$ 350.00	$ 350.00	$ 350.00
590-540-725.000	WORKMAN'S COMP	$ 1,092.35	$ 1,100.00	$ 1,100.00	$ 1,100.00
590-540-751.000	OFFICE SUPPLIES	$ -	$ -	$ 200.00	
590-540-801.000	PROFESSIONAL SERVICES	$ -	$ 3,000.00	$ 18,000.00	$ 17,500.00
590-540-807.000	ACCOUNTING & AUDITING	$ -	$ 500.00	$ 500.00	$ 500.00
590-540-855.000	WEBSITE	$ -	$ 1,500.00	$ 1,500.00	$ 1,500.00
590-540-900.000	PRINT & PUBLISH	$ -	$ 100.00	$ 100.00	$ 100.00
590-540-956.000	SUNDRY	$ 688.53	$ 550.00	$ 550.00	$ 550.00
590-540-960.000	ED & TRAIN	$ -	$ 400.00	$ 200.00	$ 400.00
590-965-965-000	TRANSFER TO GEN FUND #101	$ 26,250.00	$ 30,000.00	$ 30,000.00	$ 30,000.00
590-965-995.003	TRANSFER TO OFFICE EQUIP #664	$ 3,900.00	$ 3,900.00	$ 3,900.00	$ 4,500.00
590-965-995.008	TRANS TO VAC/SICK #729	$ 7,300.00	$ 7,300.00	$ 7,300.00	$ 7,300.00
590-965-995.010	TRANS TO RETIREMENT FUND	$ -	$ -	$ -	$ -
590-965-998.390	TRANS TO FUND BALANCE	$ -	$ 49,735.00	$ 34,735.00	$ -
	CONTINGENCY RESERVE	$ -	$ -	$ -	$ 9,606.00
	Subtotal	$ 109,996.32	$ 164,925.00	$ 164,925.00	$ 147,146.00

SWR Plant Operations (541)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-541-706.000	WAGES	$ 83,160.00	$ 81,500.00	$ 81,500.00	$ 81,500.00
590-541-715.000	SOCIAL SECURITY	$ 6,250.55	$ 6,410.00	$ 6,410.00	$ 6,410.00
590-541-716.000	HEALTH FRINGES	$ 16,940.95	$ 16,000.00	$ 16,000.00	$ 17,000.00
590-541-716.001	SELF FUNDING HEALTH PREIMUM	$ 3,148.13	$ 7,500.00	$ 7,500.00	$ 7,500.00
590-541-717.000	LIFE INS	$ 304.13	$ 320.00	$ 320.00	$ 320.00
590-541-718.000	RETIREMENT	$ 45,913.21	$ 24,000.00	$ 24,000.00	$ 30,000.00
590-541-719.000	MERS 457	$ 1.12	$ 20.00	$ 20.00	$ 20.00
590-541-721.000	MESC	$ 733.60	$ 1,000.00	$ 1,000.00	$ 1,000.00
590-541-725.000	WORKMAN'S COMP	$ 1,490.49	$ 2,750.00	$ 2,750.00	$ 2,750.00
590-541-750.000	OTHER OPERATING SUPPLIES	$ 39,580.44	$ 40,000.00	$ 40,000.00	$ 40,000.00
590-541-755.000	UNIFORMS	$ 125.00	$ 600.00	$ 600.00	$ 600.00
590-541-778.000	EQUIP. MAINT SUPP	$ 2,268.56	$ 860.00	$ 860.00	$ 3,500.00
590-541-800.000	MORAN TWP 95%)	$ 7,421.10	$ 6,300.00	$ 6,300.00	$ 6,300.00
590-541-818.000	CONTRACTED SERV	$ 13,503.43	$ 21,000.00	$ 21,000.00	$ 21,000.00
590-541-853.000	COMMUNICATIONS	$ 546.75	$ 900.00	$ 900.00	$ 900.00
590-541-920.000	UTILITIES, ELECTRIC	$ 164,137.48	$ 180,000.00	$ 180,000.00	$ 178,000.00
590-541-921.000	UTILITIES, NATURAL GAS	$ 224.99	$ 400.00	$ 400.00	$ 400.00
590-541-935.000	PROPERTY LIABILITY INS	$ 14,601.93	$ 15,000.00	$ 15,000.00	$ 16,000.00
590-541-960.000	ED & TRAIN	$ 95.00	$ 500.00	$ 500.00	$ 500.00
	Subtotal	$ 400,446.86	$ 405,060.00	$ 405,060.00	$ 413,700.00

Detailed Budget Request
Wastewater Fund (590) (Continued)

SWR Line Maintenance (542)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-542-706.000	WAGES	$ 32,806.10	$ 32,000.00	$ 32,000.00	$ 32,000.00
590-542-707.000	WAGES, TEMPORARY	$ 747.87	$ 500.00	$ 500.00	$ 500.00
590-542-715.000	SOCIAL SECURITY	$ 2,518.49	$ 2,400.00	$ 2,400.00	$ 2,400.00
590-542-716.000	HEALTH FRINGES	$ 4,603.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
590-542-717.000	LIFE INS	$ 119.10	$ 130.00	$ 130.00	$ 130.00
590-542-718.000	RETIREMENT	$ 9,907.64	$ 8,200.00	$ 8,200.00	$ 8,500.00
590-542-719.000	MERS 457	$ 163.96	$ 200.00	$ 200.00	$ 200.00
590-542-721.000	MESC	$ 240.40	$ 420.00	$ 420.00	$ 420.00
590-542-725.000	WORKMAN'S COMP	$ 1,109.36	$ 1,200.00	$ 1,200.00	$ 1,200.00
590-542-750.000	OPERATING SUPPLIES	$ 718.49	$ 1,500.00	$ 2,500.00	$ 3,000.00
590-542-778.000	EQUIP MAINT SUPP	$ 153.08	$ 500.00	$ 500.00	$ 500.00
590-542-782.000	MATERIALS/DPW/ROADS	$ 290.37	$ 2,500.00	$ 2,500.00	$ 2,500.00
590-542-818.000	CONTRACTED SERV	$ 11,501.50	$ 24,000.00	$ 21,460.00	$ 21,460.00
590-542-943.000	EQUIPMENT RENTAL	$ 13,512.98	$ 13,000.00	$ 13,000.00	$ 13,000.00
590-542-977.000	CAPITAL OUTLAY EQUIP	$ 1,515.91	$ 2,000.00	$ 3,540.00	$ 2,000.00
	Subtotal	$ 79,908.25	$ 93,550.00	$ 93,550.00	$ 92,810.00

2000 Sanitary SWR RR&I (543)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-543-778.000	EQUIP MAINT SUPP	$ -	$ 11,400.00	$ 11,400.00	$ -
590-543-818.000	CONTRACTED SERV	$ -	$ 707.00	$ 707.00	$ -
	Subtotal	$ -	$ 12,107.00	$ 12,107.00	$ -

2010 USDA SWR IMP RR&I (544)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-544-778.000	EQUIP MAINT SUPPPLIES	$ 2,819.79	$ 5,000.00	$ 4,000.00	$ -
590-544-818.000	CONTRACTED SERV	$ 2,320.00	$ 5,000.00	$ 6,000.00	$ -
590-544-977.000	CAPITAL OUTLAY EQUIP	$ 5,478.00	$ -	$ -	$ -
	Subtotal	$ 10,617.79	$ 10,000.00	$ 10,000.00	$ -

Detailed Budget Request
Wastewater Fund (590) (Continued)

Wastewater Debt Service (905)		Actual 2020	Original 2021	Amended 2021	Proposed 2022
590-905-991-400	2010 BOND PRIN #92-06	$ -	$ 51,000.00	$ 51,000.00	$ 53,000.00
590-905-991-401	2008 SRF PRIN 5320-1	$ -	$ 195,000.00	$ 195,000.00	$ 200,000.00
590-905-991-402	2009 SRF PRIN 5292-01	$ -	$ 35,000.00	$ 35,000.00	$ 35,000.00
590-905-991-403	1999A BOND PRIN 04 SWR DISP SYS	$ -	$ 18,000.00	$ 18,000.00	$ 19,000.00
590-905-991-404	1999B BOND PRIN 05 DISPOSAL REV	$ -	$ 3,000.00	$ 3,000.00	$ 2,000.00
590-905-991-405	2019 BOND PRIN #92-10	$ -	$ 21,000.00	$ 21,000.00	$ 22,000.00
590-905-992-400	2010 BOND INT #92-06	$ 44,820.00	$ 64,460.00	$ 64,460.00	$ 51,593.00
590-905-992-401	2008 SRF INT 5320-01	$ 53,500.00	$ 48,750.00	$ 48,750.00	$ 43,875.00
590-905-992-402	2009 SRF INT 5292-01	$ 9,455.00	$ 9,000.00	$ 9,000.00	$ 7,706.00
590-905-992-403	1999A BOND INT 04 SWR DISP SYS	$ 22,815.00	$ 22,050.00	$ 22,050.00	$ 21,240.00
590-905-992-404	1999B BOND INT 05 DISPOSAL REV	$ 3,150.00	$ 3,060.00	$ 3,060.00	$ 2,926.00
590-905-992-405	2019 BOND INT #92-10	$ 23,939.40	$ 35,965.00	$ 35,965.00	$ 35,412.00
	Subtotal	$ 157,679.40	$ 506,285.00	$ 506,285.00	$ 493,752.00

SRF/5593 01 (906) Debt Service		Actual 2020	Original 2021	Amended 2021	Proposed 2021
590-906-991.900	2015 N. STATE ST 5593-01 PRIN	$ -	$ 65,000.00	$ 65,000.00	$ 65,000.00
590-906-992.900	2015 N. STATE ST. 5593-01 INT	$ 34,690.20	$ 33,100.00	$ 33,900.00	$ 31,441.00
	Subtotal	$ 34,690.20	$ 98,100.00	$ 98,900.00	$ 96,441.00

Wastewater Fund Totals	$ 758,648.62	$ 1,191,927.00	$ 1,191,927.00	$ 1,243,849.00

APPENDIX B

DISADVANTAGED COMMUNITY

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

DISADVANTAGED COMMUNITY STATUS DETERMINATION WORKSHEET

The following data is required from each municipality to assess the disadvantaged community status. Please provide the necessary information and return to:

Mark Conradi
Water Infrastructure Financing Section
Finance Division
conradim@michigan.gov

Please contact Mark Conradi (conradim@michigan.gov) with any questions on the completion of the form.

Please check the box this determination is for:

DWSRF ☐

CWSRF ☑

Total amount of anticipated debt for the proposed project, if applicable.

$3,500,000.00

Annual payments on the existing debt for the system.

$604,385.00

Total operation, maintenance, and replacement expenses for the system on an annual basis.

$635,907.00

Number of residential equivalent users (REUs) in the system.

3194

For determinations made using anticipated debt, a final determination will be made based upon the awarded loan amount.

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

APPENDIX C

EVIRONMENTAL INFORMATION

ENVIRONMENTAL INFORMATION AND GUIDANCE
TABLE OF CONTENTS

Appendix C

Typical Review Package as Distributed

PROJECT SUMMARY FOR ENVIRONMENTAL REVIEWS

CITY OF ST. IGNACE, MICHIGAN
WATER AND WASTEWATER SYSTEM IMPROVEMENTS (SRF PROJECT PLANS)

February 2022

ADMINISTRATIVE

The City of St. Ignace, Michigan has contracted with C2AE Engineers of Escanaba to prepare an EGLE DWSRF and CWSRF Program Project Plan. The purpose of the Project Plan is to evaluate needs and recommend alternatives for upgrades to the existing water distribution system and facilities (tanks, pump stations, and water treatment plant), and wastewater system.

PROJECT PLANNING AREA

Project planning concentrates on the existing St. Ignace water and wastewater distribution system (Township 40N, Range 3W, Sections 6, 7, 17, and 18). The City is located in Mackinac County near the east end of Michigan's Upper Peninsula.

EXISTING FACILITIES

The City of St. Ignace is the responsible entity for the municipal water and wastewater treatment plant serving the City and the adjacent areas of Moran and St. Ignace Townships. The entire service district lies within Mackinac County in Michigan's Upper Peninsula.

The City's water facilities include a 500,000 gal in-ground concrete treated water storage tank at the WTP, one 300,000 gal steel standpipe with booster pumping at Marley Street, a 100,000 gal elevated storage tank on Second Street, and a 100,000 gal elevated storage tank in Evergreen Shores; these facilities and the distribution system are currently owned, operated, and maintained by the City. The distribution system includes about 200,000 ft of water main and includes hydrants, valves, and services. The City's water source is Lake Huron near the Straits of Mackinaw.

The existing sewer system consists of approximately 20 miles of 6 to 27-inch sewers. The City's WWTP is located directly north of the airport. The system is gravity with eight lift stations.

NEED FOR THE PROJECT

Reliable operation of the water and wastewater system within the City of St. Ignace's utility systems are imperative to protect the health and safety of the City's citizens and visitors. The City has been operating and maintaining the systems and facilities effectively, but there are areas of escalating deterioration and obsolescence that require a larger, preventative replacement and rehabilitation effort. Operators, consultants, and regulators have collaborated on the proposed solutions for these areas of work.

ALTERNATIVES CONSIDERED

Cost effectiveness of treatment and distribution alternatives has been an ongoing evaluation. Based on the cost effectiveness analysis and long term desires of the City, this application will be focused on improvements to the existing facilities and replacement of water and sewer main. The principal alternatives are being considered as noted below:

- Alternative 1: No Action; the systems may continue to maintain operations, but escalating deterioration of existing equipment and structures risks inefficiency, additional hazards, and control failures.
- Alternative 2: Upgrade existing water facilities and replacement of water and sewer main; the rehabilitation of existing water treatment systems can be done with relatively minor additions, modifications, and replacements.

RECOMMENDED ALTERNATIVE

Upgrade of existing water facilities and replacement of water and sewer main (7,950 ft) is considered the preferred alternative. Attached maps outline the proposed project areas.

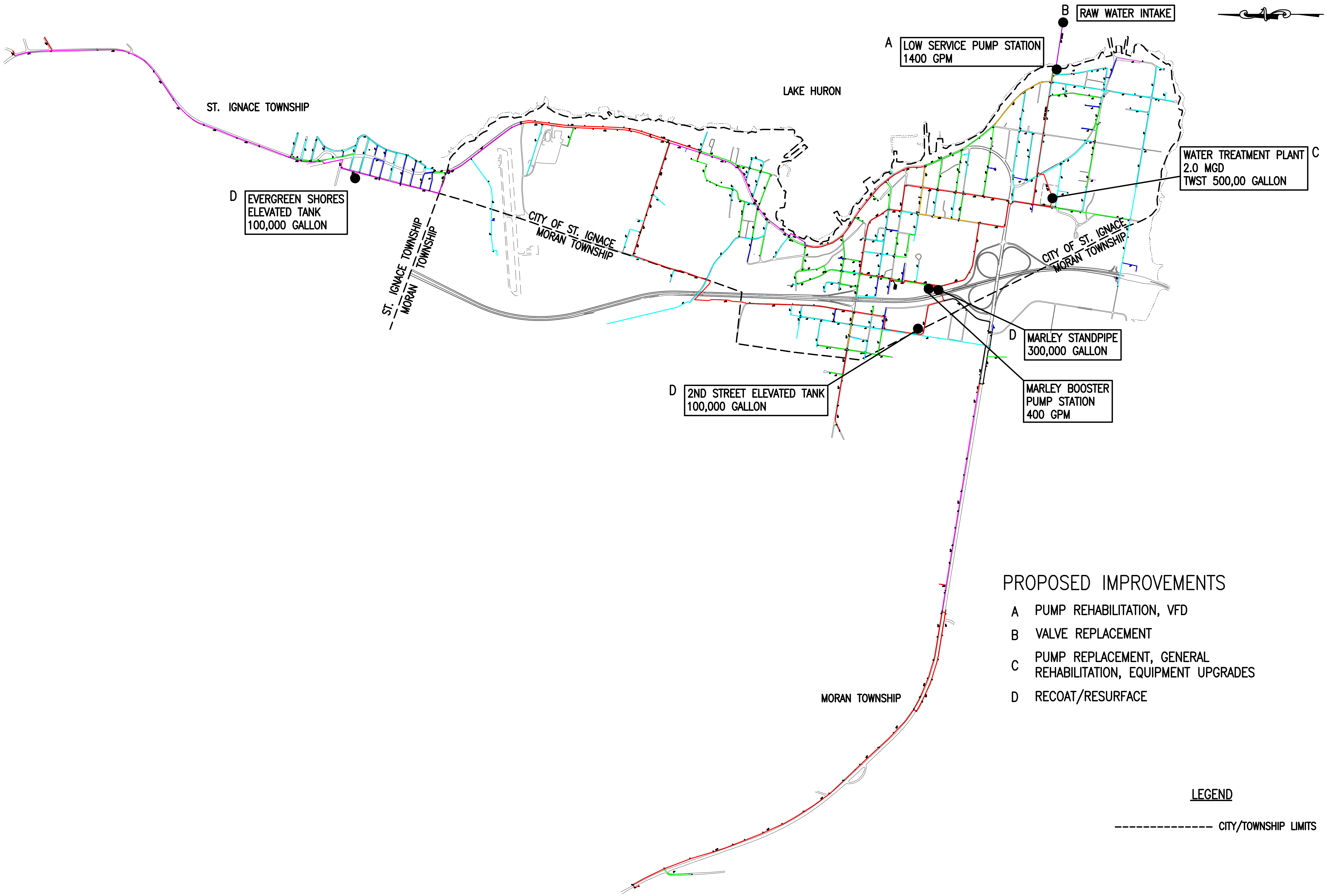
The fundamental effectiveness of the existing treatment plant and storage systems is not in need of major changes, but minor improvements can prevent decline and improve efficiency of current operations. This includes the following improvements:

- Pump rehabilitation at the low service pump station
- Valve replacement at the raw water intake
- Pump replacement, general rehabilitation, and equipment upgrades at the water treatment plant
- Recoating and resurfacing of the Evergreen Shores Elevated Tank, Second Street Elevated Tank, and Marley Standpipe

ANTICIPATED SCHEDULE

The initial project is scheduled for submission of a EGLE Project Plan in 2022 with construction in 2023 through 2024.

Figure 1: Location Map



PROPOSED IMPROVEMENTS

- A PUMP REHABILITATION, VFD
- B VALVE REPLACEMENT
- C PUMP REPLACEMENT, GENERAL REHABILITATION, EQUIPMENT UPGRADES
- D RECOAT/RESURFACE

LEGEND

-------------- CITY/TOWNSHIP LIMITS

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CITY OF ST. IGNACE, MICHIGAN
DWSRF PHASE I
MACKINAC COUNTY, MICHIGAN

FIGURE 2:
PROPOSED FACILITY
IMPROVEMENT LOCATIONS

REVISIONS

REV	DESCRIPTION	DATE

PROJ. #: 210076
DATE: MARCH 2021
SHEET
6

PRELIMINARY

DRAFT

0 500 1,000 2,000 3,000 4,000 Feet

N

FIGURE 10: PROPOSED PROJECT PRIORITIES COMBINED UTILITIES

CITY OF ST. IGNACE
USDA RD WASTEWATER
PROJECT: 18-0085
MACKINAC COUNTY, MICHIGAN

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Legend

Project Priority

- Priority 1 - Water & Sewer
- Priority 1 - Water Only
- Priority 2 - Water & Sewer
- Priority 2 - Water Only
- Priority 2 - Sewer Only
- Priority 3 - Water Only
- Priority 4 - Water Only
- Road

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Appendix C

Part 1: Air Quality

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

1. Air Quality

EGLE was contacted to review and comment on the potential direct or indirect air pollutant emissions impact that would result from the construction or operation of the proposed project. Fugitive dust emissions on the worksite are a potential during construction. If this would become an issue, dust suppressants will be used to control the fugitive dust to prevent violations of Rule 901.

Appendix C

Part 2: Archeological and Historic Resources

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

2. Archeological and Historic Resources

Based on the ITA Meeting for this project, the project has been classified as an equivalency project, therefore SHPO was not contacted for review. It is anticipated that there will be no impact to any historic properties. Construction activities will be within previously disturbed, existing facilities. Currently, it is not expected that there will be any earthwork.

Appendix C

Part 3: Archeological and Historic Resources
(Tribal Historic Preservation Officers and Federally Recognized Tribes)

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

3. Archeological and Historic Resources (Tribal Historic Preservation Officers and Federally Recognized Tribes)

Based on the ITA Meeting for this project, the project has been classified as an equivalency project, therefore THPO was not contacted for review. It is anticipated that there will be no impact to any tribal lands.

Appendix C

Part 4: Facility Discharge Permits

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

4. Facility Discharge Permit

The proposed project does not require a NPDES Permit.

PERMIT NO. MI0020699

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the federal Clean Water Act (federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq*., as amended); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2019-06,

City of St. Ignace
396 North State Street
St. Ignace, MI 49781

is authorized to discharge from the **St. Ignace Wastewater Treatment Plant** located at

1288 North State Street
St. Ignace, MI 49781

designated as **St Ignace WWTP**

to the receiving water named Lake Huron in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on January 21, 2020 amended through February 12, 2021.

This permit takes effect on July 1, 2021. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0020699 (expiring October 1, 2020).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2025**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environment, Great Lakes, and Energy (Department) by **April 4, 2025**.

Issued: June 29, 2021.

Original signed by Christine Alexander
Christine Alexander, Manager
Permits Section
Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked by January 15 for notices mailed by December 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Major, less than 10 MGD (Individual Permit)

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department if the permittee land applies biosolids. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked no later than January 31 of each year for notices mailed by December 15. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 15.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Marquette District Office of the Water Resources Division. The Marquette District Office is located at 1504 West Washington Street, Marquette, MI 49855, Telephone: 906-228-4853, Fax: 906-228-4940.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environment, Great Lakes, and Energy, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 002A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge treated municipal wastewater from Monitoring Point 002A through Outfall 002. Outfall 002 discharges to Lake Huron at Latitude 45.89539, Longitude -84.73028. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand (CBOD5)	310	500	(report)	lbs/day	25	40	(report)	mg/l	3x Weekly	24-Hr Composite
Total Suspended Solids (TSS)	380	560	(report)	lbs/day	30	45	(report)	mg/l	3x Weekly	24-Hr Composite
Ammonia Nitrogen (as N)	(report)	---	(report)	lbs/day	(report)	---	(report)	mg/l	2x Weekly	24-Hr Composite
Total Phosphorus (as P)	13	---	(report)	lbs/day	1.0	---	(report)	mg/l	3x Weekly	24-Hr Composite
Chloride	---	---	---	---	(report)	---	(report)	mg/l	Monthly	24-Hr Composite
Sulfate	---	---	---	---	(report)	---	(report)	mg/l	Monthly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	(report)	cts/ 100 ml	3x Weekly	Grab
Total Mercury										
Corrected	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Calculation
Uncorrected	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
Field Duplicate	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
Field Blank	---	---	---	---	---	---	(report)	ng/l	Quarterly	Preparation
Laboratory Method Blank	---	---	---	---	---	---	(report)	ng/l	Quarterly	Preparation
	12-Month Rolling Avg				**12-Month Rolling Avg**					
Total Mercury	0.00005	---	---	lbs/day	4.0	---	---	ng/l	Quarterly	Calculation
					Minimum % Monthly		**Minimum % Daily**			
CBOD5 Minimum % Removal	---	---	---	---	85	---	(report)	%	Monthly	Calculation
TSS Minimum % Removal	---	---	---	---	85	---	(report)	%	Monthly	Calculation
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.5	---	9.0	S.U.	3x Weekly	Grab
Dissolved Oxygen	---	---	---	---	4.0	---	---	mg/l	3x Weekly	Grab

PART I

Section A. Limitations and Monitoring Requirements

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: 1.5 MGD.

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
Samples for CBOD5, TSS, Ammonia Nitrogen (as N), Total Phosphorus (as P), Chloride, and Sulfate shall be taken prior to disinfection. Samples for Fecal Coliform Bacteria, Total Mercury, pH and Dissolved Oxygen shall be taken after disinfection. The Department may approve alternate sampling locations that are demonstrated by the permittee to be representative of the effluent.

c. Quarterly Monitoring
Quarterly samples shall be taken during the months of January, April, July, and October. If the facility does not discharge during these months, the permittee shall sample the next discharge occurring during the period in question. If the facility does not discharge during the period in question, a sample is not required for that period. For any month in which a sample is not taken, the permittee shall enter "*G" on the Discharge Monitoring Report (DMR). (For purposes of reporting on the Daily tab of the DMR, the permittee shall enter “*G” on the first day of the month only).

d. Ultraviolet Disinfection
It is understood that ultraviolet light will be used to achieve compliance with the fecal coliform limitations. If disinfection other than ultraviolet light will be used, the permittee shall notify the Department in accordance with Part II.C.12. of this permit.

e. Percent Removal Requirements
Monthly percent removal shall be calculated based on the monthly average effluent CBOD5 and TSS concentrations and the monthly average influent concentrations for approximately the same period. Daily percent removal shall be calculated based on the daily effluent CBOD5 and TSS concentrations and the daily influent concentrations for the same day. Reporting of Daily percent removal is only required on days on which an influent sample is obtained.

f. Final Effluent Limitation for Total Mercury
The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the 12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any quarter is less than or equal to the LCA, the permittee will be considered to be in compliance for total mercury for that quarter, provided the permittee is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.5. of this permit.

PART I

Section A. Limitations and Monitoring Requirements

After a minimum of 10 quarterly data points have been collected, the permittee may request a reduction in the monitoring frequency for total mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency for total mercury indicated in Part I.A.1. of this permit. The monitoring frequency shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

g. Total Mercury Testing and Additional Reporting Requirements

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternate sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, “Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance),” EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e., a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittee shall report under "Total Mercury – Corrected" the same value reported under "Total Mercury – Uncorrected." The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

h. Security Fencing

The lagoon shall be enclosed by security fencing. The fencing shall include gates wide enough to accommodate mowing machinery. All gates shall be locked to prevent unauthorized access. Metal warning signs shall be posted on the fencing. Lagoon systems that utilize sophisticated mechanical equipment should consider more secure fencing and access control.

PART I

Section A. Limitations and Monitoring Requirements

2. Facility Operation and Maintenance

The permittee shall comply with the inspection, operation, and maintenance program requirements specified below. An alternate facility operations program may be approved by the Department.

a. Lagoon Inspection

The permittee shall inspect the lagoon facilities three (3) times weekly year-round unless otherwise authorized by the Department. These inspections shall include:

1) The lagoon dikes for vegetative growth, erosion, slumping, animal burrowing or breakthrough, and condition of lagoon liner.

2) The lagoon for growth of aquatic plants, offensive odors, insect infestations, scum, floating sludge, and septic conditions.

3) The depth of the water in each cell and the freeboard.

4) The control structures and pump stations to ensure that valves, gates, and alarms are set correctly and properly functioning.

5) The lagoon security fence and warning signs.

The permittee shall initiate steps to correct any condition that is not in accordance with the facility maintenance program outlined in b. below. A record of the inspections shall be maintained by the permittee for a period of three (3) years in accordance with Part II.B.5. of this permit.

b. Facility Maintenance

The permittee shall implement a Facility Maintenance Program that incorporates the following management practices unless otherwise authorized by the Department:

1) Vegetation shall be maintained at a height not more than six (6) inches above the ground on lagoon dikes and around the fencing.

2) At all times, the facility shall be maintained to prevent the negative effects of floating material and/or water perimeter emergent rooted aquatic plants on Dissolved Oxygen concentrations, treatment efficiency, nuisance organisms, offensive odors, or other measurable impacts. However, in no case, even without demonstrated impact, shall the floating material and/or water perimeter emergent rooted aquatic plants exceed 40 percent cover.

3) Dike damage due to erosion or animal burrowing shall be corrected immediately and steps taken to prevent occurrences in the future.

4) The integrity of the lagoon liner shall be protected. Liner damages shall be corrected immediately and steps taken to prevent future occurrences.

5) The occurrence of scum, floating sludge, offensive odors, insect infestations, and septic conditions shall be minimized.

6) A schedule for the inspection and maintenance of the collection system, lift stations, mechanical and electrical systems, transfer stations, and control structures shall be developed and implemented.

PART I

Section A. Limitations and Monitoring Requirements

3. Quantification Levels and Analytical Methods for Selected Parameters

Maximum acceptable quantification levels (QLs) are specified for selected parameters in the table below. These QLs shall be considered the maximum acceptable unless a higher QL is appropriate because of sample matrix interference. Justification for higher QLs shall be submitted to the Department within 30 days of such determination. Where necessary to help ensure that the QLs specified herein can be achieved, analytical methods may also be specified in the table below. The sampling procedures, preservation and handling, and analytical protocol for all monitoring conducted in compliance with this permit, including monitoring conducted to meet the requirements of the application for permit reissuance, shall be in accordance with the methods specified herein, or in accordance with Part II.B.2. of this permit if no method is specified herein, unless an alternate method is approved by the Department. The Department will consider only alternate methods that meet the requirements of Part II.B.2. and whose QLs are at least as sensitive (i.e., low) as those specified herein. **Not all QLs are expressed in the same units in the table below**. The table is continued on the following page:

Parameter	QL	Units	Analytical Method
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3'-Dichlorobenzidine	1.5	ug/l	
4-Chloro-3-Methylphenol	7.0	ug/l	
4,4'-DDD	0.01	ug/l	
4,4'-DDE	0.01	ug/l	
4,4'-DDT	0.01	ug/l	
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	
Alpha-Endosulfan	0.01	ug/l	
Alpha-Hexachlorocyclohexane	0.01	ug/l	
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	
Beryllium, Total	1	ug/l	
Beta-Endosulfan	0.01	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Bis (2-Ethylhexyl) Phthalate	5.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	
Chloride	1.0	mg/l	
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	

PART I

Section A. Limitations and Monitoring Requirements

Parameter	QL	Units	Analytical Method
Dieldrin	0.01	ug/l	
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan Sulfate	0.01	ug/l	
Endrin	0.01	ug/l	
Endrin Aldehyde	0.01	ug/l	
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	
Heptachlor Epoxide	0.01	ug/l	
Hexachlorobenzene	0.01	ug/l	
Hexachlorobutadiene	0.01	ug/l	
Hexachlorocyclopentadiene	0.01	ug/l	
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	
Lithium, Total	10	ug/l	
Mercury, Total	0.5	ng/l	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	
PCB-1221	0.1	ug/l	
PCB-1232	0.1	ug/l	
PCB-1242	0.1	ug/l	
PCB-1248	0.1	ug/l	
PCB-1254	0.1	ug/l	
PCB-1260	0.1	ug/l	
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	0.002	ug/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Phosphorus (as P), Total	10	ug/l	
Selenium, Total	1.0	ug/l	
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfate	2.0	mg/l	
Sulfides, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	
Vinyl Chloride	1.0	ug/l	
Zinc, Total	10	ug/l	

PART I

Section A. Limitations and Monitoring Requirements

4. Additional Monitoring Requirements

As a condition of this permit, the permittee shall monitor the discharge from monitoring point 002A for the constituents identified below. This monitoring is an application requirement of 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in October 2021, May 2022, March 2023, and August 2024. Grab samples shall be collected for available cyanide, total phenols, and the Perfluoroalkyl and Polyfluoroalkyl Substances and Volatile Organic Compounds identified below. For all other parameters, 24-hour composite samples shall be collected.

Test species for whole effluent toxicity monitoring shall include fathead minnow **and** *Ceriodaphnia dubia,* for a total of four (4) tests on each species. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-013, "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (Fourth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 3 mg/l, the pH of the toxicity test shall be maintained at a pH of 8 Standard Units. Acute and chronic toxicity data shall be included in the reporting for the toxicity test results. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request. The permittee shall report to the Department any whole effluent toxicity test results greater than 1.0 TU_A or 1.0 TU_C within five (5) days of becoming aware of the result.

The results of such additional monitoring shall be submitted with the application for reissuance (see the cover page of this permit for the application due date). The permittee shall notify the Department within 14 days of completing the monitoring for each month specified above in accordance with Part II.C.5. Additional reporting requirements are specified in Part II.C.11. If, upon review of the analysis, it is determined that additional requirements are needed to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified by the Department in accordance with applicable laws and rules.

Whole Effluent Toxicity

acute toxicity	chronic toxicity

Hardness

calcium carbonate

Perfluoroalkyl and Polyfluoroalkyl Substances

Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)

Metals (Total Recoverable), Cyanide and Total Phenols

antimony	arsenic	available cyanide	nickel
beryllium	cadmium	chromium	zinc
copper	lead	thallium	
selenium	silver	total phenolic compounds	

Volatile Organic Compounds

acrolein	acrylonitrile	benzene	bromoform
carbon tetrachloride	chlorobenzene	chlorodibromomethane	chloroethane
2-chloroethylvinyl ether	chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	trans-1,2-dichloroethylene	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	ethylbenzene	methyl bromide	methyl chloride
methylene chloride	1,1,2,2-tetrachloroethane	tetrachloroethylene	toluene
1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethylene	vinyl chloride

Acid-Extractable Compounds

4-chloro-3-methylphenol	2-chlorophenol	2,4-dichlorophenol	2,4-dimethylphenol
4,6-dinitro-o-cresol	2,4-dinitrophenol	2-nitrophenol	4-nitrophenol
Pentachlorophenol	phenol	2,4,6-trichlorophenol	

PART I

Section A. Limitations and Monitoring Requirements

Base/Neutral Compounds

acenaphthene	acenaphthylene	anthracene	benzidine
benzo(a)anthracene	benzo(a)pyrene	3,4-benzofluoranthene	benzo(ghi)perylene
benzo(k)fluoranthene	bis(2-chloroethoxy)methane	bis(2-chloroethyl)ether	bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate	4-bromophenyl phenyl ether	butyl benzyl phthalate	2-chloronaphthalene
4-chlorophenyl phenyl ether	chrysene	di-n-butyl phthalate	di-n-octyl phthalate
dibenzo(a,h)anthracene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
3,3'-dichlorobenzidine	diethyl phthalate	dimethyl phthalate	2,4-dinitrotoluene
2,6-dinitrotoluene	1,2-diphenylhydrazine	fluoranthene	fluorene
Hexachlorobenzene	hexachlorobutadiene	hexachlorocyclo-pentadiene	hexachloroethane
indeno(1,2,3-cd)pyrene	isophorone	naphthalene	nitrobenzene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
pyrene	1,2,4-trichlorobenzene		

5. Pollutant Minimization Program for Total Mercury

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l. The permittee shall continue to implement the Pollutant Minimization Program approved on January 7, 2011, and modifications thereto, to proceed toward the goal. The Pollutant Minimization Program includes the following:

a. an annual review and semi-annual monitoring of potential sources of mercury entering the wastewater collection system;

b. a program for quarterly monitoring of influent and periodic monitoring of sludge for mercury; and

c. implementation of reasonable cost-effective control measures when sources of mercury are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

On or before March 31 of each year, the permittee shall submit a status report to the Department for the previous calendar year that includes 1) the monitoring results for the previous year, 2) an updated list of potential mercury sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of mercury.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or to demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification), including a reduction in the frequency of the requirements under items a. and b. above.

This permit may be modified in accordance with applicable laws and rules to include additional mercury conditions and/or limitations as necessary.

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Section A. Limitations and Monitoring Requirements

6. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the permittee shall immediately, but not more than 24 hours after the discharge begins, notify local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located, that the discharge is occurring. The permittee shall also notify the Department via its MiWaters system on the form entitled "Report of Discharge (CSO\SSO\RTB)." The MiWaters website is located at https://miwaters.deq.state.mi.us. At the conclusion of the discharge, the permittee shall make all such notifications specified in, and in accordance with, Section 324.3112a of the NREPA, and shall notify the Department via its MiWaters system on the form entitled "Report of Discharge (CSO\SSO\RTB)."

The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of untreated or partially treated sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification.

Additionally, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The results of this testing shall be submitted to the Department via MiWaters as part of the notification specified above, or, if the results are not yet available, submitted as soon as they become available. This testing is not required if it has been waived by the local health department, or if the discharge(s) did not affect surface waters. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

PART I

Section A. Limitations and Monitoring Requirements

7. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
- for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
- for a partnership, a general partner,
- for a sole proprietorship, the proprietor, or
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.

b. A person is a duly authorized representative only if:
- the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
- the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section releases the permittee from properly submitting reports and forms as required by law.

8. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, operating reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

Within 30 days of the effective date of this permit, the permittee shall submit to the Department a revised treatment facility monitoring program to address monitoring requirement changes reflected in this permit, or submit justification explaining why monitoring requirement changes reflected in this permit do not necessitate revisions to the treatment facility monitoring program. The permittee shall implement the revised treatment facility monitoring program upon approval from the Department. Applicable forms and guidance are available on the Department's web site at https://www.michigan.gov/egle/0,9429,7-135-3313_71618_44117---,00.html. The permittee may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittee that monthly submittal of operating reports is required, operating reports that result from implementation of the approved treatment facility monitoring program shall be maintained on site for a minimum of three (3) years and shall be made available to the Department for review upon request.

PART I

Section A. Limitations and Monitoring Requirements

9. Asset Management

The permittee shall at all times properly operate and maintain all facilities (i.e., the sewer system and treatment works as defined in Part 41 of the NREPA), and control systems installed or used by the permittee to operate the sewer system and treatment works and achieve and maintain compliance with the conditions of this permit (also see Part II.D.3 of this permit). The requirements of an Asset Management Program function to achieve the goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process for ensuring that optimum value is gained for each asset and that financial resources are available to rehabilitate and replace those assets when necessary. Asset management is centered on a framework of five (5) core elements: the current state of the assets; the required sustainable level of service; the assets critical to sustained performance; the minimum life-cycle costs; and the best long-term funding strategy.

a. Asset Management Program Requirements

On or before January 1, 2022, the permittee shall submit to the Department an Asset Management Plan for review and approval. An approvable Asset Management Plan shall contain a schedule for the development and implementation of an Asset Management Program that meets the requirements outlined below in 1) – 4). A copy of any Asset Management Program requirements already completed by the permittee should be submitted as part of the Asset Management Plan. Upon approval by the Department the permittee shall implement the Asset Management Plan. (The permittee may choose to include the Operation and Maintenance Manual required under Part II.C.14. of this permit as part of their Asset Management Program).

1) *Maintenance Staff.* The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. The level of staffing needed shall be determined by taking into account the work involved in operating the sewer system and treatment works, planning for and conducting maintenance, and complying with this permit.

2) *Collection System Map.* The permittee shall complete a map of the sewer collection system it owns and operates. The map shall be of sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by the Department. **Note: Items below referencing combined sewer systems are not applicable to separate sewer systems.** Such map(s) shall include but not be limited to the following:

a) all sanitary sewer lines and related manholes;

b) all combined sewer lines, related manholes, catch basins and CSO regulators;

c) all known or suspected connections between the sanitary sewer or combined sewer and storm drain systems;

d) all outfalls, including the treatment plant outfall(s), combined sewer treatment facility outfalls, untreated CSOs, and any known SSOs;

e) all pump stations and force mains;

f) the wastewater treatment facility(ies), including all treatment processes;

g) all surface waters (labeled);

h) other major appurtenances such as inverted siphons and air release valves;

PART I

Section A. Limitations and Monitoring Requirements

i) a numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j) the scale and a north arrow;

k) the pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow; and

l) the manhole interior material, rim elevation (optional), and invert elevations.

3) *Inventory and assessment of fixed assets.* The permittee shall complete an inventory and assessment of operations-related fixed assets including portions of the collection system owned and operated by the permittee. Fixed assets are assets that are normally stationary (e.g., pumps, blowers, buildings, manholes, and sewer lines). The inventory and assessment shall be based on current conditions and shall be kept up-to-date and available for review by the Department.

a) The fixed asset inventory shall include the following:

(1) a brief description of the fixed asset, its design capacity (e.g., pump: 120 gallons per minute), its level of redundancy, and its tag number if applicable;

(2) the location of the fixed asset;

(3) the year the fixed asset was installed;

(4) the present condition of the fixed asset (e.g., excellent, good, fair, poor); and

(5) the current fixed asset (replacement) cost in dollars for year specified in accordance with approved schedules;

b) The fixed asset assessment shall include a "Business Risk Evaluation" that combines the probability of failure of the fixed asset and the criticality of the fixed asset, as follows:

(1) Rate the probability of failure of the fixed asset on a scale of 1-5 (low to high) using criteria such as maintenance history, failure history, and remaining percentage of useful life (or years remaining);

(2) Rate the criticality of the fixed asset on a scale of 1-5 (low to high) based on the consequence of failure versus the desired level of service for the facility; and

(3) Compute the Business Risk Factor of the fixed asset by multiplying the failure rating from (1) by the criticality rating from (2).

4) *Operation, Maintenance & Replacement (OM&R) Budget and Rate Sufficiency for the Sewer System and Treatment Works.* The permittee shall complete an assessment of its user rates and replacement fund, including the following:

a) beginning and end dates of fiscal year;

b) name of the department, committee, board, or other organization that sets rates for the operation of the sewer system and treatment works;

c) amount in the permittee's replacement fund in dollars for year specified in accordance with approved schedules;

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Section A. Limitations and Monitoring Requirements

d) replacement fund strategy of all assets with a useful life of 20 years or less;

e) expenditures for maintenance, corrective action and capital improvement taken during the fiscal year;

f) OM&R budget for the fiscal year; and

g) rate calculation demonstrating sufficient revenues to cover OM&R expenses. If the rate calculation shows there are insufficient revenues to cover OM&R expenses, the permittee shall document, within three (3) fiscal years after submittal of the Asset Management Plan, that there is at least one rate adjustment that reduces the revenue gap by at least 10 percent. The permittee may prepare and submit an alternate plan, subject to Department approval, for addressing the revenue gap. The ultimate goal of the Asset Management Program is to ensure sufficient revenues to cover OM&R expenses.

b. Annual Reporting

The permittee shall develop a written report that summarizes asset management activities completed during the previous year and planned for the upcoming year. The written report shall be submitted to the Department on or before February 1 of each year. The written report shall include:

1) a description of the staffing levels maintained during the year;

2) a description of inspections and maintenance activities conducted and corrective actions taken during the previous year;

3) expenditures for collection system maintenance activities, treatment works maintenance activities, corrective actions, and capital improvement during the previous year;

4) a summary of assets/areas identified for inspection/action (including capital improvement) in the upcoming year based on the five (5) core elements and the Business Risk Factors computed in accordance with condition a.3)b)(3) above;

5) a maintenance budget and capital improvement budget for the upcoming year that take into account implementation of an effective Asset Management Program that meets the five (5) core elements;

6) an updated asset inventory based on the original submission; and

7) an updated OM&R budget with an updated rate schedule that includes the amount of insufficient revenues, if any.

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Section A. Limitations and Monitoring Requirements

10. Inflow and Infiltration Reduction Program

The permittee has provided data that demonstrates that there is a significant volume of Inflow and Infiltration (I/I) in the City's separate municipal wastewater collection system. This requirement establishes the program necessary to reduce I/I. The permittee shall develop and implement an I/I Reduction Program in accordance with the following schedule:

On or before July 1, 2022 the permittee shall submit to the Department for review and approval an I/I Reduction Program. The I/I Reduction Program shall be implemented upon approval by the Department. The I/I Reduction Program shall include the following:

a. an annual review of remaining sources of I/I within the collection system;

b. quantification of remaining sources of I/I within the collection system; and

c. implementation of reasonable, cost-effective I/I reduction measures.

On or before July 1 of each year, following Department Approval of the I/I Reduction Program, the permittee shall submit to the department a written report that summarizes the I/I removal activities completed during the previous year, any deviations from the previous year's plan, an updated list of remaining I/I sources, and a projected I/I removal plan for the upcoming year.

Any information generated as a result of the I/I Reduction Program set forth in this permit may be used to support a request to modify the approved program or may demonstrate that the program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification).

The permittee may choose to demonstrate that the program is complete and request removal of the program from the permit. If the Department determines that the request is approvable, this permit may be modified in accordance with applicable laws and rules to remove this requirement.

This permit may be modified in accordance with applicable laws and rules to include additional conditions and/or limitations as necessary.

PART I

Section A. Limitations and Monitoring Requirements

11. Discharge Monitoring Report – Quality Assurance Study Program

The permittee shall participate in the Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program. The purpose of the DMR-QA Study Program is to annually evaluate the proficiency of all in-house and/or contract laboratory(ies) that perform, on behalf of the facility authorized to discharge under this permit, the analytical testing required under this permit. In accordance with Section 308 of the Clean Water Act (33 U.S.C. § 1318); and R 323.2138 and R 323.2154 of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, participation in the DMR-QA Study Program is required for all major facilities, and for minor facilities selected for participation by the Department.

Annually and in accordance with DMR-QA Study Program requirements and submittal due dates, the permittee shall submit to the Michigan DMR-QA Study Program state coordinator all documentation required by the DMR-QA Study. DMR-QA Study Program participation is required only for the analytes required under this permit and only when those analytes are also identified in the DMR-QA Study.

If the permitted facility's status as a major facility should change, participation in the DMR-QA Study Program may be reevaluated. Questions concerning participation in the DMR-QA Study Program should be directed to the Michigan DMR-QA Study Program state coordinator.

All forms and instructions required for participation in the DMR-QA Study Program, including submittal due dates and state coordinator contact information, can be found at http://www.epa.gov/compliance/discharge-monitoring-report-quality-assurance-study-program.

12. Continuous Monitoring

If continuous monitoring equipment is used and becomes temporarily inoperable, the permittee shall manually obtain a minimum of three (3) equally spaced grab samples/readings within each 24-hour period for the affected parameter(s). On such days, in the comment field on the Daily tab of the DMR, the permittee shall indicate "continuous monitoring system inoperable," the date on which the system is expected to become operable again, and the number of samples/readings obtained during each 24-hour period.

PART I

Section B. Storm Water Pollution Prevention

Section B. Storm Water Pollution Prevention is not required for this permit.

PART I

Section C. Industrial Waste Pretreatment Program

1. Industrial Waste Pretreatment Program

It is understood that the permittee does not receive the discharge of any type or quantity of substance which may cause interference with the operation of the treatment works; and, therefore, the permittee is not required to immediately develop an industrial pretreatment program in accordance with Section 307 of the Federal Water Pollution Control Act. The permittee is required to comply with Section 307 of the Federal Water Pollution Control Act upon accepting any such discharge for treatment. The permittee is required to notify the Department within 30 days if any user discharges or proposes to discharge such wastes to the permittee for treatment.

Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

a. pollutants which cause pass-through or interference;

b. pollutants which create a fire hazard or explosion hazard in the sewerage system, including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;

c. pollutants which will cause corrosive structural damage to the sewerage system; but in no case, discharges with pH less than 5.0, unless the works is specifically designed to accommodate such discharges;

d. solid or viscous pollutants in amounts which will cause obstruction to the flow in the sewerage system resulting in interference;

e. any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment plant;

f. heat in amounts which will inhibit biological activity in the treatment plant resulting in interference; but in no case, heat in such quantities that the temperature at the treatment plant exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless the Department, upon request of the permittee, approves alternate temperature limits;

g. pollutants which result in the presence of toxic gases, vapors or fumes within the sewerage system in a quantity that may cause acute worker health and safety problems; and

h. any trucked or hauled pollutants, except at discharge points designated by the permittee.

If information is gained by the Department that the permittee receives or is about to receive industrial wastes, then this permit may be modified in accordance with applicable laws and rules to incorporate the requirements of Section 307 of the Federal Water Pollution Control Act.

PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

The permittee is authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittee's approved Residuals Management Program (RMP) approved on June 13, 2011, and approved modifications thereto, and the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/egle/ and near the top of the screen click on Water, then towards the bottom right of the screen click on Permits, Wastewater, Biosolids, then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. Annual Report
On or before October 30 of each year, the permittee shall submit an annual report to the Department for the previous fiscal year of October 1 through September 30. The report shall be submitted electronically via the Department's MiWaters system at https://miwaters.deq.state.mi.us. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Annual Report Form for Reporting Biosolids, available at https://miwaters.deq.state.mi.us.

b. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

c. Record Keeping
Records required by the Part 24 Rules shall be kept for a minimum of five (5) years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

d. Contact Information
RMP-related submittals shall be made to the Department.

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of Section 9110 of Part 91, Soil and Sedimentation Control, of the NREPA, to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

CAFO means concentrated animal feeding operation.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means 100/MATC or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules, Land Application of Biosolids, promulgated under Part 31 of the NREPA. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

PART II

Section A. Definitions

Composite sample is a sample collected over time, either by continuous sampling or by mixing discrete samples. A composite sample represents the average wastewater characteristics during the compositing period. Various methods for compositing are available and are based on either time or flow-proportioning, the choice of which will depend on the permit requirements.

Continuous monitoring refers to sampling/readings that occur at regular and consistent intervals throughout a 24-hour period and at a frequency sufficient to capture data that are representative of the discharge. The maximum acceptable interval between samples/readings shall be one (1) hour.

Daily concentration
FOR PARAMETERS OTHER THAN pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – Daily concentration is the sum of the concentrations of the individual samples of a parameter taken within a calendar day divided by the number of samples taken within that calendar day. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations. For guidance and examples showing how to perform calculations using results below quantification levels, see the document entitled "Reporting Results Below Quantification," available at https://www.michigan.gov/documents/deq/wrd-npdes-results-quantification_620791_7.pdf.

FOR pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – The daily concentration used to determine compliance with maximum daily pH, temperature, and conductivity limitations is the highest pH, temperature, and conductivity readings obtained within a calendar day. The daily concentration used to determine compliance with minimum daily pH and dissolved oxygen limitations is the lowest pH and dissolved oxygen readings obtained within a calendar day.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environment, Great Lakes, and Energy.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

PART II

Section A. Definitions

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned composite sample is a composite sample in which either a) the volume of each portion of the composite is proportional to the effluent flow rate at the time that portion is obtained, or b) a constant sample volume is obtained at varying time intervals proportional to the effluent flow rate.

General permit means an NPDES permit authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

PART II

Section A. Definitions

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts a POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body’s legal authority.

MBTU/hr means million British Thermal Units per hour.

MGD means million gallons per day.

PART II

Section A. Definitions

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a POTW as defined in the Code of Federal Regulations at 40 CFR 122.2.

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Clean Water Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Clean Water Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Nonstructural controls are practices or procedures implemented by employees at a facility to manage storm water or to prevent contamination of storm water.

NPDES means National Pollutant Discharge Elimination System.

Outfall is the location at which a point source discharge first enters a surface water of the state.

PART II

Section A. Definitions

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of Section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of Section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation control activities under Part 615, Supervisor of Wells; Part 631, Reclamation of Mining Lands; or Part 632, Nonferrous Metallic Mineral Mining, of the NREPA, pursuant to the provisions of Section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's NPDES permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules, Spillage of Oil and Polluting Materials, promulgated under Part 31 of the NREPA (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Predevelopment is the last land use prior to the planned new development or redevelopment.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.

PART II

Section A. Definitions

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by state or federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface waters or groundwaters of the state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111, Hazardous Waste Management, of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

PART II

Section A. Definitions

Special-use area means storm water discharges for which the Department has determined that additional monitoring is needed from: secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

Structural controls are physical features or structures used at a facility to manage or treat storm water.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Clean Water Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value, or observation shall be reported for that period if a discharge occurs during that period. If the calendar week begins in one month and ends in the following month, the analytical result, reading, value, or observation shall be reported in the month in which monitoring was conducted.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14-day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

PART II

Section A. Definitions

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period and in which the volume of each portion is proportional to the discharge flow rate at the time that portion is taken. A time-proportioned composite sample may be used upon approval from the Department if the permittee demonstrates it is representative of the discharge.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Clean Water Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. For lists of approved test methods, go to https://www.epa.gov/cwa-methods. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Manager of the Permits Section, Water Resources Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Assurance/Quality Control program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-Up Notification

The permittee shall notify the Department of start-up if one of the following conditions applies and in accordance with the applicable condition:

a. Non-CAFOs

1) **If this is an individual permit** and the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of this permit, and then again 60 days prior to commencement of the discharge.

2) **If this is a general permit** and the permittee will not discharge during the first 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of the COC, and then again 60 days prior to commencement of the discharge.

b. CAFOs

1) **If this is an individual permit** and the permittee will not populate with animals during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of this permit, and then again 60 days prior to populating with animals.

2) **If this is a general permit** and the permittee will not populate with animals during 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of the COC, and then again 60 days prior to populating with animals.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittee shall submit self-monitoring data via the Department's MiWaters system.

The permittee shall utilize the information provided on the MiWaters website, located at https://miwaters.deq.state.mi.us, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

PART II

Section C. Reporting Requirements

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act, 1987 PA 96, as amended, for assurance of proper facility operation, shall be submitted as required by the Department.

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a written notification to the Department via MiWaters (https://miwaters.deq.state.mi.us) indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

PART II

Section C. Reporting Requirements

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Clean Water Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC). A written submission shall also be provided via MiWaters (https://miwaters.deq.state.mi.us) within five (5) days.

b. Other Reporting
The permittee shall report, in writing via MiWaters (https://miwaters.deq.state.mi.us), all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Reporting shall include: 1) a description of the discharge and cause of noncompliance; 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue; and 3) the steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, by calling the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

Within 10 days of the release, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a full written explanation as to the cause of the release, the discovery of the release, response measures (clean-up and/or recovery) taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under b. or c. below.

b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, the permittee shall submit written notification to the Department before the anticipated date of the bypass. This notification shall be submitted at least 10 days before the date of the bypass; however, the Department will accept fewer than 10 days advance notice if adequate explanation for this is provided. The notification shall provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions specified in a. above.

c. Notice of Unanticipated Bypass
As soon as possible but no later than 24 hours from the time the permittee becomes aware of the unanticipated bypass, the permittee shall notify the Department by calling the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if notification is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

PART II

Section C. Reporting Requirements

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of a., b., c., and d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

PART II

Section C. Reporting Requirements

11. Notification of Changes in Discharge

The permittee shall notify the Department, via MiWaters (https://miwaters.deq.state.mi.us), as soon as possible but within no more than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by written notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such written notice, the permit or, if applicable, the facility's COC, may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the following requirements apply: Not less than 30 days prior to the actual transfer of ownership or control – for non-CAFOs, or within 30 days of the actual transfer of ownership or control – for CAFOs, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

PART II

Section C. Reporting Requirements

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Clean Water Act and the NREPA.

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically via MiWaters (https://miwaters.deq.state.mi.us) all such reports or notifications as required by this permit, on forms provided by the Department.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Clean Water Act and constitutes grounds for enforcement action; for permit or COC termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

PART II

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a POTW, these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Clean Water Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit and required to be submitted to the Department shall be available for public inspection via MiWaters (https://miwaters.deq.state.mi.us). As required by the Clean Water Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Clean Water Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department via MiWaters (https://miwaters.deq.state.mi.us), within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

PART II

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Clean Water Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environment, Great Lakes, and Energy permits, or approvals from other units of government as may be required by law.

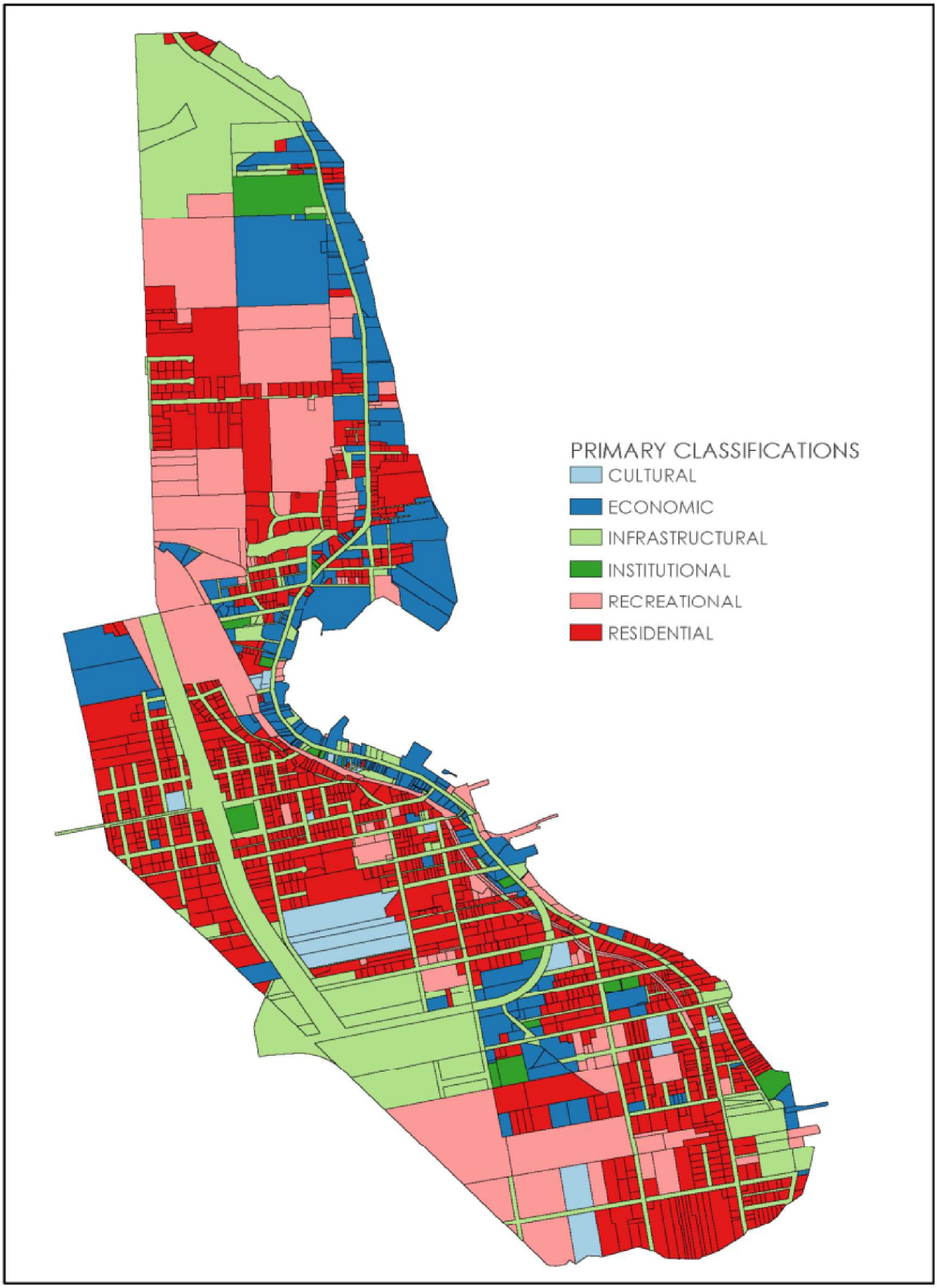
Appendix C

Part 5: Farmland and Open Space Preservation

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

5. Farmland and Open Space Preservation

A map of the Land Use in the project location is provided on the following page. It is not anticipated that the proposed project would involve converting farmlands to nonagricultural uses. Construction will be limited to previously disturbed areas.



0 0.25 0.5 1 Miles

N

SCALE: 1:20,000

Appendix C

Part 6: Health Department Permits

1211 Ludington St.
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O: 906.233.9360
www.c2ae.com

6. Health Department Permits

The proposed project does not involve the construction, alteration, extension, or replacement of onsite septic systems. Thus the local health department was not contacted.

Appendix C

Part 7: Lagoon Berm Permits

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www.c2ae.com

7. Lagoon Berm Permits

The proposed project will not impact a lagoon as defined where the berm encloses more than five acres. Thus the EGLE WRD Damstaff was not contacted.

Appendix C

Part 8: National Natural Landmarks

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8. National Natural Landmarks

A list of national natural landmarks was reviewed, the following three designated National Natural Landmarks in the Upper Peninsula of Michigan were found:

1. Dukes Research Natural Area (Marquette County): 231 acres in the U.S. Forest Service Upper Peninsula Experimental Station, 22 miles southeast of Marquette near Maple Grove.
2. Porcupine Mountains (Gogebic and Ontonagon Counties): 47,761 acres on the southern shore of Lake Superior, 14 miles north of Wakefield.
3. Strangmoor Bog (Schoolcraft County): 9,700 acres within the Seney National Wildlife Refuge, 14 miles southwest of Seney.

None of which are near the vicinity of the project location.

Appendix C

Part 9: Project Site Contamination

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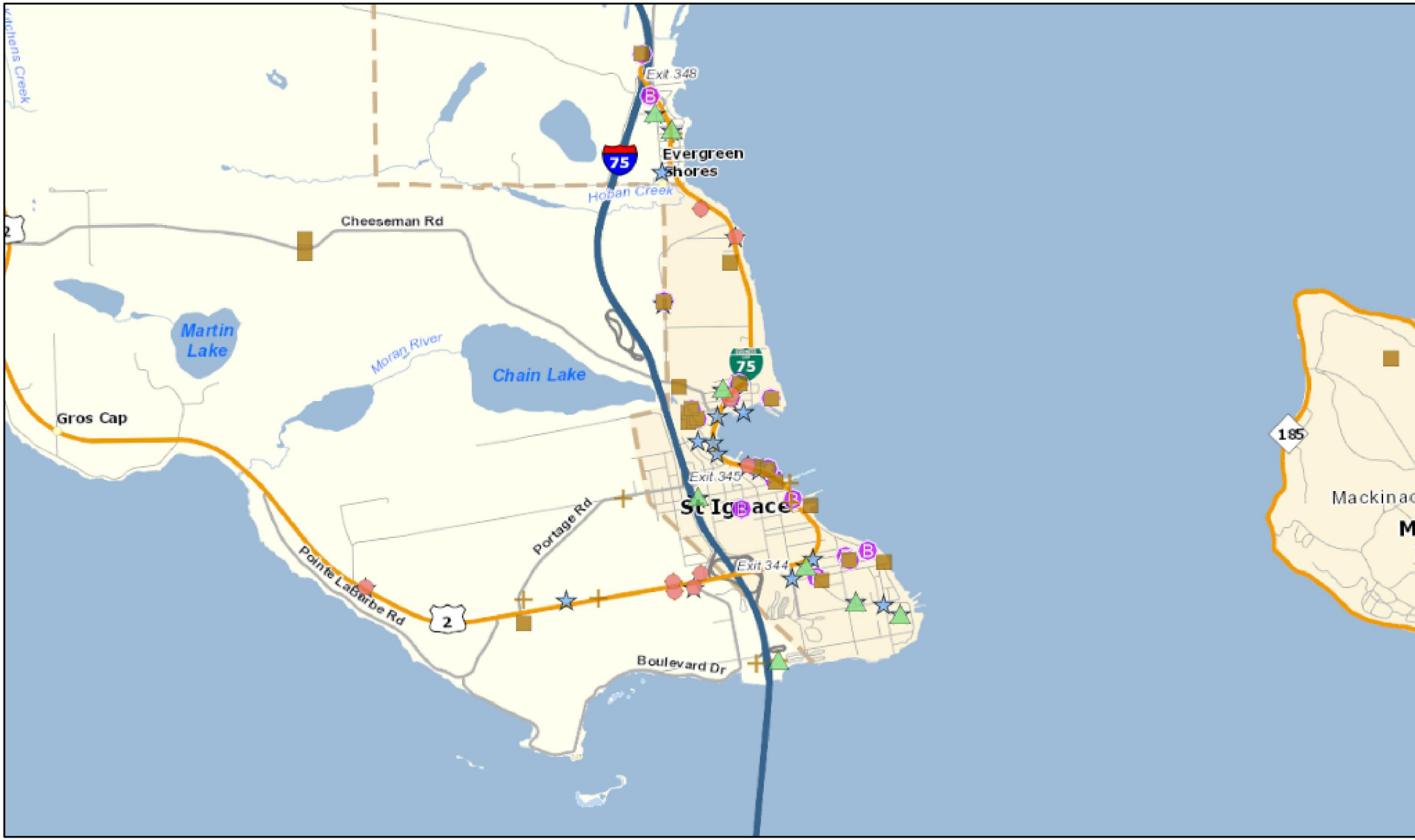
9. Project Site Contamination

The EGLE Environmental Mapper was used to examine for potential areas with contamination. The possible and/or confirmed contamination sites and sites with underground storage tanks are shown in the map below and listed in the following tables attached. When individual projects are designed contaminated areas will be avoided via utility routing where possible. When construction may infringe on impacted areas, a FOIA request for these sites will be made, EGLE permitting will be pursued if appropriate, and mitigation and safety measures will be required by contractor via construction documents:

> *Compliance with all applicable health and safety regulations, use of properly trained personnel in accordance with OSHA requirements, preparation of a Site Health and Safety Plan in accordance with OSHA requirements, monitoring of hydrocarbon levels in the work area, proper material segregation, storage and backfill of affected soils, and use of hydrocarbon resistant gaskets (Nitrile or Viton) on the utility being installed.*

However, it is not anticipated that there will be any earthwork associated with construction. All work will be in existing facilities.

Environmental Mapper



March 25, 2021

- Baseline Environmental Assessment
- Closed Tanks
- Active Tanks
- Sites of Environmental Contamination (Part 201)
- Open
- Closed

1:58,844

0 0.5 1 2 mi

0 0.75 1.5 3 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRC Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NC OpenStreetMap contributors, and the GIS User Community

Map by: State of Michiga

Appendix C

Part 10: Protected Plants and Animals

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10. Protected Plants and Animals

Based on the ITA Meeting for this project, the project has been classified as an equivalency project, therefore MNFI was not contacted for review. Disturbance to these species will be minimized. All construction will be within existing facilities.

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10 B. Protected Plants and Animals: U.S. Fish and Wildlife Services

The U.S. Fish and Wildlife Services technical assistance website on Section 7 Endangered Species Act Consultation was used to determine if the project will impact any federally listed species. This provided the following results:

- There may be the following endangered and/or threatened species present in the County: Canada Lynx, Gray Wolf, Northern Long-eared Bat, Piping Plover, Red Knot, Hine's Emerald Dragonfly, Dwarf Lake Iris, Houghton's Goldenrod, Lakeside Daisy, Michigan Monkey Flower, Pitcher's Thistle, and American Hart's-tongue Fern.
- There were no critical habitats found at the Action Area location.
- Also possibly present in the County includes the migratory birds: American Britten, Bald Eagle, Black Tern, Black-billed Cucko, Bobolink, Canada Warbler, Cape May Warbler, Connecticut Warbler, Dunlin, Eastern Whip-poor-will, Evening Grosbeak, Golden Eagle, Golden-winged Warbler, Lesser Yellowlegs, Long-eared Owl, Olive-sided Flycatcher, Ruddy Turnstone, Rusty Blackbird, Semipalmated Sandpipe, Whimbrel, and Wood Thrush.
- There are no refuge lands or fish hatcheries.
- Although there are wetlands within the IPAC area (the entire IPAC area is the City's water service area), no construction is anticipated to be near the wetlands.

The action area will be limited to already developed area and will be within existing facilities. Therefore, this project will not affect suitable habitat for federally listed species. For these reasons, it can be concluded that the project will have "no effect" on listed species, their habitats, or proposed or designated critical habitat.

IPaC resource list

IPaC is experiencing performance issues. We are working on the issue and hope to have it resolved soon. We apologize for any inconvenience this may cause. ×

This re abitat (collec jurisdi The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mackinac County, Michigan

Local office

Michigan Ecological Services Field Office

(517) 351-2555
(517) 351-1443

2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360

http://www.fws.gov/midwest/EastLansing/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Canada Lynx Lynx canadensis — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/3652

Northern Long-eared Bat Myotis septentrionalis — Threatened

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Birds

NAME	STATUS

Piping Plover Charadrius melodus — Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened

Wherever found

This species only needs to be considered if the following condition applies:

- Only actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1864

Insects

NAME	STATUS

Hine's Emerald Dragonfly Somatochlora hineana — Endangered

Wherever found

There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/7877

Flowering Plants

NAME	STATUS

Dwarf Lake Iris Iris lacustris — Threatened

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/598

Houghton's Goldenrod *Solidago houghtonii* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5219	Threatened
Lakeside Daisy *Hymenoxys herbacea* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3615	Threatened
Michigan Monkey-flower *Mimulus michiganensis* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5295	Endangered
Pitcher's Thistle *Cirsium pitcheri* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8153	Threatened

Ferns and Allies

NAME	STATUS
American Hart's-tongue Fern *Asplenium scolopendrium var. americanum* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4232	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Hine's Emerald Dragonfly *Somatochlora hineana* https://ecos.fws.gov/ecp/species/7877#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

American Bittern *Botaurus lentiginosus* — Breeds Apr 1 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/6582

Bald Eagle *Haliaeetus leucocephalus* — Breeds Dec 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Tern *Chlidonias niger* — Breeds May 15 to Aug 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3093

Black-billed Cuckoo *Coccyzus erythropthalmus* — Breeds May 15 to Oct 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Bobolink *Dolichonyx oryzivorus* — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler *Cardellina canadensis* — Breeds May 20 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cape May Warbler *Setophaga tigrina* — Breeds Jun 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Connecticut Warbler *Oporornis agilis* — Breeds Jun 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Dunlin *Calidris alpina arcticola* — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Eastern Whip-poor-will *Antrostomus vociferus* — Breeds May 1 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8745

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-eared Owl asio otus — Breeds Mar 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Ruddy Turnstone Arenaria interpres morinella — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Rusty Blackbird Euphagus carolinus — Breeds May 10 to Jul 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Whimbrel Numenius phaeopus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Wood Thrush Hylocichla mustelina

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

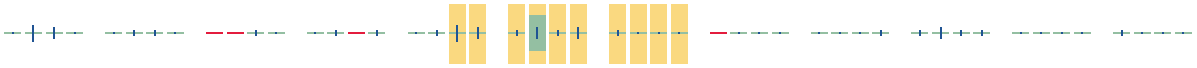
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

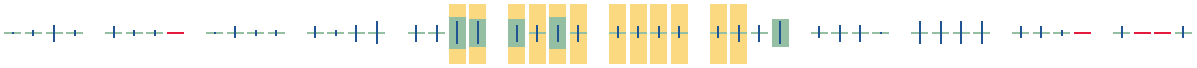
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

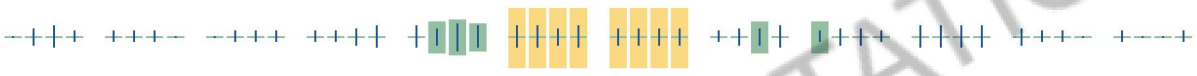
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



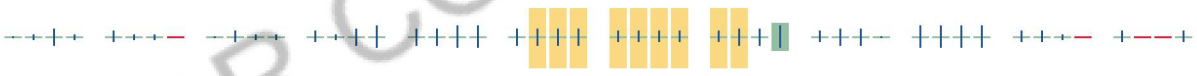
Canada Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



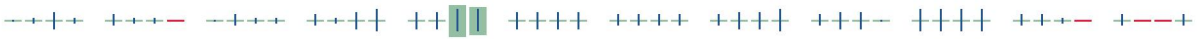
Cape May Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

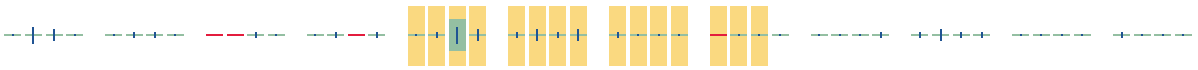


Connecticut Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

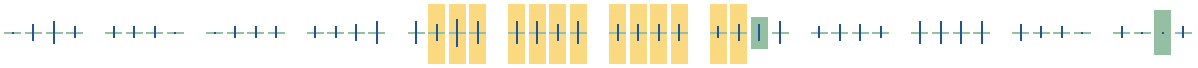


Dunlin BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

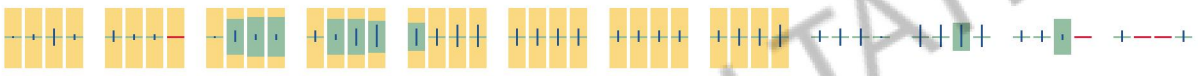




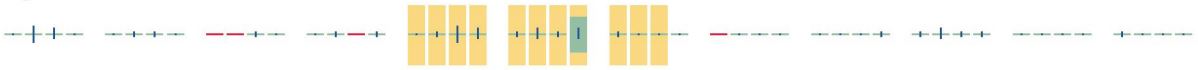
Eastern Whip-poor-will BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Evening Grosbeak BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



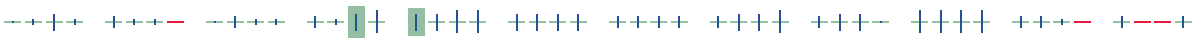
Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



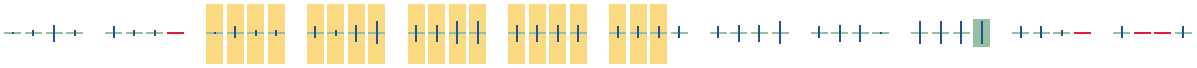
Golden-winged Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

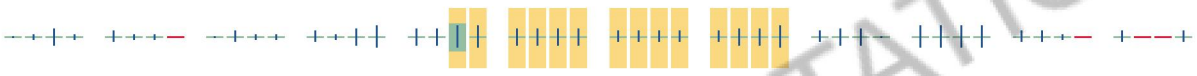
Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-eared Owl BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

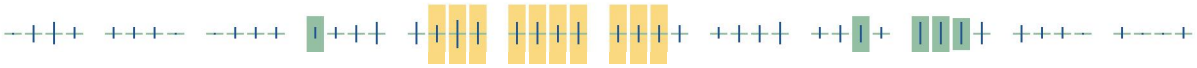


Olive-sided Flycatcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

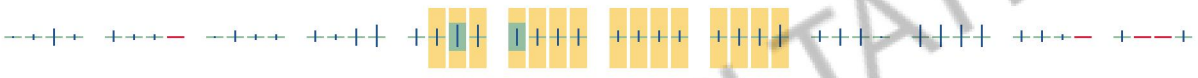
Rusty Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Semipalmated Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C

Part 11: Regional Planning

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

March 26, 2021

Jeff Hagan
EUP Planning CEO
Eastern Upper Peninsula Regional Planning & Development Commission
2345 Meridian Street
Sault Ste. Marie, MI 49783

Re: City of St. Ignace, Michigan
Mackinac County
Water Distribution System Facility Improvements
To Evaluate Needs and Recommend Alternatives for Improvements
Environmental Review and Evaluation

Dear Mr. Hagan,

On behalf of the City of St. Ignace, Mackinac County, we are requesting review and comment of plans for improvements to their existing water distribution system facilities.

The City of St. Ignace is preparing an EGLE DWSRF Program Project Plan to evaluate needs and recommended alternatives for improvements to the water distribution system facilities. The project location spans across Township 40N, Range 3W, Sections 6, 7, 17, and 18.

We have enclosed a Project Summary and Location Maps. We are requesting your review and comment. Comments received within 30 days will allow them to be incorporated into the project plan prior to the preparation of the final DWSRF Project Plan.

Comments can be mailed to our Escanaba office or emailed to ashley.hendricks@c2ae.com.

Sincerely,
C2AE

Ashley N. Hendricks, PE

Enclosure
cc: 21-0076 Project Narrative

Appendix C

Part 12: Stormwater Discharge Permits

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12. Stormwater Discharge Permit

The proposed project does not involve additional stormwater discharges nor does it include separation of combine sewer system. Construction activities are part of the system upgrades only. Construction activity will be limited to the area encompassing these upgrades. Disturbance during construction will most likely be greater than one acre. Therefore, a Part 91 SESC permit and Notice of Coverage shall be required for this project. An SESC plan will be prepared to minimize soil erosion and sedimentation leaving the site during construction. Best Management Practices will be incorporated for review and approval by ELGE.

Appendix C

Part 13: Water Withdrawal and Dewatering

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13. Water Withdrawal and Dewatering

The proposed project will not require consumptive uses or diversions that would result in significant impacts to the water and water dependent natural resources. There is some dewatering that may be needed temporarily during construction. Construction is not anticipated to exceed depths more than twenty feet.

Appendix C

Part 14: Wild and Scenic Rivers

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14. Wild and Scenic Rivers

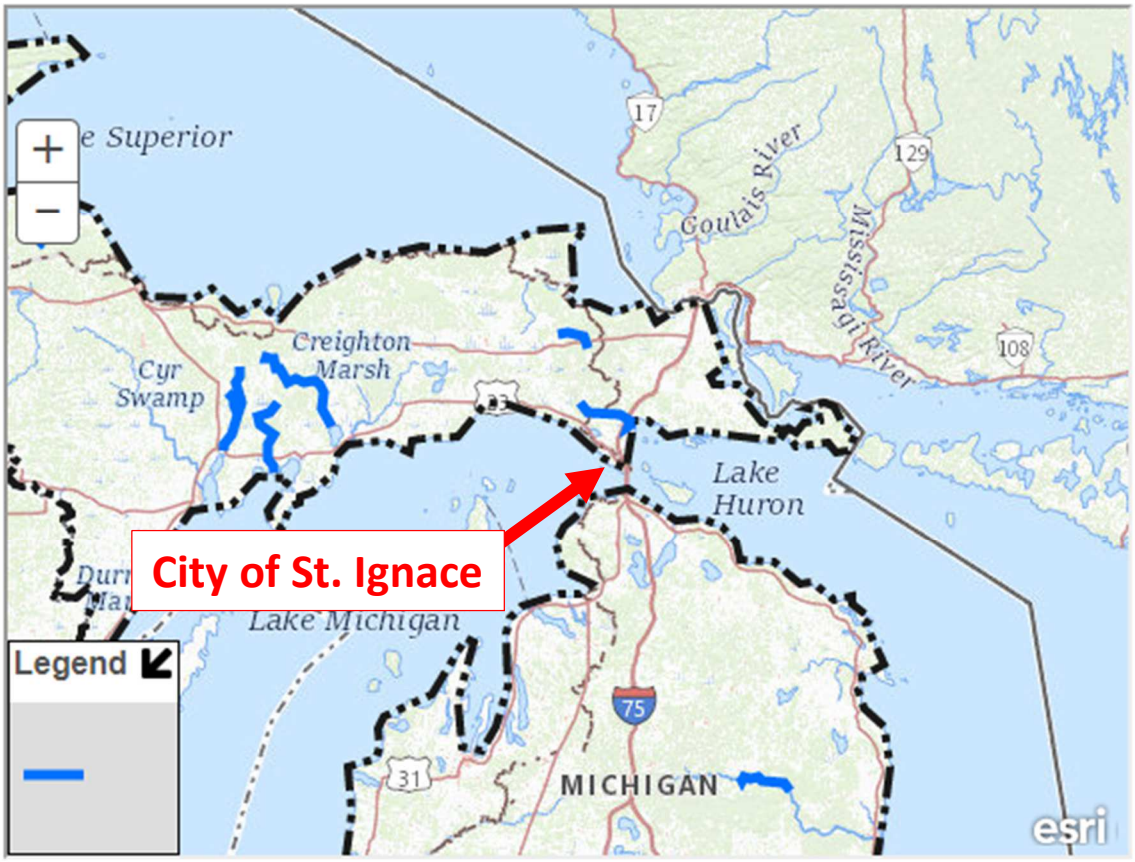
The proposed project will not impact a wild, scenic, or natural river or tributary. Maps illustrating the proximity of the project location to these rivers are shown on the following pages.

MICHIGAN'S DESIGNATED NATURAL RIVERS

National Wild and Scenic River System

MICHIGAN

Michigan has approximately 51,438 miles of river, of which 656.4 miles are designated as wild & scenic—just a bit more than 1% of the state's river miles.



Nationwide Rivers Inventory

This is a listing of more than 3,200 free-flowing river segments in the U.S. that are believed to possess one or more "outstandingly remarkable" values.

National Park Service
U.S. Department of the Interior

Park Tiles Imagery

Find a location

10 mi

Appendix C

Part 15: Airspace and Airports

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15. Airspace and Airports

The Mackinac County airport is located within the City of St. Ignace limits. No new structures or facilities are being built as part of the proposed project nor will there be a new or expanded wildlife attractant in the vicinity of the airport. However, all construction will be within five miles of the airport and the MDOT Aeronautics Environmental Specialist was contacted.

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

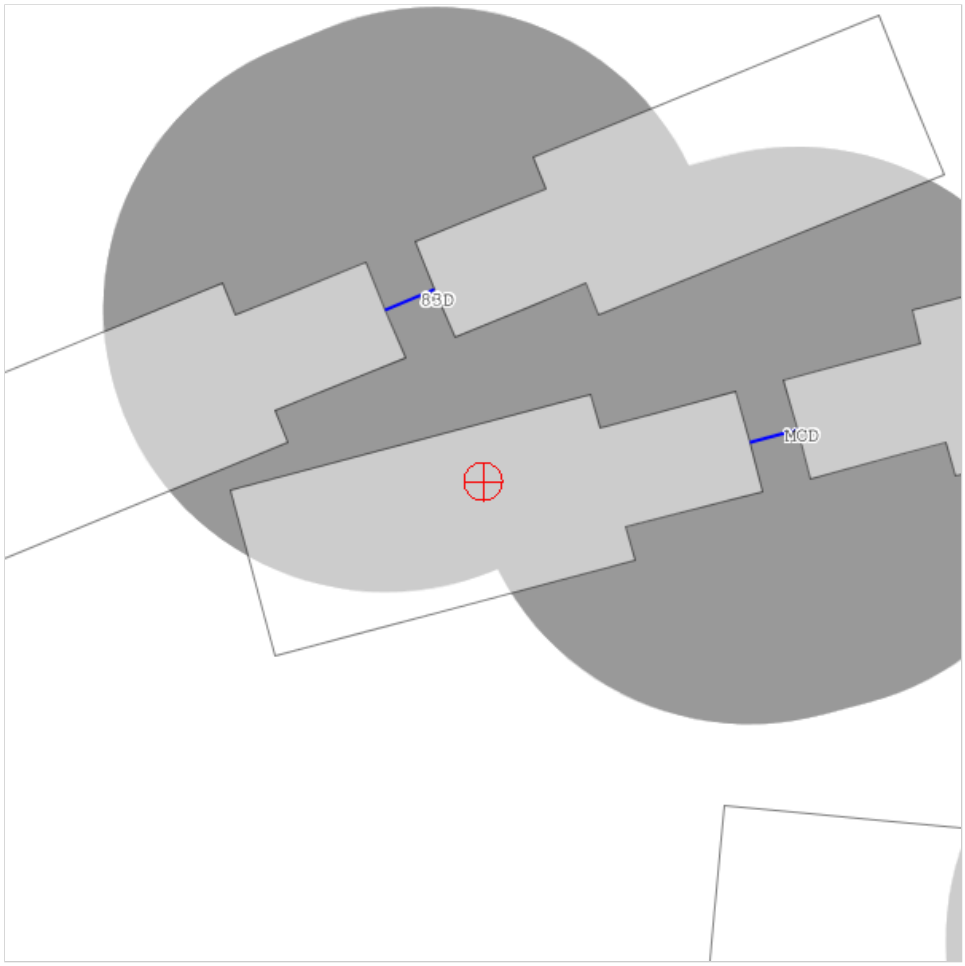
Latitude:	45 Deg 51 M 20.95 S N
Longitude:	84 Deg 43 M 4.498 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	672 (nearest foot)
Structure Height :	1 (nearest foot)
Traverseway:	No Traverseway (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

Results

You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

The FAA requests that you file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MCD

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

March 26, 2021

Molly Lamrouex
Aeronautics Environmental Specialist, MDOT
2700 Port Lansing Road
Lansing, MI 48906-2160

Re: City of St. Ignace, Michigan
Mackinac County
Water Distribution System Facility Improvements
To Evaluate Needs and Recommend Alternatives for Improvements
Environmental Review and Evaluation

Dear Ms. Lamrouex,

On behalf of the City of St. Ignace, Mackinac County, we are requesting review and comment of plans for improvements to their existing water distribution system facilities.

The City of St. Ignace is preparing an EGLE DWSRF Program Project Plan to evaluate needs and recommended alternatives for improvements to the water distribution system facilities. The project location spans across Township 40N, Range 3W, Sections 6, 7, 17, and 18.

We have enclosed a Project Summary and Location Maps. We are requesting your review and comment. Comments received within 30 days will allow them to be incorporated into the project plan prior to the preparation of the final DWSRF Project Plan.

Comments can be mailed to our Escanaba office or emailed to ashley.hendricks@c2ae.com.

Sincerely,
C2AE

Ashley N. Hendricks, PE

Enclosure
cc: 21-0076 Project Narrative

Appendix C

Part 16: Land-Water Interfaces
A. Inland Lakes and Streams

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16. Land – Water Interfaces

A. Inland Lakes and Streams

It is not anticipated that the project plan will result in the control or structural modification of any natural stream or inland body of water.

Appendix C

Part 16: Land-Water Interfaces
B. Floodplains

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16. Land – Water Interfaces

B. Flood Plains

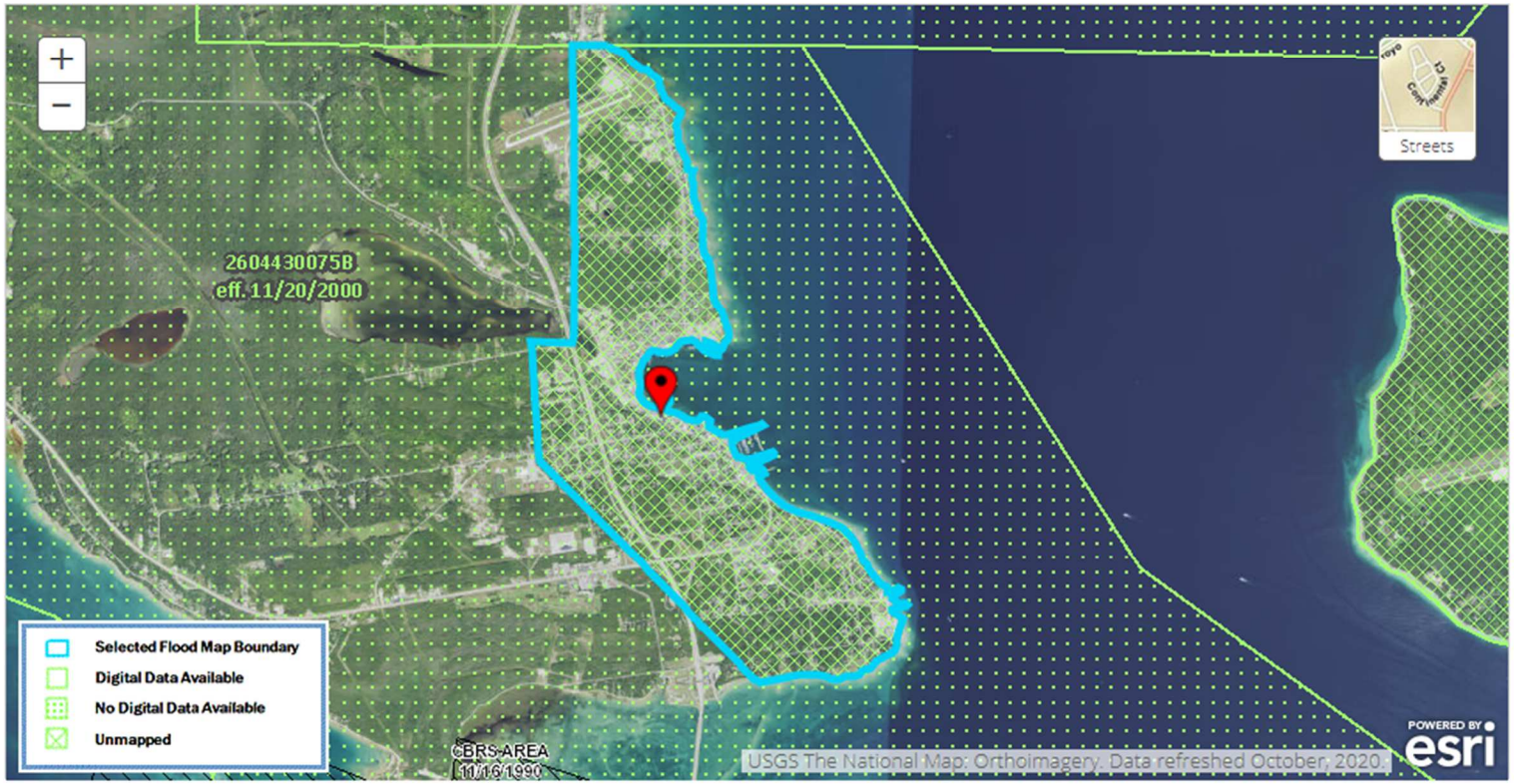
It is not anticipated that the project plan will result in impacts to any Flood Plains. Construction will be within existing facilities and there will be no permanent elevation changes to the ground surface or new buildings/structures as a result of the project. Because of this, all work is exempt from the EGLE Floodplain Authority found in Part 31 of Michigan's NREPA, when ground surface elevations are restored to pre-existing conditions. FEMA Flood Plain maps showing project location are shown on the following pages.

Search Results—Products for **ST. IGNACE, CITY OF**

Show ALL Products »

FEMA has not completed a study to determine flood hazard for the selected location; therefore, a flood map has not been published at this time. You can contact your community or the FEMA FMIX for more information about flood risk and flood insurance in your community.

You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a new location in the search field above. It may take a minute or more during peak hours to generate a dynamic FIRMette. If you are a person with a disability, are blind, or have low vision, and need assistance, please contact a map specialist.



Appendix C

Part 16: Land-Water Interfaces
C. Wetlands

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16. Land – Water Interfaces

C. Wetlands

It is not anticipated that the project plan construction or operation will have wetland impacts. All proposed construction is within previously disturbed areas. The project location is outlined on a map from the National Wetlands Inventory from the US Fish and Wildlife Services on the following page

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands near St. Ignace

March 25, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Appendix C

Part 16: Land-Water Interfaces
D. Great Lakes Shorelands Protection

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16. Land – Water Interfaces

D. Great Lakes Shorelands Protection

The City of St. Ignace located along the shorelands of Lake Michigan and Lake Huron at the Straits of the Mackinac. It is not anticipated that the project plan construction or operation will affect any shoreland included in the Coastal Barrier Resource System. A map showing the project location in the vicinity of any shoreland included Coastal Barrier Resource System is shown below. However, the City of St. Ignace's service area is located along the Coastal Zone Management Area shown on the following page. All construction is to be within existing facilities and it is not expected to have any impact on the Shorelands.

U.S. Fish and Wildlife Service

Coastal Barrier Resources System

City of St. Ignace - Nearby Coasta

March 25, 2021

CBRS Units

- Otherwise Protected Area
- System Unit

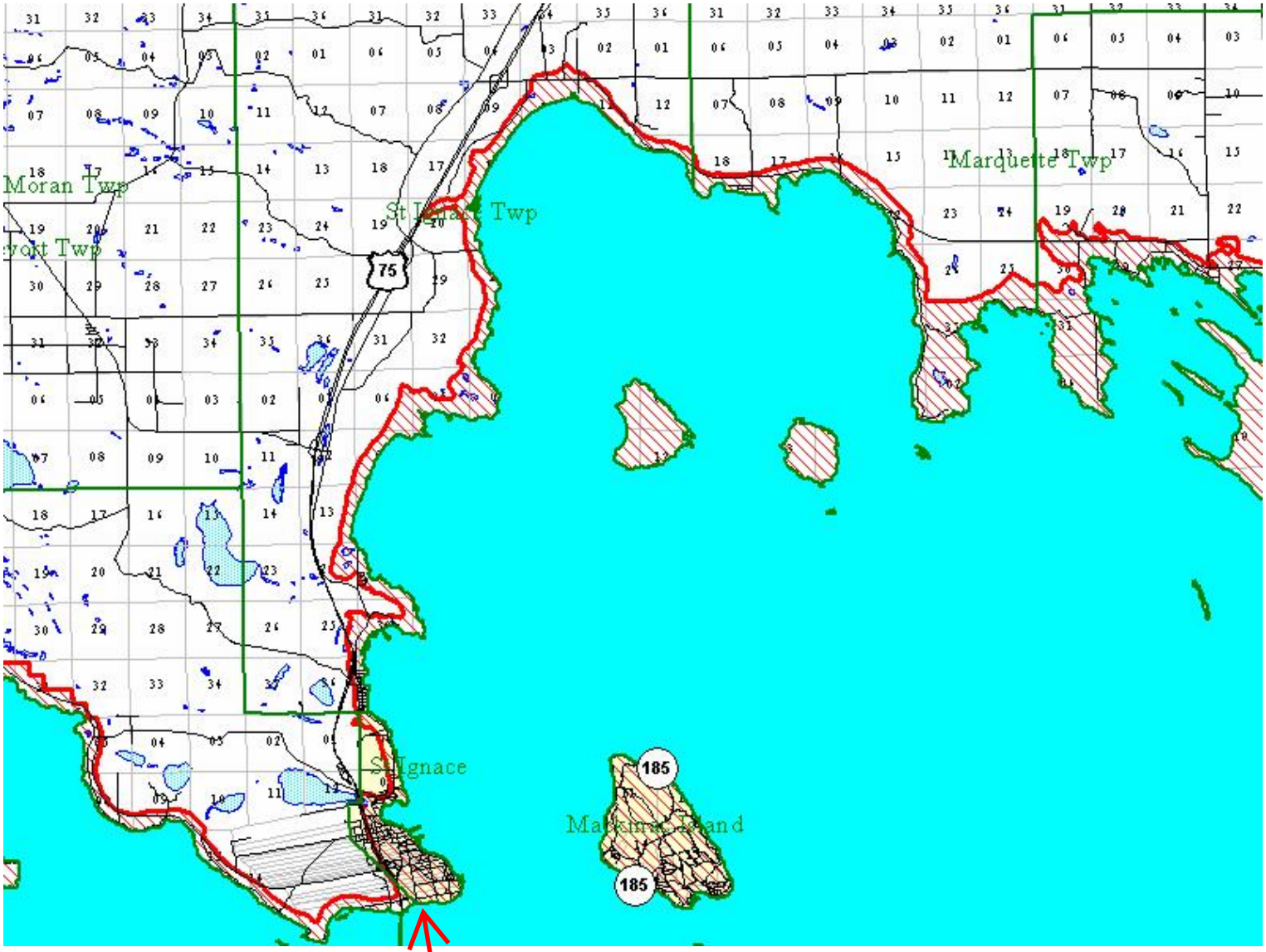
This map is for general reference only. The Coastal Barrier Resources System (CBRS) boundaries depicted on this map are representations of the controlling CBRS boundaries, which are shown on the official maps, accessible at https://www.fws.gov/cbra/maps/index.html. All CBRS related data should be used in accordance with the layer metadata found on the CBRS Mapper website.

The CBRS Buffer Zone represents the area immediately adjacent to the CBRS boundary where users are advised to contact the Service for an official determination (http://www.fws.gov/cbra/Determinations.html) as to whether the property or project site is located "in" or "out" of the CBRS.

CBRS Units normally extend seaward out to the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS mapper.

Mackinac County
Marquette Township, T41N R2W and T42N R2W
St. Ignace Township, T40N R3W, T41N R3W, T41N R4E and T42N R3W

The heavy red line is the ***Coastal Zone Management Boundary***
The red hatched area is the ***Coastal Zone Management Area***



City of St. Ignace

Appendix C

Part 16: Land-Water Interfaces
E. Army Corps of Engineers Regulated Activities

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16. Land – Water Interfaces

E. USACE Regulated Activities

It is not anticipated that the proposed construction will impact a water resource under federal jurisdiction, and therefore, USACE was not contacted on behalf of this project.

Appendix C

Part 16: Land-Water Interfaces
F. Joint Permit Applications

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16. Land – Water Interfaces

F. Joint Permit Applications

It is anticipated that a Joint Permit will be needed for this project. Appropriate permitting processes will be followed.

Appendix C

Part 17: Soils and Geology

United States Department of Agriculture

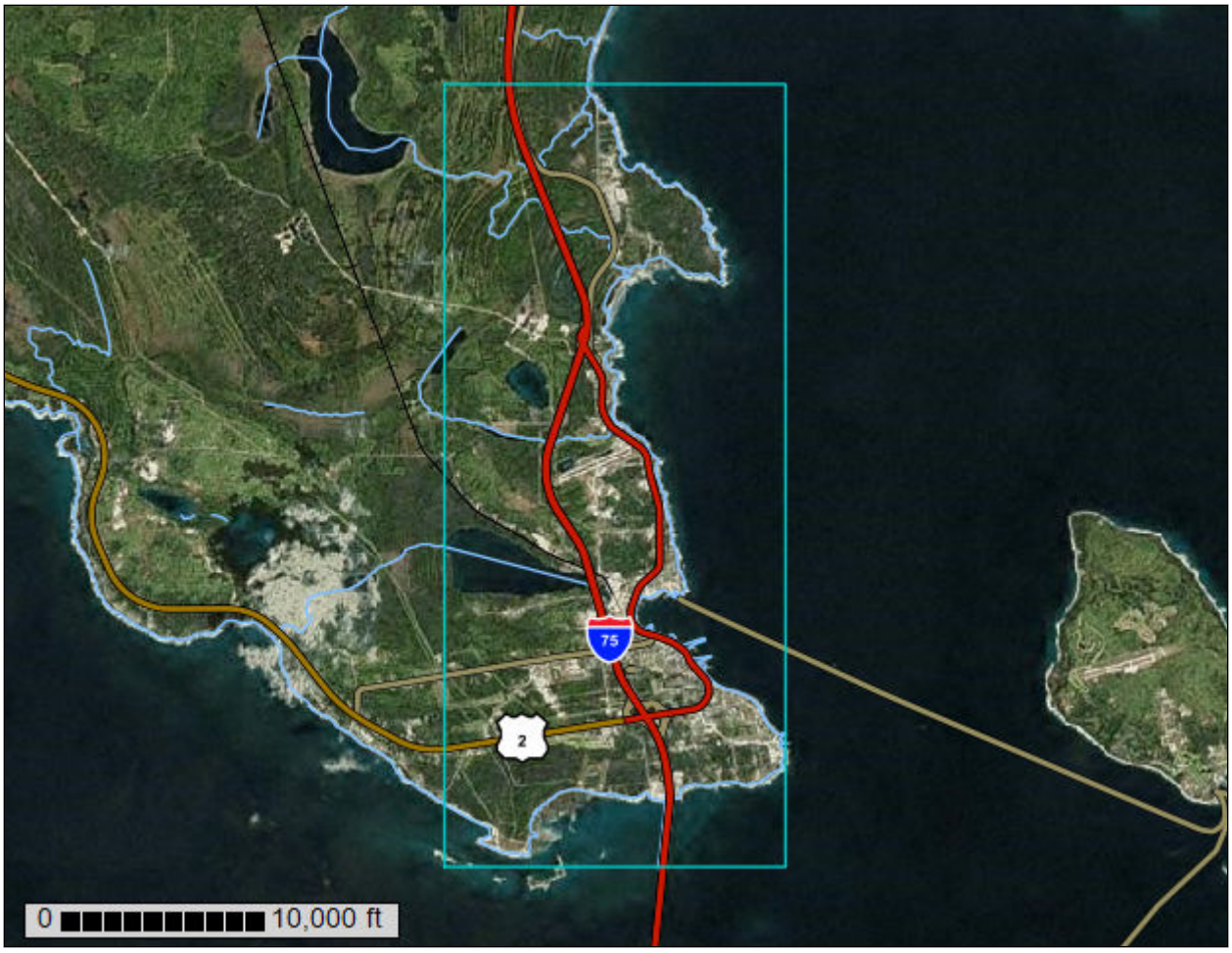
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Mackinac County, Michigan

City of St. Ignace



March 25, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Mackinac County, Michigan
Survey Area Data: Version 13, Jun 2, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Mar 31, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11A	Rudyard silty clay loam, 0 to 3 percent slopes	17.6	0.1%
17D	Eastport sand, 0 to 15 percent slopes	13.8	0.1%
18B	Rubicon sand, 0 to 6 percent slopes	55.7	0.4%
20B	Croswell sand, 0 to 3 percent slopes	13.6	0.1%
23	Deford and Leafriver soils, 0 to 2 percent slopes	91.2	0.6%
24B	Springlake loamy coarse sand, 0 to 6 percent slopes	10.4	0.1%
27D	Greylock fine sandy loam, 6 to 15 percent slopes	40.3	0.3%
29A	Solona loam, 0 to 3 percent slopes	227.0	1.5%
33	Pits, sand and gravel	218.7	1.5%
35	Histosols and Aquents, ponded	102.4	0.7%
36	Markey and Carbondale mucks	1,583.5	10.7%
38E	Eastport-Leafriver complex, 0 to 35 percent slopes	655.5	4.4%
43	Angelica muck	193.8	1.3%
44B	Battydoe fine sandy loam, 1 to 6 percent slopes, stony	13.9	0.1%
52A	Ingalls fine sand, 0 to 3 percent slopes	22.1	0.1%
62A	Iosco sand, 0 to 3 percent slopes	33.0	0.2%
64A	Search very fine sandy loam, 0 to 3 percent slopes	112.0	0.8%
68	Wakeley muck	4.7	0.0%
69B	Satago silt loam, 1 to 6 percent slopes	277.4	1.9%
70B	St. Ignace silt loam, 0 to 6 percent slopes	1,813.6	12.3%
70D	St. Ignace silt loam, 6 to 15 percent slopes, rocky	89.3	0.6%
70F	St. Ignace-Rock outcrop complex, 35 to 70 percent slopes	401.4	2.7%
88B	Croswell-Wainola complex, 0 to 6 percent slopes	20.1	0.1%
94A	Markey-Spot-Finch complex, 0 to 3 percent slopes	65.1	0.4%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
112	Soo silty clay loam	98.6	0.7%
116	Udipsamments and Udorthents, nearly level	440.6	3.0%
124D	Alpena gravelly loam, 0 to 15 percent slopes	1,324.4	9.0%
125B	Croswell-Markey complex, 0 to 6 percent slopes	31.3	0.2%
147B	Shelter very cobbly loam, 0 to 6 percent slopes, stony	155.2	1.1%
151	Beavertail muck	144.3	1.0%
160B	Esau extremely gravelly sandy loam, 0 to 3 percent slopes	52.4	0.4%
163B	Esau-Zela complex, 0 to 3 percent slopes	193.9	1.3%
W	Water	416.9	2.8%
Totals for Area of Interest		**14,759.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Mackinac County, Michigan

11A—Rudyard silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xtmz
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 37 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of local importance

Map Unit Composition

Rudyard and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rudyard

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 6 inches: silty clay loam
B/E - 6 to 9 inches: silty clay loam
Bt - 9 to 17 inches: clay
C - 17 to 79 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: No

Minor Components

Pickford

Percent of map unit: 10 percent
Landform: Flats
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis, Dryopteris phase (TMC-D)
Hydric soil rating: Yes

17D—Eastport sand, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: fz80
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Eastport and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eastport

Setting

Landform: Beach ridges, dunes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Beach sand

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sand
E - 4 to 15 inches: sand
Bs1 - 15 to 25 inches: sand
Bs2 - 25 to 39 inches: sand
C - 39 to 80 inches: sand

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Other vegetative classification: Acer-Quercus-Vaccinium/Tsuga-Maianthemum-Vaccinium (AQV/TMV)
Hydric soil rating: No

Minor Components

Leafriver

Percent of map unit: 5 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Fraxinus-Mentha-Carex (FMC)
Hydric soil rating: Yes

Finch

Percent of map unit: 5 percent
Landform: Lake plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V)
Hydric soil rating: No

18B—Rubicon sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2v8dd
Elevation: 420 to 1,710 feet
Mean annual precipitation: 28 to 37 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Rubicon and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rubicon

Setting

Landform: Ground moraines, outwash plains, beach ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Sandy glaciofluvial deposits

Typical profile

A - 0 to 1 inches: sand
E - 1 to 7 inches: sand
Bs1 - 7 to 11 inches: sand
Bs2 - 11 to 18 inches: sand
BC - 18 to 38 inches: sand
C - 38 to 79 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F094DY007WI - Sand Barrens
Forage suitability group: Low AWC, adequately drained (G090AY002WI)
Other vegetative classification: Acer-Quercus-Vaccinium/Quercus-Acer-Epigea (AQV/QAE), Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Minor Components

Kalkaska

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Acer-Tsuga-Dryopteris, Dryopteris phase (ATD-D), Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Croswell

Percent of map unit: 5 percent
Landform: Outwash plains, beach ridges, ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Ecological site: F094DY008WI - Sandy Terraces And Plains
Other vegetative classification: Acer-Quercus-Vaccinium (AQV), Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Au gres

Percent of map unit: 4 percent
Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC-V), Low AWC, high water table (G090AY001WI)
Hydric soil rating: No

Kinross

Percent of map unit: 1 percent
Landform: Outwash plains, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F094DY010WI - Wet Sandy Depressions
Other vegetative classification: Tsuga-Thuja-Sphagnum (TTS), Mod AWC, high water table (G090AY004WI)
Hydric soil rating: Yes

20B—Croswell sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xtn4
Elevation: 570 to 1,800 feet
Mean annual precipitation: 27 to 38 inches
Mean annual air temperature: 36 to 45 degrees F
Frost-free period: 70 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Croswell and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Croswell

Setting

Landform: Flats, terraces, flats
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
E - 2 to 4 inches: sand
Bs1 - 4 to 8 inches: sand
Bs2 - 8 to 18 inches: sand
BC - 18 to 31 inches: sand
C - 31 to 79 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Low AWC, adequately drained (G090AY002WI)
Other vegetative classification: Low AWC, adequately drained (G090AY002WI), Acer rubrum-Quercus/Vaccinium (ArQV), Pinus/Maianthemum-Vaccinium (PMV)
Hydric soil rating: No

Minor Components

Au gres

Percent of map unit: 8 percent
Landform: Flats, drainageways, terraces, flats
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V), Low AWC, high water table (G090AY001WI)
Hydric soil rating: No

Rubicon

Percent of map unit: 5 percent
Landform: Hillslopes, beach ridges, flats
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Acer-Quercus-Vaccinium/Quercus-Acer-Epigea (AQV/QAE), Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Kinross

Percent of map unit: 2 percent
Landform: Depressions, drainageways, depressions, drainageways
Down-slope shape: Concave, linear
Across-slope shape: Concave
Other vegetative classification: Mod AWC, high water table (G090AY004WI), Not Assigned (wet mineral soils) (Nmin)
Hydric soil rating: Yes

23—Deford and Leafriver soils, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2xxj3
Elevation: 570 to 1,770 feet
Mean annual precipitation: 27 to 35 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Deford and similar soils: 50 percent
Leafriver and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deford

Setting

Landform: Depressions, drainageways, flats, depressions, drainageways
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oa - 0 to 6 inches: muck
A - 6 to 8 inches: mucky loamy sand
Cg - 8 to 14 inches: sand
C1 - 14 to 28 inches: sand
C2 - 28 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Forage suitability group: Low AWC, high water table (G095AY001WI)
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Thuja-Sphagnum (TMC/TTS), Low AWC, high water table (G095AY001WI)
Hydric soil rating: Yes

Description of Leafriver

Setting

Landform: Depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over sandy glaciofluvial deposits

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 12 inches: muck
Cg1 - 12 to 28 inches: sand
Cg2 - 28 to 79 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Fraxinus-Impatiens (FI)
Hydric soil rating: Yes

Minor Components

Tawas

Percent of map unit: 8 percent
Landform: Depressions, depressions
Down-slope shape: Concave

Across-slope shape: Concave
Other vegetative classification: Tsuga Thuja Mitchella (TTM_1), Tsuga Thuja Sphagnum (TTS_1)
Hydric soil rating: Yes

Au gres

Percent of map unit: 5 percent
Landform: Flats, terraces, flats
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F094DY009WI - Wet Sandy Drainageways
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V), Low AWC, high water table (G090AY001WI)
Hydric soil rating: No

Croswell

Percent of map unit: 2 percent
Landform: Flats, terraces, flats
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Convex, linear
Other vegetative classification: Low AWC, adequately drained (G090AY002WI), Acer rubrum-Quercus/Vaccinium (ArQV), Pinus/Maianthemum-Vaccinium (PMV)
Hydric soil rating: No

24B—Springlake loamy coarse sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: fz8m
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Springlake and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Springlake

Setting

Landform: Outwash plains, till plains, beach ridges
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Base slope, side slope, crest, talf, rise

Down-slope shape: Linear, convex, concave
Across-slope shape: Linear, convex
Parent material: Sandy outwash

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 7 inches: loamy coarse sand
E - 7 to 9 inches: loamy coarse sand
Bhs - 9 to 14 inches: loamy coarse sand
Bs - 14 to 23 inches: loamy coarse sand
2BC - 23 to 26 inches: gravelly coarse sand
2C - 26 to 80 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Tsuga-Dryopteris (AVO/ATD)
Hydric soil rating: No

Minor Components

Guardlake

Percent of map unit: 4 percent
Landform: Till plains, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, base slope, crest
Down-slope shape: Convex
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Viola-Osmorhiza, Adianthum phase (AVO/AVO-A)
Hydric soil rating: No

Wallace

Percent of map unit: 3 percent
Landform: Outwash plains, dunes, lake plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Base slope, side slope, crest
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Tsuga-Dryopteris (ATD)
Hydric soil rating: No

27D—Greylock fine sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: fz8v
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Greylock and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greylock

Setting

Landform: End moraines, drumlins, till plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, base slope, rise, talf
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Coarse-loamy till

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
E - 6 to 7 inches: sandy loam
Bhs - 7 to 9 inches: sandy loam
Bs - 9 to 19 inches: sandy loam
E/B - 19 to 26 inches: sandy loam
B/E - 26 to 34 inches: sandy loam
C - 34 to 80 inches: sandy loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Other vegetative classification: Acer-Viola-Osmorhiza, Adianthum phase (AVO-A)
Hydric soil rating: No

Minor Components

Springlake
Percent of map unit: 5 percent
Landform: Outwash plains, till plains, beach ridges
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Base slope, side slope, crest, talf, rise
Down-slope shape: Linear, convex, concave
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Tsuga-Dryopteris (AVO/ATD)
Hydric soil rating: No

Solona
Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Longrie
Percent of map unit: 3 percent
Landform: Lake terraces, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, riser, talf, rise
Down-slope shape: Convex, concave
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Viola-Osmorhiza, Adianthum phase (AVO/AVO-A)
Hydric soil rating: No

29A—Solona loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: fz8z
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Solona and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Solona

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous coarse-loamy till

Typical profile

A - 0 to 6 inches: loam
E - 6 to 18 inches: fine sandy loam
Bt - 18 to 25 inches: fine sandy loam
C - 25 to 80 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Minor Components

Greylock

Percent of map unit: 5 percent
Landform: Drumlins, till plains, end moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, base slope, rise, talf
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Viola-Osmorhiza, Adianthum phase (AVO-A)
Hydric soil rating: No

Angelica

Percent of map unit: 5 percent
Landform: Till plains

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

33—Pits, sand and gravel

Map Unit Composition

Pits, sand and gravel: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Sand And Gravel

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

35—Histosols and Aquents, ponded

Map Unit Setting

National map unit symbol: fz93
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Histosols, ponded, and similar soils: 49 percent
Aquents, ponded, and similar soils: 45 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Histosols, Ponded

Setting

Landform: Marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

Oa - 0 to 51 inches: muck
C - 51 to 80 inches: variable

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Very high (about 20.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Aquents, Ponded

Setting

Landform: Marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

C - 0 to 80 inches: variable

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydric soil rating: Yes

Minor Components

Finch

Percent of map unit: 3 percent
Landform: Lake plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V)
Hydric soil rating: No

Rubicon

Percent of map unit: 3 percent
Landform: Outwash plains, till plains
Landform position (two-dimensional): Shoulder, summit, footslope, backslope
Landform position (three-dimensional): Side slope, crest, base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Quercus-Vaccinium/Quercus-Acer-Epigea (AQV/QAE)
Hydric soil rating: No

36—Markey and Carbondale mucks

Map Unit Setting

National map unit symbol: fz94
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Markey and similar soils: 50 percent
Carbondale and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Markey

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy glaciolacustrine deposits

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 20 inches: muck
Cg - 20 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)

Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Available water capacity: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: Yes

Description of Carbondale

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody organic material

Typical profile

Oa1 - 0 to 6 inches: muck
Oa2 - 6 to 23 inches: muck
Oa3 - 23 to 38 inches: muck
Oe1 - 38 to 68 inches: mucky peat
Oe2 - 68 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Very high (about 26.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: Yes

Minor Components

Finch

Percent of map unit: 5 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V)
Hydric soil rating: No

Angelica

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

38E—Eastport-Leafriver complex, 0 to 35 percent slopes

Map Unit Setting

National map unit symbol: fz96
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Eastport and similar soils: 50 percent
Leafriver and similar soils: 37 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eastport

Setting

Landform: Beach ridges, dunes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Beach sand

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sand
E - 4 to 15 inches: sand
Bs1 - 15 to 25 inches: sand
Bs2 - 25 to 39 inches: sand

C - 39 to 80 inches: sand

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Other vegetative classification: Acer-Quercus-Vaccinium (AQV)
Hydric soil rating: No

Description of Leafriver

Setting

Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin organic material over sandy lacustrine deposits

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 8 inches: muck
A - 8 to 10 inches: loamy fine sand
Cg1 - 10 to 23 inches: fine sand
Cg2 - 23 to 39 inches: fine sand
Cg3 - 39 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Fraxinus-Mentha-Carex (FMC)
Hydric soil rating: Yes

Minor Components

Wainola

Percent of map unit: 7 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Markey

Percent of map unit: 6 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

43—Angelica muck

Map Unit Setting

National map unit symbol: fz9c
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Angelica and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Angelica

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous fine-loamy till

Typical profile

Oa - 0 to 2 inches: muck

A - 2 to 6 inches: loam
Bg - 6 to 10 inches: sandy loam
Bw1 - 10 to 14 inches: loam
Bw2 - 14 to 17 inches: sandy clay loam
C - 17 to 80 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Available water capacity: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

Minor Components

Search

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Acer-Viola-Osmorhiza Adiantum phase (AVO-A)
Hydric soil rating: No

Solona

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Markey

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

44B—Battydoe fine sandy loam, 1 to 6 percent slopes, stony

Map Unit Setting

National map unit symbol: fz9d
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Battydoe, stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Battydoe, Stony

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Base slope, side slope, crest, rise, talf
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Coarse-loamy till

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: fine sandy loam
E - 3 to 5 inches: loamy sand
Bhs - 5 to 11 inches: fine sandy loam
Bs - 11 to 20 inches: loamy sand
BC - 20 to 28 inches: gravelly fine sandy loam
C - 28 to 80 inches: gravelly fine sandy loam

Properties and qualities

Slope: 1 to 6 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Viola-Osmorhiza, Adianthum phase (AVO/AVO-A)
Hydric soil rating: No

Minor Components

Guardlake, stony
Percent of map unit: 5 percent
Landform: Outwash plains, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, base slope, crest
Down-slope shape: Convex
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Viola-Osmorhiza, Adianthum phase (AVO/AVO-A)
Hydric soil rating: No

Longrie, stony
Percent of map unit: 5 percent
Landform: Lake terraces, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, riser, talf, rise
Down-slope shape: Convex, concave
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Viola-Osmorhiza, Adianthum phase (AVO/AVO-A)
Hydric soil rating: No

Amadon, stony
Percent of map unit: 5 percent
Landform: Terraces, till plains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Tread, riser, talf, rise
Down-slope shape: Linear, convex, concave
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum/Acer-Viola-Osmorhiza (TM/AVO)
Hydric soil rating: No

Shelter, stony
Percent of map unit: 5 percent
Landform: Lake terraces, drumlins, till plains
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Riser, tread, rise, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

52A—Ingalls fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: fz9l
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Ingalls and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ingalls

Setting

Landform: Lake plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits over stratified loamy lacustrine deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oa - 1 to 3 inches: muck
E - 3 to 10 inches: fine sand
Bs1 - 10 to 17 inches: loamy sand
Bs2 - 17 to 23 inches: sand
BC - 23 to 43 inches: loamy fine sand
2C - 43 to 80 inches: stratified loamy fine sand to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Other vegetative classification: Acer-Tsuga-Dryopteris/Tsuga-Maianthemum (ATD/TM)
Hydric soil rating: No

Minor Components

Wainola
Percent of map unit: 5 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Borgstrom
Percent of map unit: 4 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Tsuga/Maianthemum-Coptis=(Dryopteris) (TMC-D), Acer saccharum-Tsuga/Dryopteris (ATD)
Hydric soil rating: No

Caffey
Percent of map unit: 4 percent
Landform: Lake plains, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

62A—Iosco sand, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: fz9t
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Iosco and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Iosco

Setting

Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy over loamy lacustrine deposits

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
Oa - 2 to 6 inches: slightly decomposed plant material
E1 - 6 to 9 inches: sand
E2 - 9 to 11 inches: sand
Bs1 - 11 to 25 inches: loamy sand
Bs2 - 25 to 27 inches: sand
2Bt - 27 to 38 inches: loam
2C - 38 to 80 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

Minor Components

Battydoe

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Base slope, side slope, crest, rise, talf
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Tsuga-Dryopteris (AVO/ATD)

Hydric soil rating: No

Solona

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis (TMC)
Hydric soil rating: No

64A—Search very fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: fz9v
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Search and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Search

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 8 inches: very fine sandy loam
BA - 8 to 10 inches: very fine sandy loam
C1 - 10 to 15 inches: gravelly very fine sandy loam
C2 - 15 to 24 inches: very gravelly very fine sandy loam
Cr - 24 to 80 inches: weathered bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Other vegetative classification: Acer-Viola-Osmorhiza Adiantum phase (AVO-A)
Hydric soil rating: No

Minor Components

Angelica

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

Satago

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Base slope, side slope, talf, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Viola-Osmorhiza, Adianthum phase (AVO-A)
Hydric soil rating: No

68—Wakeley muck

Map Unit Setting

National map unit symbol: fz9x
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Wakeley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wakeley

Setting

Landform: Outwash plains, lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash over clayey lacustrine deposits

Typical profile

Oa - 0 to 4 inches: muck
A - 4 to 5 inches: loamy fine sand
Cg - 5 to 7 inches: loamy fine sand
C1 - 7 to 24 inches: fine sand
2C2 - 24 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

Minor Components

Markey

Percent of map unit: 8 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

Allendale

Percent of map unit: 7 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Other vegetative classification: Tsuga-Maianthemum-Coptis, Dryopteris phase (TMC-D)
Hydric soil rating: No

69B—Satago silt loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: fz9y
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Farmland of local importance

Map Unit Composition

Satago and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Satago

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, base slope, rise, talf
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Loamy till over residuum weathered from calcareous shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 6 inches: silt loam
BA - 6 to 10 inches: silt loam
Bw - 10 to 14 inches: silt loam
C - 14 to 48 inches: silt loam
2Cr - 48 to 80 inches: weathered bedrock

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 70 percent
Available water capacity: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Other vegetative classification: Acer-Viola-Osmorhiza, Adianthum phase (AVO-A)
Hydric soil rating: No

Minor Components

Search

Percent of map unit: 7 percent
Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Acer-Viola-Osmorhiza Adiantum phase (AVO-A)
Hydric soil rating: No

Alpena

Percent of map unit: 6 percent
Landform: Eskers, outwash plains, beach ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, concave, linear
Hydric soil rating: No

70B—St. Ignace silt loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: fz9z
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

St. ignace and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Ignace

Setting

Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Calcareous loamy till over limestone breccia-basic

Typical profile

A - 0 to 5 inches: silt loam
Bw - 5 to 15 inches: gravelly silt loam
2Cr - 15 to 80 inches: weathered bedrock

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Available water capacity: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Alpena

Percent of map unit: 13 percent
Landform: Eskers, outwash plains, beach ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, concave, linear
Hydric soil rating: No

70D—St. Ignace silt loam, 6 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: fzb0
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

St. ignace, rocky, and similar soils: 87 percent
Minor components: 13 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Ignace, Rocky

Setting

Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy till over limestone breccia-basic

Typical profile

A - 0 to 5 inches: silt loam
Bw - 5 to 15 inches: gravelly silt loam
2Cr - 15 to 80 inches: weathered bedrock

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Available water capacity: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Alpena, rocky

Percent of map unit: 7 percent
Landform: Beach ridges, eskers, outwash plains
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

Rock outcrop

Percent of map unit: 6 percent
Hydric soil rating: Unranked

70F—St. Ignace-Rock outcrop complex, 35 to 70 percent slopes

Map Unit Setting

National map unit symbol: fzb1
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

St. ignace and similar soils: 57 percent
Rock outcrop: 30 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Ignace

Setting

Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy till over limestone breccia-basic

Typical profile

A - 0 to 5 inches: silt loam
Bw - 5 to 15 inches: gravelly silt loam
2Cr - 15 to 80 inches: weathered bedrock

Properties and qualities

Slope: 35 to 70 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Available water capacity: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 80 inches: unweathered bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Minor Components

Alpena

Percent of map unit: 13 percent
Landform: Beach ridges, eskers, outwash plains
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

88B—Croswell-Wainola complex, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: fzb7
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Croswell and similar soils: 52 percent
Wainola and similar soils: 35 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Croswell

Setting

Landform: Outwash plains, lake plains, dunes
Landform position (two-dimensional): Backslope, shoulder, summit, footslope
Landform position (three-dimensional): Crest, side slope, base slope, rise, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex
Parent material: Sandy outwash

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

E - 2 to 4 inches: sand
Bs1 - 4 to 8 inches: sand
Bs2 - 8 to 19 inches: sand
BC - 19 to 31 inches: sand
C - 31 to 80 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Other vegetative classification: Acer-Quercus-Vaccinium (AQV)
Hydric soil rating: No

Description of Wainola

Setting

Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oa - 0 to 2 inches: muck
E - 2 to 12 inches: fine sand
Bs - 12 to 27 inches: fine sand
BC - 27 to 41 inches: fine sand
C - 41 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC-V)
Hydric soil rating: No

Minor Components

Eastport
Percent of map unit: 5 percent
Landform: Beach ridges, dunes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Other vegetative classification: Acer-Quercus-Vaccinium/Tsuga-Maianthemum-Vaccinium (AQV/TMV)
Hydric soil rating: No

Spot
Percent of map unit: 4 percent
Landform: Outwash plains, lake plains, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Sphagnum (TTS)
Hydric soil rating: Yes

Leafriver
Percent of map unit: 4 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Fraxinus-Mentha-Carex (FMC)
Hydric soil rating: Yes

94A—Markey-Spot-Finch complex, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: fzbc
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Markey and similar soils: 45 percent
Spot and similar soils: 29 percent
Finch and similar soils: 17 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Markey

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy glaciolacustrine deposits

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 20 inches: muck
Cg - 20 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Available water capacity: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: Yes

Description of Spot

Setting

Landform: Lake plains, till plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash

Typical profile

Oa - 0 to 2 inches: muck
E - 2 to 8 inches: sand

Bhsm - 8 to 10 inches: sand
Bs - 10 to 18 inches: sand
C - 18 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: Yes

Description of Finch

Setting

Landform: Lake plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
E - 1 to 11 inches: sand
Bsm1 - 11 to 18 inches: sand
Bsm2 - 18 to 42 inches: sand
C - 42 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 20 inches to ortstein
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: No

Minor Components

Paquin
Percent of map unit: 3 percent
Landform: Outwash plains, lake plains, till plains
Landform position (two-dimensional): Backslope, shoulder, summit, footslope
Landform position (three-dimensional): Crest, side slope, rise, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex
Other vegetative classification: Acer-Tsuga-Dryopteris/Tsuga-Maianthemum-Coptis (ATD/TMC)
Hydric soil rating: No

Carbondale
Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella/Tsuga-Thuja-Sphagnum (TTM/TTS)
Hydric soil rating: Yes

Croswell
Percent of map unit: 3 percent
Landform: Dunes, outwash plains, lake plains
Landform position (two-dimensional): Backslope, shoulder, summit, footslope
Landform position (three-dimensional): Crest, base slope, side slope, rise, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Quercus-Vaccinium (AQV)
Hydric soil rating: No

112—Soo silty clay loam

Map Unit Setting
National map unit symbol: fz6b
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Soo and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Soo

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-silty lacustrine deposits

Typical profile

Ap - 0 to 7 inches: silty clay loam
Bw - 7 to 17 inches: silty clay loam
C1 - 17 to 26 inches: stratified silt loam to silty clay loam
C2 - 26 to 80 inches: stratified silt loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 20 percent
Available water capacity: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: Yes

Minor Components

Rudyard

Percent of map unit: 4 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: No

Bowers

Percent of map unit: 3 percent
Landform: Lake plains

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Petasties (TTP)
Hydric soil rating: No

116—Udipsamments and Udorthents, nearly level

Map Unit Setting

National map unit symbol: fz6d
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Udipsamments and similar soils: 55 percent
Udorthents and similar soils: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udipsamments

Typical profile

C - 0 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 to 28.34 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Udorthents

Typical profile

C - 0 to 80 inches: variable

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydric soil rating: No

124D—Alpena gravelly loam, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: fz6m
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Alpena and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alpena

Setting

Landform: Beach ridges, eskers, outwash plains
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex, concave
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A1 - 2 to 6 inches: gravelly loam
A2 - 6 to 9 inches: gravelly sandy loam
2C - 9 to 80 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Esau

Percent of map unit: 8 percent
Landform: Beach ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Hydric soil rating: No

Shelter

Percent of map unit: 7 percent
Landform: Till plains, lake terraces, drumlins
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Riser, tread, rise, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

125B—Croswell-Markey complex, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: fz6n
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Croswell and similar soils: 52 percent
Markey and similar soils: 35 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Croswell

Setting

Landform: Outwash plains, lake plains, dunes
Landform position (two-dimensional): Backslope, shoulder, summit, footslope
Landform position (three-dimensional): Crest, side slope, base slope, rise, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex
Parent material: Sandy outwash

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
E - 2 to 4 inches: sand
Bs1 - 4 to 8 inches: sand
Bs2 - 8 to 19 inches: sand
BC - 19 to 31 inches: sand
C - 31 to 80 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Other vegetative classification: Acer-Quercus-Vaccinium (AQV)
Hydric soil rating: No

Description of Markey

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy glaciolacustrine deposits

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 20 inches: muck
Cg - 20 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Available water capacity: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

Minor Components

Finch

Percent of map unit: 5 percent
Landform: Lake plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Maianthemum-Coptis/Tsuga-Maianthemum-Coptis, Vaccinium phase (TMC/TMC-V)
Hydric soil rating: No

Leafriver

Percent of map unit: 4 percent
Landform: Outwash plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Fraxinus-Mentha-Carex (FMC)
Hydric soil rating: Yes

Spot

Percent of map unit: 4 percent
Landform: Lake plains, till plains, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Sphagnum (TTS)
Hydric soil rating: Yes

147B—Shelter very cobbly loam, 0 to 6 percent slopes, stony

Map Unit Setting

National map unit symbol: fz70
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Shelter, stony, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shelter, Stony

Setting

Landform: Lake terraces, drumlins, till plains
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Riser, tread, rise, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Calcareous, loamy-skeletal till

Typical profile

A - 0 to 4 inches: very cobbly loam
A/B - 4 to 6 inches: very stony loam
Bw - 6 to 12 inches: very cobbly fine sandy loam
Cd1 - 12 to 26 inches: very cobbly fine sandy loam
Cd2 - 26 to 80 inches: very cobbly fine sandy loam

Properties and qualities

Slope: 0 to 6 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Available water capacity: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Battydoe, stony
Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope, backslope, shoulder, summit
Landform position (three-dimensional): Base slope, side slope, crest, rise, talf
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Other vegetative classification: Acer-Viola-Osmorhiza/Acer-Tsuga-Dryopteris (AVO/ATD)
Hydric soil rating: No

Alpena, stony
Percent of map unit: 4 percent
Landform: Beach ridges, eskers, outwash plains
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Beavertail, stony
Percent of map unit: 4 percent
Landform: Till plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear, convex
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

151—Beavertail muck

Map Unit Setting
National map unit symbol: fz72
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition
Beavertail and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beavertail

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Calcareous, loamy-skeletal till

Typical profile

Oa - 0 to 8 inches: muck
Bw - 8 to 16 inches: very gravelly fine sandy loam
Cg - 16 to 29 inches: very gravelly fine sandy loam
Cd - 29 to 80 inches: very gravelly fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

Minor Components

Glawe

Percent of map unit: 8 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Shelter

Percent of map unit: 7 percent
Landform: Lake terraces, drumlins, till plains
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Riser, tread, rise, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

160B—Esau extremely gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: fz73
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Esau and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Esau

Setting

Landform: Beach ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Gravelly beach sand

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: extremely gravelly sandy loam
2Bw - 6 to 10 inches: extremely gravelly coarse sand
2C - 10 to 80 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Zela

Percent of map unit: 8 percent
Landform: Depressions, beach ridges
Landform position (two-dimensional): Toeslope, backslope, footslope, summit
Landform position (three-dimensional): Side slope, base slope, crest, dip
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear
Hydric soil rating: Yes

Alpena

Percent of map unit: 7 percent
Landform: Beach ridges, eskers, outwash plains
Landform position (two-dimensional): Backslope, summit, shoulder, footslope
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

163B—Esau-Zela complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: fz75
Elevation: 570 to 1,390 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 39 to 43 degrees F
Frost-free period: 90 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Esau and similar soils: 52 percent
Zela and similar soils: 43 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Esau

Setting

Landform: Beach ridges
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Gravelly beach sand

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: extremely gravelly sandy loam
2Bw - 6 to 10 inches: extremely gravelly coarse sand

2C - 10 to 80 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Hydric soil rating: No

Description of Zela

Setting

Landform: Depressions, beach ridges
Landform position (two-dimensional): Toeslope, backslope, footslope, summit
Landform position (three-dimensional): Side slope, base slope, crest, dip
Down-slope shape: Linear, concave, convex
Across-slope shape: Linear
Parent material: Sandy and gravelly lacustrine deposits

Typical profile

Oa - 0 to 9 inches: muck
A - 9 to 12 inches: extremely gravelly loam
Cg - 12 to 35 inches: very gravelly sand
C - 35 to 80 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Markey

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Tsuga-Thuja-Mitella (TTM)
Hydric soil rating: Yes

Water

Percent of map unit: 2 percent
Hydric soil rating: Unranked

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Typical profile

W - 0 to 80 inches: water

Properties and qualities

Slope: 0 percent
Depth to water table: About 0 inches

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX D

Previous Studies

Appendix D

Part 1: 2017 SAW Summary

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CITY OF ST. IGNACE
ASSET MANAGEMENT PROGRAM SUMMARY

Grantee Information

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Cityofstignace.com

Contact Information for the Grantee

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SAW Grant Project Number: 1061-01

Executive Summary

The City of St. Ignace Asset Management Program (AMP) was created through funding from the Michigan Department of Environmental Quality's SAW Program.

The applicant has formed a SAW team which is composed of City officials and members of the public. The purpose of the team is to develop a mission statement and to discuss and decide upon the Level of Service the system should provide, this impacts cost. The team will meet annually before the City's budget process begins.

The program is GIS based which provides an electronic map background of the St. Ignace sanitary and storm collection systems. The City treats its own sewage and the treatment facility is also included.

The other major components of the program include the asset management spreadsheet (AMS), the User Charge Report, and system filing system; the filing system is accessed through the GIS system.

The AMS utilizes the MDEQ/WEF recommended spreadsheet which is the master compilation tool for the program. It includes:

A. System information and personnel worksheet
B. Summary- worksheet; listing all assets and calculating the business risk
C. Asset Rating Definitions- worksheet
D. Level of Service Statement- worksheet
E. Criticality Calculation – worksheet

F. Probability of Failure - worksheet
G. Budget and Rate formulation worksheet
H. Replacement - worksheet
I. Timing - worksheet
J. Capital Improvement Project – worksheet
K. Ten Year Forecast – worksheet

A. The System Information and Personnel worksheet contains system basic data.
B. The Summary worksheet lists all system assets, with accompanying data related to asset type, location, capacity or size, material type, estimate of original installation year and costs, expected remaining life and valve, the cost of replacement in today's dollars, and data from items E and F above, plus redundancy due to number of units, which leads to a calculation of business risk observation.
C. The 1-5 rating scales for condition, probability of failure and criticality of asset is found in the asset rating definitions.
D. Level of service statement for the system is developed by the SAW team committee and along with the mission statement is on D. above.
E. Worksheets E and F are the calculator worksheets for criticality and probability of failure of a particular asset. These worksheets were only used for major assets where additional documentation was felt necessary. Most cases utilize engineering judgment for the rating decision.
G. The budget and rate sheet is another calculator which includes the operating budget for the system as well as required capital commitment. It makes an assessment of needed operating reserves based on the planned short term replacements needs as well as future capital needs. It includes required reserves for programs such as USDA-RD. It also indicates what is being put away to satisfy these requirements.
H. The replacement worksheet derives the depreciated value of the system as well as a calculation of the replacement value.
I. The timing worksheet attempts to identify whether an asset needs replacing and when to consider and formulate future capital improvement projects.
J. Capital Improvement Plan indicating future possible projects. This is a forecast based on current data, debt retirement, and typical funding agency grouping of project value
K. Ten year budget worksheet attempts to identify the work of inflation on the plan over "10 years".

The second major component is the User Charge System Report which works with the system financials explaining the budget and rate information. It also included the detailed level of service statement and detailed capital improvement forecast.

Finally included is the data filing system which will include items such as the User Charge System above, the system televising data, the hydraulic model, easements, user data, debt documents and other relevant data.

The City of St. Ignace received second round grants as follows:

WAMP

Grant	Local Share	Total
$621,500	-0-	621,500

SAMP

Grant	Local Share	Total
$234,180	$26,020	260,200

The asset management development procedure followed the following path:

A. Identifying and numbering all the assets before field efforts begin.
B. A survey team gathered all GPS coordinates of items such as manholes in the field.
C. A digital orthographic photo was developed using aerial photography to create a GIS system background.
D. A Sewer system layer was created in the GIS system to locate the various assets.
E. A field team inspected and using the NASSCO rating system inventoried and detailed the in-ground assets. Field inspections, records research, capacity testing where needed, and management/staff interviews were used to inventory pump stations and treatment facility components.
F. The inventory data is used in the construction of a production data base which helps populate the Asset Management Data Base and subsequent Spreadsheet (AMS) as described above.
G. The AMS is the calculating tool for assessing the future viability of the delineated assets and the criticality and future impact on the system overall.
H. The criteria of Business Risk and remaining useful life are used to determine what assets need attention and the cost impact of that attention.
I. This data also leads to the formulation of future capital improvement projects.
J. The data is combined into the systems current operating budget to determine whether sufficient financial reserves are being collected.
K. Rate impacts are then considered.
L. The system operators are then trained in the GIS system use and maintenance
M. The process is to be revisited annually.

Wastewater and Stormwater Asset Inventory

The program included two components under different grant offers. The Wastewater Asset Management Program is call the WAMP and the corresponding Stormwater Asset Management Program is called the SAMP.

The WAMP includes all assets found

A. Wastewater Treatment Facility
B. All pump stations and force mains
C. All collection system components

The SAMP includes all assets making up

A. The stormwater collection system
B. The ditches, culverts, and drainage structures

The inventory was performed by records research, field visitation, and inspection. Briefly it included;

Treatment Facility

a) Identifying the assets to be tracked
b) An assessment of the effectiveness of the system currently
c) An assessment of the condition of the identified assets through
    i. Testing
    ii. Visual inspection
    iii. Installation and maintenance records
    iv. Age of the asset

Pump stations(PS) followed the method as completed for the treatment facilities.

Collection systems both sanitary and storm

a) Name and label all manholes
b) Acquire GPS coordinates of all these structures
c) Visually inspect all manholes structures as per NASSCO dictated methodology.
d) Televise selected portions of the collection piping and rate per NASSCO
e) Acquire the age (installation year) of all the elements as close as possible.

The decision was made to utilize the MDEQ offered spreadsheet for compiling and analyzing the data.

The manholes condition assessment was gleaned from the field inventories. We utilized the NASSCO rating system to develop a quick rating of the components. In some circumstances engineering judgement was necessary. The process evaluation for the Wastewater Treatment Facility went a step further determining whether the equipment in place was functioning as is needed to maintain regulatory compliance.

The results of the St. Ignace WAMP assessment were as follows.

General

WAMP

The treatment process assessment indicated that the process line is preforming in line with the basis of design and is meeting expected discharge results.

Of the 110 identified treatment and pump station (PS) assets;

65.9% were considered low business risk
34% were considered average business risk
0.1% were considered in need of effort

In ground (1,192 assets)

81% were considered low business risk
15% were considered average business risk
4% were considered in need of effort

SAMP

In ground (2,178 assets)

65% were considered low business risk
23% were considered average business risk
12% were considered in need of effort

Criticality of Assets

The criticality of assets was determined based on the following factors;

Treatment Facility

Highly Critical (5 rating)

a) Failure of a component would result in a permit violation.
b) Failure of component would cause another component to fail.

Moderately Critical (3-4 rating)

a) Failure of an asset would result in temporary process upset.
b) Failure of an asset would result in a SCADA system warning.
c) Failure of an asset would result in additional budget impact.

Slightly Critical (1-2 rating)

a) Failure of an asset can be addressed when personnel are available.

Pump Stations

Highly Critical (5 rating)

Failure of an asset disables the station resulting in sewer backup affecting customers or the environment.

Moderately Critical (3-4 rating)

Failure of an asset would results in system disruption requiring immediate attention.

Slightly Critical (1-2 rating)

Failure can be dealt with when personnel are available.

Collection System (WAMP & SAMP)

Highly Critical (5 rating)

Failure of an asset would result in flooding, severe adverse environmental impact, or impede an activity.

Moderately Critical (3-4 rating)

Failure of an asset would damage properties in high value areas or a large number of users

Slightly Critical (1-2 rating)

Failure will develop slowly and can be dealt with when personnel are available.

The ranking of an asset has a component of criticality involved but it is only one factor in determining business risk, the other two being redundancy (i.e. back up of the asset) and probability of failure(the condition) of the asset. Our methodology utilizes business risk (ranking 1 to 25) and depreciation (age) of the asset to rank its need for attention and subsequent budget set aside for maintenance or replacement.

Level of Service Determination

The level of services that the system is to offer was determined by a team we entitled the SAW Team to prioritize what the system should offer and how it should respond. Typically four or five major goals were determined and then subdivided into items that should be or not be pursued to meet the goals. These items are placed in a level of service statement found with the USER Charge Report with reference in the asset management database.

Revenue Structure

The MDEQ spreadsheet was utilized to list and prioritize items which required short term or long term capital infusion. The long term items were grouped into project groups and targeted as future projects under the Capital Improvement Plan, which follows. The intent for these projects is future borrowing with monies being added to the current operating budget for future borrowing applications.

The short term capital needs were identified for operating budget inclusion annually. They may include annual maintenance needs or small replacement items along with large project needs in the first seven years after the project is created.

St. Ignace in its very recent participation with the SRF and USDA-RD programs has recently worked on its operating budgets and required set aside for the wastewater system. We found the operating budget and rate support is current and meets the needs outlined by the WAMP.

The SAMP identified budget considerations which have been delivered to the City's Utility Committee to determine what should be done and when to align with other possible future utility or street improvements.

Capital Improvement Plan

St Ignace has identified five future wastewater capital improvement projects. The first one has recently been offered funding by USDA-RD. The debt involved with this project is already incorporated into the rate structure. Short term smaller projects are also incorporated, these are typically less than $100,000.

St. Ignace's Capital Improvement Plan follows major debit retirement milestones replacing debt with new debt when working on depreciating assets.

The SAMP has identified four priority project areas. The first requires MDOT participation and thus is at the mercy of MDOT's highway improvements schedule. The others the City will attempt to pursue with other utility and street projects.

List of Major Assets

Wastewater:

The Wastewater Treatment Facility incorporates 3 aerated lagoons and 2 polishing cells. The disinfection method is ultraviolet

Five major pump stations and three grinder stations

Force Main

4"	400 ft.
6"	2,300 ft.
8"	1,100 ft.
18"	4,400 ft.

Mainline Gravity Sewer

6"	2,665 feet
8"	70,585 feet.
10"	7,825 feet
12"	11,635 feet
15"	3,665 feet
18"	3,370 feet
24"	5,665 feet
27"	210 feet
Total	105,620 feet

System Value: $7,730,000
Replacement Value: $37,825,000

Stormwater:

Sewer & Culverts

- 2 inch – 40 feet
- 3 inch – 25 feet
- 4 inch – 1,090 feet
- 6 inch – 3,500 feet
- 8 inch – 8,500 feet
- 10 inch – 2,800 feet
- 12 inch – 40,100 feet
- 14 inch – 50 feet
- 15 inch – 6,400 feet
- 16 inch – 300 feet
- 18 inch – 7,300 feet
- 20 inch – 90 feet
- 24 inch – 8,200 feet
- 30 inch – 1,300 feet
- 48 inch – 1,600 feet

Total 81,295 feet

System Value: $2,235,000
Replacement Value: $17,936,000

Appendix D

Part 2: SAW WAMP Summary

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	WASTEWATER TREATMENT FACILITY											30	#VALUE!	#VALUE!		1.00	5.0	2.0	**10.00**
												30	#VALUE!	#VALUE!		1.00	3.5	2.0	**7.00**
	Aerated Lagoon Blower Building	AL-BD-001							$57,133	01-Jun-98	24	75	51	$39,082	$81,600	0.00	3	1.5	**0.00**
	Blower/Blower Building Electrical	AL-E-001							$114,266	01-Jun-98	24	40	16	$46,575	$163,200	1	4	1.5	**6.00**
	Floating Aerator Electrical	AL-E-002							$4,687	01-Jun-89	33	40	7	$855	$8,000	0.25	2	2.5	**1.25**
	Lagoon Aeration Cell 1A and 1B	AL-EL-001							$103,997	01-Jun-09	13	30	17	$60,014	$119,460	0.1	3	2	**0.60**
	Lagoon Storage Cell 1C	AL-EL-002							$67,320	01-Jun-09	13	30	17	$38,849	$77,330	0.1	2	2	**0.40**
	Lagoon Flocculation Cell 2	AL-EL-003							$30,165	01-Jun-09	13	30	17	$17,408	$34,650	0	4	2	**0.00**
	Lagoon Polishing Cell 4A	AL-EL-004							$28,983	01-Jun-11	11	30	19	$18,658	$32,000	0.1	4	1.5	**0.60**
	Lagoon Polishing Cell 4B	AL-EL-005							$47,511	01-Jun-09	13	30	17	$27,418	$54,575	0.1	4	2	**0.80**
	Blower Building Mechanical, Heating Ventilating	AL-M-001							$8,314	01-Jun-98	24	40	16	$3,389	$11,875	1	2	1	**2.00**
	Positive Displacement Aeration Blowers	AL-P-001							$57,973	01-Jun-98	24	30	6	$12,182	$82,800	0.25	5	2.5	**3.13**
	Air Diffusion Equipment, Floating Laterals and Diffusers	AL-P-002							$387,888	01-Jun-98	24	30	6	$81,510	$554,000	1	4	2	**8.00**
	Fine Bubble Diffuser Membrane Tubes	AL-P-003							$10,502	01-Jun-98	24	10	-14	$0	$50,000	1	4.5	4	**18.00**
	Floating Eduction Aerators, Cell 1C	AL-P-004							$21,091	01-Jun-89	33	25	-8	$0	$36,000	1	2	3	**6.00**
	Blower Building Piping	AL-P-005							$7,975	01-Jun-98	24	75	51	$5,455	$11,390	1	5	2	**10.00**
	Lagoon Piping	AL-P-006							$717,943	01-Jun-98	24	75	51	$491,112	$1,025,400	0.25	5	2	**2.50**
	Lagoon Flow Control Valves	AL-P-007							$64,977	01-Jun-00	22	25	3	$8,595	$89,200	0.25	2.5	2.5	**1.56**
	Lagoon Hydraulic Gates	AL-P-008							$92,453	01-Jun-09	13	25	12	$45,532	$106,200	0.25	3.5	1.5	**1.31**
	Lagoon Flow Control Structures	AL-TK-001							$240,855	01-Jun-98	24	30	6	$50,613	$344,000	1	5	2	**10.00**
	Lagoon Flow Control Manholes	AL-TK-002							$126,546	01-Jun-89	33	75	42	$71,370	$216,000	1	3.5	2.5	**8.75**
	Remote Administrative Laboratory, Interior, 1989	AS-BD-001							$7,030	01-Jun-89	33	70	37	$3,746	$12,000	1	1	1.5	**1.50**
	Service Building, 1989	AS-BD-002							$269,965	01-Jun-89	33	50	17	$93,400	$460,800	1	3	2.5	**7.50**
	Service Building Shingle Roofs	AS-BD-003							$15,043	01-Jun-09	13	40	27	$10,271	$17,280	1	3	1	**3.00**
	Service Building, Windows and Doors	AS-BD-004							$17,998	01-Jun-89	33	30	-3	$0	$30,720	1	3	3	**9.00**
	Laboratory Casework and Accessory Cabinets	AS-BD-005							$5,062	01-Jun-89	33	40	7	$924	$8,640	1	1	2	**2.00**
	Service Building 480 Volt Power Supply	AS-E-001							$58,586	01-Jun-89	33	45	12	$16,012	$100,000	1	5	2.5	**12.50**
	Service Building Automatic Transfer Switch, 480 V, 3 Ph	AS-E-002							$4,418	01-Jun-09	13	20	7	$1,615	$5,075	1	4	1.5	**6.00**
	Standby Power Generator, Diesel Fired	AS-E-003							$41,889	01-Jun-89	33	50	17	$14,492	$71,500	1	4	1.5	**6.00**
	Service Building Low Voltage Electrical Distribution	AS-E-004							$6,749	01-Jun-89	33	50	17	$2,335	$11,520	1	3	2.5	**7.50**
	Service Building Lighting	AS-E-005							$11,249	01-Jun-89	33	40	7	$2,053	$19,200	1	2.5	2.5	**6.25**
	Main Control Panel, Remote Administrative and Lab Building	AS-I-001							$18,477	01-Jun-12	10	15	5	$6,547	$20,000	1	4	1.5	**6.00**
	Control Panel 1, Service Building	AS-I-002							$23,525	01-Jun-98	24	20	-4	$0	$33,600	1	4	2	**8.00**
	SCADA Hardware and Software	AS-I-003							$6,603	01-Jun-98	24	20	-4	$0	$9,430	0.5	4	2	**4.00**
	Flow Meters, Lot	AS-I-004							$2,642	01-Jun-99	23	40	17	$1,143	$3,700	1	2	3	**6.00**
	Level Sensors, Position Sensors	AS-I-005							$940	01-Jun-09	13	20	7	$344	$1,080	1	3	2.5	**7.50**
	Service Building Heating And Ventilation Equipment	AS-M-001							$9,215	01-Jun-00	22	35	13	$3,504	$12,650	1	3.5	3	**10.50**
	Potable and Service Water Supply System	AS-M-002							$20,247	01-Jun-89	33	40	7	$3,694	$34,560	1	2	2.5	**5.00**
	Potable Water Supply Main	AS-M-003							$53,167	01-Jun-89	33	75	42	$29,985	$90,750	1	3	1.5	**4.50**
	Service Building Simplex Sump Pump	AS-M-004							$3,427	01-Jun-89	33	35	2	$225	$5,850	1.00	2	2.5	**5.00**
	Laboratory Equipment	AS-OM-001							$26,843	01-Jun-00	22	40	18	$12,285	$36,850	1	3.5	2	**7.00**
	Maintenance Equipment	AS-OM-002							$3,571	01-Jun-99	23	40	17	$1,545	$5,000	1	3	3	**9.00**
	Automatic Samplers, RS, PE, and FE	AS-P-001							$16,574	01-Jun-12	10	7	-3	$0	$17,940	1	3	2.5	**7.50**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Ferric Chloride Bulk Storage Tanks	CT-P-001							$9,293	01-Jun-89	33	40	7	$1,696	$15,862	1	4	2.5	**10.00**
	Ferric Chloride Day Tank, Metering Pumps, and Accessories	CT-P-002							$7,689	01-Jun-89	33	30	-3	$0	$13,125	0.1	4	3	**1.20**
	Polymer Feed System	CT-P-003							$5,317	01-Jun-89	33	30	-3	$0	$9,075	1	1	3	**3.00**
	UV Disinfection Equipment	DF-P-001							$356,930	01-Jun-09	13	30	17	$205,976	$410,000	1	5	1.5	**7.50**
	UV Disinfection Hydraulic Gates	DF-P-002							$25,351	01-Jun-09	13	40	27	$17,310	$29,120	1	4	2	**8.00**
	Access Parking Bituminous Pavement	F-C-001							$17,761	01-Jun-89	33	40	7	$3,241	$30,316	1	1	3	**3.00**
	Isolation and Safety Fencing and Gates	F-C-002							$42,390	01-Jun-79	43	50	7	$6,181	$88,200	1	1	2.5	**2.50**
	Site Monitoring Wells	F-C-003							$18,455	01-Jun-89	33	50	17	$6,385	$31,500	0.1	4	2	**0.80**
	Wastewater Pump Truck	F-OM-001							$18,652	01-Jun-92	30	40	10	$4,804	$30,000	0.1	3	2.5	**0.75**
	Pump, 8", Diesel, Trailer Mounted	F-OM-002							$58,873	01-Jun-11	11	40	29	$43,143	$65,000	1	3	1.5	**4.50**
	Pumps, Portable, Lot	F-OM-003							$14,205	01-Jun-00	22	20	-2	$0	$19,500	1	3	2	**6.00**
	Electrical Geneators, Lot	F-OM-004							$1,189	01-Jun-01	21	15	-6	$0	$1,600	1	3	1.5	**4.50**
	Yard Maintenance Equipment, Lawn Mower	F-OM-005							$5,595	01-Jun-92	30	25	-5	$0	$9,000	1	1	3.5	**3.50**
	Pickup Truck, 1 Ton, Plow	F-OM-006							$44,118	30-Jun-15	7	20	13	$29,547	$45,000	1	2	1	**2.00**
	Pickup Truck, 3/4 Ton	F-OM-007							$29,872	01-Jun-08	14	30	16	$16,243	$35,000	1	2	1.5	**3.00**
	Outfall Piping	OT-P-001							$0	01-Jun-73	49	0			$0	1	4	2	**8.00**
	Effluent Cascade Structure (Structure H)	OT-TK-001							$29,527	01-Jun-89	33	75	42	$16,653	$50,400	1	2	2	**4.00**
	Outfall Manholes	OT-TK-002							$17,576	01-Jun-89	33	75	42	$9,913	$30,000	1	2	2.5	**5.00**
	Piece 1	PI 1							$0	16-Feb-17	5	0			$0	0	0	0	**0.00**
	Piece 2	PI 2							$0	16-Feb-17	5	0			$0	0	0	0	**0.00**
	Piece 3	PI 3							$0	16-Feb-17	5	0			$0	0	0	0	**0.00**
	Screen and Disinfection Building	POL-BD-001							$71,038	01-Jun-09	13	75	62	$59,021	$81,600	1	3	1.5	**4.50**
	Asphalt Shingle Roof	POL-BD-002							$3,996	01-Jun-09	13	40	27	$2,729	$4,590	1	2	1.5	**3.00**
	Doors and Windows	POL-BD-003							$7,104	01-Jun-09	13	30	17	$4,100	$8,160	1	2	1.5	**3.00**
	Screen Building 480 Volt Supply	POL-E-001							$35,519	01-Jun-09	13	40	27	$24,253	$40,800	1	5	2	**10.00**
	Screen Building Low Voltage Distribution	POL-E-002							$2,664	01-Jun-09	13	30	17	$1,537	$3,060	1	3	1.5	**4.50**
	Screen Building Lighting	POL-E-003							$4,440	01-Jun-09	13	30	17	$2,562	$5,100	0.1	2	1.5	**0.30**
	Screen Building Heating and Ventilating	POL-M-001							$5,310	01-Jun-09	13	40	27	$3,626	$6,100	1	2	1.88	**3.76**
	Screen Equipment	POL-P-001							$114,914	01-Jun-09	13	30	17	$66,314	$132,000	1	2	2	**4.00**
	Reagon Street, Electrical Building	PS1-BD-001							$18,854	01-Jun-99	23	50	27	$10,296	$26,400	1	2	1.5	**3.00**
	PS Electrical, 480 Volt, MV/LV Supply Distrib.	PS1-E-001							$32,566	01-Jun-99	23	40	17	$14,088	$45,600	0.25	5	1.5	**1.88**
	Variable Speed Drives, 150 HP	PS1-E-002							$104,340	01-Jun-11	11	20	9	$48,582	$115,200	0.1	5	2	**1.00**
	Diesel Fired Standby Generator	PS1-E-003							$99,597	01-Jun-89	33	50	17	$34,458	$170,000	1	3	2	**6.00**
	PS Heating, Ventilation, Drainage and Piping	PS1-M-001							$3,482	01-Jun-99	23	20	-3	$0	$4,875	1	2	2	**4.00**
	Raw Sewage Pumps	PS1-P-001							$122,274	01-Jun-11	11	15	4	$35,152	$135,000	0.1	5	1.5	**0.75**
	PS Dry Pit, Wet Well, and Yard Piping	PS1-P-002							$21,270	01-Jun-89	33	75	42	$11,996	$36,305	0.25	4	2	**2.00**
	PS Dry Pit, Wet Well, and Yard Valves	PS1-P-003							$8,349	01-Jun-89	33	50	17	$2,889	$14,250	0.25	4	2	**2.00**
	Reagon St PS, Steel Dry Pit	PS1-TK-001							$35,152	01-Jun-89	33	50	17	$12,162	$60,000	1	4	2	**8.00**
	Reagon St. PS, Concrete Wet Well	PS1-TK-002							$58,118	01-Jun-89	33	50	17	$20,107	$99,200	1	5	2.5	**12.50**
	Filtrating Pumping System	SD-P-001							$33,965	01-Jun-11	11	20	9	$15,815	$37,500	0.1	1	1.5	**0.15**
	Drying Bed Piping and Valves	SD-P-002							$15,370	01-Jun-79	43	75	32	$6,617	$31,980	1	3	1.5	**4.50**
	Sludge Dry Beds-Structure	SD-TK-001							$58,583	01-Jun-11	11	50	39	$46,061	$64,680	0.1	1	1.5	**0.15**
	STRUCTURES																		
	Sanitary Clean-out (NORTH STATE HOTELS AREA TYPICAL)	CO001		1		408446.3	26826298.24	619.58	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	**5.60**
	Sanitary Clean-out	CO002		1		406962.915	26825080.67	623.192	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	**5.60**
	Sanitary Clean-out	CO003		1		406983.291	26825079.79	624.451	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Clean-out	CO004		1		407013.676	26825070.96	626.238	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO005		1		407016.179	26825068.51	625.666	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO006	48	1	CR	405341.666	26823894.09	604.35	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO007		1		403485.518	26825720.14	641.924	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO008	36	1	BR	403357.894	26824712.84	639.184	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO009		1		0	0	0	$500	01-Jan-08	14	30	16	$265	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO011		1		0	0	0	$500	01-Jan-86	36	30	-6	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO012		1		408510.566	26826205.06	595.372	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO1		1		408770.6	26826132.27	595.38	$200	01-Jan-50	72	30	-42	$0	$500	1.00	2.8	2	5.60
	Sanitary Clean-out	CO360		1		403294.561	26826356.2	623.813	$200	01-Jan-40	82	30	-52	$0	$500	1.00	2.8	2.8	7.84
	Force Main Structure	FM		1		409982.69	26825906.18	601.59	$5,000	01-Jan-00	22	30	8	$1,315	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM001		1		412621.621	26822574.48	616.552	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM002		1		407111.403	26822916.86	620.416	$5,000	01-Jan-09	13	30	17	$2,816	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM002A		1		407109.815	26822897.53	619.747	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM003		1		407109.51	26822983.28	624.501	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM004		1		406676.241	26824208.22	616.635	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM005		1		406112.716	26824684.51	590.876	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM006		1		406142.419	26824677.08	592.389	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM007		1		0	0	0	$5,000	01-Jan-09	13	30	17	$2,816	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM008-2FM008		1		414460.528	26823264.74	586.075	$5,000	01-Jan-80	42	30	-12	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM008-2FM008		1		0	0	0	$5,000	01-Jan-80	42	30	-12	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM010		1		0	0	0	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM011		1		413946.367	26823780.61	589.121	$5,000	01-Jan-80	42	30	-12	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM012		1		409261.08	26825929.59	602.26	$5,000	01-Jan-09	13	30	17	$2,816	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM013		1		413025.83	26825065.7	592.52	$5,000	01-Jan-60	62	30	-32	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM014		1		407202.9499	26825764.81	621.25	$5,000	01-Jan-50	72	30	-42	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM019		1		399699.731	26824239.33	709.693	$5,000	01-Jan-85	37	30	-7	$0	$15,000	1.00	2.8	2	5.60
	Force Main Structure	FM020		1		412465.899	26822566.77	616.775	$5,000	01-Jan-89	33	30	-3	$0	$15,000	1.00	2.8	2	5.60
	Lagoons Structure	LO001		1		0	0	0	$5,000	01-Jan-10	12	30	18	$2,983	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO002	48	1	CR	413753.275	26824231.83	588.697	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO003	60	1	CR	413701.045	26824145.68	590.712	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO004	60	1	CR	413941.963	26823772.41	589.255	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO005		1		413627.893	26823541.8	599.312	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO006		1		413619.229	26823538.15	599.296	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO007		1		413611.651	26823530.3	599.382	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Lagoons Structure	LO008	48	1	CR	413391.205	26823366.1	606.518	$5,000	01-Jan-89	33	30	-3	$0	$10,000	1.00	2.8	2	5.60
	Meter Vault	METER		1		407311.473	26822226.6	625.337	$2,000	01-Jan-50	72	30	-42	$0	$15,000	1.00	2.8	2	5.60
	Meter Vault	MV003		1		409674.7397	26825992.28	593.27	$15,000	01-Jan-09	13	30	17	$8,449	$15,000	1.00	2.8	2	5.60
	Pump Station	PS001		1		406188.557	26824683.3	595.056	$200,000	01-Jan-89	33	30	-3	$0	$500,000	1.00	2.8	2	5.60
	Pump Station	PS002		1		0	0	0	$25,000	01-Jan-86	36	30	-6	$0	$200,000	1.00	2.8	2	5.60
	Pump Station	PS003		1		0	0	0	$250,000	01-Jan-09	13	30	17	$140,822	$200,000	1.00	2.8	2	5.60
	Pump Station	PS004		1		399358.806	26831512.06	596.805	$150,000	01-Jan-88	34	30	-4	$0	$150,000	1.00	2.8	2	5.60
	Pump Station	PS005		1		396891.402	26825751.83	595.429	$50,000	01-Jan-95	27	30	3	$4,813	$150,000	1.00	2.8	2	5.60
	Pump Station	PS006?		1		0	0	0	$2,000	01-Jan-50	72	30	-42	$0	$100,000	1.00	2.8	2	5.60
	Pump Station	PS007		1		414613.597	26823165.11	585.918	$2,000	01-Jan-50	72	30	-42	$0	$100,000	1.00	2.8	2	5.60
	Pump Station	PS008		1		0	0	0	$2,000	01-Jan-50	72	30	-42	$0	$50,000	1.00	2.8	2	5.60
	Pump Station	PS009		1		399111.534	26831824.53	588.682	$2,000	01-Jan-50	72	30	-42	$0	$50,000	1.00	2.8	2	5.60
	Pump Station	PS-PRIVATE		1		399546.278	26822588.45	710.566	$15,000	01-Jan-85	37	30	-7	$0	$25,000	1.00	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA001	48	1	CR	409118.267	26822791.69	689.131	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA002	48	1	CR	408767.072	26822796.15	701.133	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA003	48	1	CR	408464.107	26822803.49	708.728	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA004	48	1	CR	408154.362	26822804.3	710.482	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA005	48	1	CR	408116.083	26822804.22	711.521	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA006	48	1	CR	408144.02	26822832.8	710.327	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA008		1		0	0	0	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA009	48	1	CR	407111.789	26822777.59	618.078	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA010	48	1	CR	407092.414	26823028.82	621.389	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA011	48	1	CR	407061.257	26823327.03	622.095	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA012	48	1	CR	406954.069	26823608.59	623.254	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA013	48	1	CR	406858.634	26823879.55	626.998	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA014	48	1	CR	406813.789	26823999.6	623.775	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA015	48	1	CR	406974.704	26824063.14	658.982	$507	01-Jan-60	62	75	13	$87	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA016	48	1	CR	406302.603	26824264.34	599.982	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA017	48	1	CR	406391.038	26824485.44	604.068	$5,720	01-Jan-08	14	75	61	$4,644	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA018	48	1	CR	406157.798	26824354.07	595.686	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA019	48	1	CR	406044.19	26824447.37	592.716	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA020	48	1	BR	406061.43	26824569.67	591.869	$5,720	01-Jan-08	14	75	61	$4,644	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA021	72	1	CR	406120.146	26824696.18	590.961	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA022	48	1	CR	406000.2357	26824150.69	596.87	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA023	72	1	CR	406120.917	26824830.27	592.573	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA024	48	1	CR	406141.87	26824896.2	593.759	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA025	48	1	BR	406180.561	26825032.41	593.617	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA026	48	1	BR	406462.638	26825238.18	601.336	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA027	48	1	BR	406574.393	26825420.59	604.612	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA028	36	1	BR	406577.659	26825771.53	598.867	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA029	48	1	BR	406686.736	26825767.5	602.112	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA030	48	1	BR	406706.386	26826014.9	599.698	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA031	48	1	CR	406185.399	26824848.67	595.286	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA033	48	1	CR	406594.16	26825123.38	608.913	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA034	48	1	CR	406606.13	26825113.6	609.59	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA035	48	1	CR	406707.676	26825229.84	613.874	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA036	48	1	BR	406706.053	26825244.96	613.994	$3,223	01-Jan-89	33	30	-3	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA037	48	1	BR	406833.726	26825374.04	617.633	$3,223	01-Jan-89	33	30	-3	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA038	48	1	BR	407066.322	26825636.51	620.532	$3,223	01-Jan-89	33	30	-3	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA039	48	1	BR	407296.444	26825890.79	622.059	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA040	48	1	CR	406964.901	26825105.12	623.913	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA042	24	1	BR	407152.117	26825015.34	667.387	$95	01-Jan-50	72	30	-42	$0	$1,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA043	48	1	BR	407127.406	26824779.69	672.894	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA045	48	1	CR	407110.91	26825264.86	650.913	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA046	48	1	CR	407238.074	26825307.96	661.573	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA047	48	1	CR	407407.929	26825285.18	671.76	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA048	48	1	CR	407606.759	26825257.99	674.58	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA049	48	1	CN	407809.36	26825277.51	679.76	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA050	48	1	CR	408013.101	26825314.62	679.363	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA054	48	1	BR	407556.624	26825918.99	620.043	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA055	48	1	BR	407785.986	26825915.71	619.984	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA056	48	1	BR	408095.541	26825908.35	612.971	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA057	48	1	BR	408361.49	26825899.64	607.758	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA058	48	1	CR	408737.274	26825885.6	607.45	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA059	36	1	BR	408727.81	26825759.63	613.463	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA060	48	1	CR	409017.008	26825873.57	604.938	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA061	48	1	CR	409197.537	26825859.87	603.327	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA062	48	1	CR	409199.211	26825690.69	617.292	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA063	48	1	BR	409196.365	26825399.02	646.219	$746	01-Jan-60	62	30	-32	$0	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA064	48	1	BR	409188.908	26825098.72	656.908	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA065	48	1	BR	409180.371	26824801.15	669.693	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA066	48	1	BR	409170.072	26824499.62	674.135	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA067	48	1	CR	408929.579	26824386.82	682.68	$3,223	01-Jan-84	38	75	37	$1,585	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA068	48	1	CR	408828.132	26824395.22	686.717	$3,223	01-Jan-84	38	75	37	$1,585	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA069	48	1	CR	408984.841	26824273.79	682.781	$3,223	01-Jan-84	38	75	37	$1,585	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA070	48	1	CR	409162.486	26824255.89	676.18	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA071	48	1	CR	409151.785	26823993.11	678.786	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA072	48	1	CR	409138.946	26823699.72	680.542	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA073	48	1	CR	409102.325	26823701.46	680.534	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA074	48	1	CR	409089.063	26823448.1	681.882	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA075	48	1	CR	409080.022	26823151.34	684.541	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA076	48	1	CR	409120.831	26823343.45	682.854	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA077	48	1	CR	409108.353	26822947.93	686.792	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA078	48	1	CR	409709.36	26823115.72	669.532	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA079	48	1	CR	409559.884	26825847.58	600.609	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA080	48	1	CR	409692.965	26825842.97	600.462	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA098	48	1	BR	0	0	0	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA099	48	1	CR	412456.393	26825189.67	592.646	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA100	48	1	CR	412701.545	26825136.07	592.107	$4,204	01-Jan-97	25	75	50	$2,797	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA101	48	1	CR	412329.381	26825210.56	593.602	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA102	48	1	CN	411839.554	26825323.57	595.053	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA104	48	1	CR	411666.011	26825375.49	595.267	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA105	48	1	BR	411646.247	26825094.12	599.564	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA106	48	1	CR	411374.901	26825467.42	597.139	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA107	48	1	CR	411095.011	26825560.1	597.977	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA109	48	1	CR	0	0	0	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA110	48	1	CR	410435.099	26825765.4	600.236	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA118	48	1	BR	408365.015	26826103.33	600.196	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA120	36	1	BR	408109.737	26826064.06	604.714	$47	01-Jan-30	92	30	-62	$0	$2,500	1.00	3.5	5	**17.50**
	Sanitary Manhole	SA135	72	1	CR	405793.608	26824720.88	587.627	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA136	72	1	CR	405482.864	26824615.14	587.979	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA137	48	1	BR	405561.769	26824361.1	590.402	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA138	48	1	CR	405609.749	26824082.93	595.507	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA139	72	1	CR	405302.494	26824560.33	588.716	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA140	72	1	CR	405273.827	26824593.54	588.257	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA141		1		404932.818	26824589.25	588.798	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA142	72	1	CR	404784.4	26824614.15	588.861	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA143	72	1	CR	404659.834	26824664.44	588.068	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA144	72	1	CR	404540.314	26824737.76	587.554	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA145	72	1	CR	404362	26824880.83	587.26	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA146	72	1	CR	404196.559	26825115.66	588.486	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA147	72	1	CR	404131.515	26825281.58	588.982	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA148	72	1	CR	404093.733	26825407.5	588.835	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA149	72	1	CR	404029.885	26825702.65	589.059	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA150	72	1	CR	404001.132	26825846.89	589.211	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA151	72	1	CR	403932.82	26826075.02	588.971	$5,103	01-Jan-89		75	75	$5,103	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA152	72	1	CR	403833.205	26826350.99	589.758	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA153	72	1	CR	403728.115	26826633.05	591.261	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA154	72	1	CR	403578.986	26826890.2	590.596	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA155	72	1	CR	403420.909	26827147.88	590.623	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA156	48	1	CR	403442.475	26827267.48	588.233	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA157	48	1	CR	403222.19	26827360.68	589.887	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA158	48	1	CR	403096.4	26827398.13	591.63	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA159	48	1	BR	402915.121	26827452.62	593.362	$3,223	01-Jan-89	33	30	-3	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA160	72	1	CR	402781.417	26827526.45	592.852	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA161	72	1	CR	402658.143	26827621.8	591.546	$5,103	01-Jan-89	33	75	42	$2,850	$12,635	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA162	48	1	CR	402694.777	26827672.62	590.907	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA165	48	1	CR	402172.328	26828091.55	590.414	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA166	48	1	CR	401991.36	26828267.18	593.083	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA167	36	1	BR	401823.777	26828386.37	602.954	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA168		1		0	0	0	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA169	48	1	CR	401865.24	26828550.87	594.397	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA170	48	1	CR	401703.142	26828795.02	594.817	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA171	48	1	CR	401482.064	26829160.79	599.756	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA172	48	1	BR	401371.999	26829453.94	601.23	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA173		1		401263.854	26829768.35	601.757	$0	01-Jan-50	72	75	3	$0	$0	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA174	48	1	BR	401199.006	26829954.96	602.236	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA175	48	1	BR	401061.7889	26830213.88	603.3	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA176	48	1	BR	400840.087	26830513.2	602.563	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA177	48	1	BR	400689.903	26830656.53	601.426	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA178		1		400459.628	26830777.79	603.123	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA179	48	1	CR	400463.329	26830916.81	598.688	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA180	48	1	BR	400182.464	26831045.1	601.277	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA181	48	1	BR	399910.898	26831171.28	603.46	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA182	48	1	BR	399649.573	26831326.83	604.119	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA183	48	1	BR	399599.109	26831117.63	610.239	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA184	48	1	BR	399345.535	26831511.83	596.567	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA185	48	1	BR	399113.266	26831834.43	588.189	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA186	48	1	BR	399053.539	26831871.05	587.834	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA187	48	1	BR	398785.935	26831901.19	591.063	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA189	48	1	BR	398638.288	26831999.5	596.019	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA190	24	1	BR	398439.818	26832079.9	598.253	$44	01-Jan-50	72	30	-42	$0	$1,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA195	48	1	CR	0	0	0	$3,223	01-Jan-90	32	75	43	$1,843	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA197	48	1	CR	0	0	0	$3,223	01-Jan-90	32	75	43	$1,843	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA198	48	1	CR	399225.969	26831578.89	595.167	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA199	48	1	CR	399147.014	26831212.84	611.766	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA200	48	1	CR	399119.83	26831045.76	611.705	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA201	48	1	BR	399094.977	26831030	611.273	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA202	48	1	BR	398893.596	26831055.89	612.798	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA203	48	1	BR	399144.651	26830970.34	610.401	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA204	48	1	CR	399488.355	26830904.9	614.204	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA205	36	1	BR	0	0	0	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	3.5	5	17.50
	Sanitary Manhole	SA206	36	1	BR	399630.193	26830874.84	615.02	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	3.5	5	17.50
	Sanitary Manhole	SA207	60	1	BR	400018.255	26830800.71	616.858	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA208	48	1	BR	399984.711	26830618.34	621.519	$5,070	01-Jan-50	72	30	-42	$0	$7,980	1.00	3.5	5	17.50
	Sanitary Manhole	SA209	60	1	BR	399736.612	26830555.4	622.93	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA210	60	1	BR	399451.662	26830487.1	610.711	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA211	60	1	BR	399227.474	26830521.84	624.892	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA212	60	1	BR	399015.396	26830566.89	623.562	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA213	60	1	BR	398955.528	26830248.35	632.471	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA214	48	1	BR	398909.694	26830002.67	635.745	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA215	36	1	BR	398866.123	26829766.63	641.911	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	5.60
	Sanitary Manhole	SA216	48	1	CR	398809.282	26829495.15	653.128	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA217		1		399013.268	26829966.57	635.382	$0	01-Jan-50	72	0				1.00	2.8	2	5.60
	Sanitary Manhole	SA218	48	1	CR	399262.488	26829907.91	631.489	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA219	60	1	BR	400151.69	26830774.34	615.325	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA220	60	1	BR	400443.468	26830717.48	606.47	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA221	60	1	BR	400398.414	26830468.38	621.033	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	3.5	5	17.50
	Sanitary Manhole	SA222	48	1	BR	400340.408	26830180.48	631.007	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	3.5	5	17.50
	Sanitary Manhole	SA223	48	1	BR	400256.562	26829742.35	630.558	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	3.5	5	17.50
	Sanitary Manhole	SA224	48	1	BR	400543.032	26830686.5	604.007	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	3.5	5	17.50
	Sanitary Manhole	SA225	48	1	BR	400678.445	26830614.9	601.952	$507	01-Jan-50	72	30	-42	$0	$7,890	1.00	3.5	5	17.50
	Sanitary Manhole	SA226	48	1	BR	400809.606	26830486.77	603.135	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	3.5	5	17.50
	Sanitary Manhole	SA227	60	1	BR	0	0	0	$634	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA228	60	1	CR	400934.782	26830049.31	615.132	$634	01-Jan-50	72	75	3	$24	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA229	60	1	CR	400899.734	26829869.51	622.906	$634	01-Jan-50	72	75	3	$24	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA230	60	1	CR	400885.926	26829787.67	625.903	$634	01-Jan-50	72	75	3	$24	$9,975	1.00	2.8	2	5.60
	Sanitary Manhole	SA231	48	1	CR	401411.059	26829132.04	605.75	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA232	36	1	BR	401398.071	26828933.49	623.246	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	5.60
	Sanitary Manhole	SA233	36	1	BR	401332.983	26828581.93	633.638	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	5.60
	Sanitary Manhole	SA234	36	1	BR	401316.272	26828499.82	634.948	$159	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	5.60
	Sanitary Manhole	SA235	48	1	BR	401230.709	26828079.73	662.78	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA236	48	1	BR	401182.552	26827820.18	664.675	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA237	48	1	BR	401143.667	26827594.83	666.88	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA238	48	1	CR	401089.222	26828453.52	644.534	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA239	48	1	BR	400885.776	26828353.94	651.892	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA240	48	1	BR	400804.402	26828084.38	659.099	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA241	48	1	BR	400743.002	26827806.89	668.723	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA242	48	1	BR	400696.229	26827632.54	673.897	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA243	48	1	BR	400654.09	26827459.45	677.062	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA244	48	1	BR	400795.653	26829259.88	631.187	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA245	48	1	BR	400851.758	26829544.06	629.464	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA246	48	1	BR	400763.69	26829653.76	632.301	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA247	48	1	BR	400768.353	26829128.31	633.669	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA248	48	1	BR	400708.6	26828820.91	640.786	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA249	48	1	BR	400640.444	26828475.83	653.235	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA250	48	1	BR	400580.613	26828379.91	657.722	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA251	48	1	BR	400509.003	26828053.23	666.612	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA252	36	1	BR	400329.619	26828090.83	664.493	$507	01-Jan-50	72	30	-42	$0	$2,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA253	24	1	BR	400228.489	26827906.56	670.927	$507	01-Jan-50	72	30	-42	$0	$1,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA254	48	1	BR	400469.127	26829319.75	630.351	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA255	48	1	BR	400161.105	26829378.3	630.398	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA256	48	1	CR	400102.574	26829078.34	633.732	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA257	48	1	CR	400061.49	26828880.4	640.086	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA258	48	1	BR	400018.704	26828683.89	651.642	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA259	48	1	BR	399935.266	26828294.8	661.275	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA260	48	1	CR	399891.478	26828071.17	667.248	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA261	48	1	CR	399843.814	26827839.7	670.273	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA262	48	1	CR	399799.114	26827613.56	671.706	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA263	48	1	CR	399529.656	26827667	670.202	$507	01-Jan-80	42	75	33	$222	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA264	48	1	CR	399259.311	26827722.02	671.567	$507	01-Jan-80	42	75	33	$222	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA265	48	1	CR	399189.673	26827674.23	672.618	$507	01-Jan-80	42	75	33	$222	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA266	48	1	CR	399208.548	26827731.88	671.823	$507	01-Jan-80	42	75	33	$222	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA267		1		399240.215	26827884.11	671.922	$3,223	01-Jan-80	42	75	33	$1,413	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA268		1		0	0	0	$3,223	01-Jan-80	42	75	33	$1,413	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA269	36	1	BR	399297.098	26828189.76	671.873	$1,010	01-Jan-80	42	30	-12	$0	$2,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA270	48	1	BR	401187.762	26829177.94	623.207	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA271		1	BR	401975.923	26828151.44	602.016	$3,223	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA272		1	CR	401929.336	26827836.23	625.217	$3,223	01-Jan-50	72	75	3	$123	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA273		1	CR	401864.166	26827537.75	656.273	$3,223	01-Jan-50	72	75	3	$123	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA274		1	BR	401847.851	26827526.19	656.71	$3,223	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA275		1	BR	401815.773	26827364	656.828	$3,223	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA276		1	CR	401786.071	26827215.88	659.515	$3,223	01-Jan-50	72	75	3	$123	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA277	48	1	BR	401741.616	26826934.6	664.432	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA278	48	1	BR	401625.681	26827409.09	659.997	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA279	48	1	BR	401653.016	26827519.06	657.326	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA280	24	1	BR	401472.225	26827407.52	659.174	$95	01-Jan-50	72	30	-42	$0	$1,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA281	24	1	CR	401395.165	26827400.03	663.217	$95	01-Jan-50	72	75	3	$4	$1,500	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA282	48	1	CR	401590.275	26827260.48	662.399	$507	01-Jan-50	72	75	3	$19	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA283	48	1	CR	401528.235	26826968.09	669.988	$507	01-Jan-94	28	75	47	$317	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA284	48	1	CR	401471.193	26826671.94	677.91	$507	01-Jan-94	28	75	47	$317	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA285	48	1	CR	401441.594	26826533.08	680.977	$507	01-Jan-94	28	75	47	$317	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA287	48	1	CR	401079.7	26826604.16	686.92	$5,720	01-Jan-05	17	75	58	$4,416	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA288		1		0	0	0	$5,720	01-Jan-05	17	75	58	$4,416	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA289		1		402379.653	26827673.07	601.317	$507	01-Jan-50	72	75	3	$19	$7,890	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA290	48	1	BR	402323.514	26827559.98	608.434	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA291	48	1	BR	402239.494	26827145.8	621.684	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA292	60	1	BR	402543.565	26827532.05	600.152	$803	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA293	60	1	BR	402515.466	26827392.92	606.972	$803	01-Jan-50	72	30	-42	$0	$9,975	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA294	48	1	BR	402452.79	26827062.92	616.026	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA295	48	1	BR	402384.355	26826720.78	618.011	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA296	48	1	BR	402319.843	26826397	624.789	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA297	48	1	BR	402312.863	26826359.86	625.638	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA298	48	1	BR	402486.064	26826363.41	620.5	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA299	48	1	BR	402455.158	26826138.71	626.129	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA300	48	1	BR	402579.391	26826605.76	625.115	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA301	48	1	BR	402630.443	26826333.79	621.699	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA302	48	1	BR	402941.361	26826269.83	624.192	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA303	48	1	BR	402889.464	26826013.02	623.357	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA304	48	1	BR	402839.109	26825756.02	626.357	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA305	48	1	CR	0	0	0	$5,720	01-Jan-05	17	75	58	$4,416	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA306		1		0	0	0	$5,720	01-Jan-05	17	75	58	$4,416	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA307		1		0	0	0	$5,720	01-Jan-05	17	75	58	$4,416	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA308	48	1	CR	402690.488	26825077.53	636.442	$5,720	01-Jan-05	17	75	58	$4,416	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA309	48	1	CR	402730.165	26825069.36	635.231	$5,720	01-Jan-05	17	75	58	$4,416	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA310	48	1	BR	402363.689	26824901.45	695.071	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA311	48	1	BR	402312.667	26824585.78	694.058	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA312	48	1	BR	402588.143	26824526.47	688.524	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA313	48	1	BR	402992.696	26826515.4	623.608	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA314	48	1	BR	403071.481	26826931.16	617.284	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA315	48	1	CR	402666.647	26827017.44	617.975	$237	01-Jan-40	82	75	-7	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA316		1		402644.8	26826524.54	641.09	$237	01-Jan-40	82	75	-7	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA317	48	1	BR	403102.895	26827084.77	605.883	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	**7.84**
	Sanitary Manhole	SA318	48	1	BR	402720.99	26827262.98	608.643	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA319	48	1	CR	402775.344	26827505.05	594.035	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA320	48	1	CR	402280.301	26822891.78	703.349	$5,720	01-Jan-03	19	75	56	$4,263	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA321	48	1	CR	402379.692	26823183.45	702.996	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA323	48	1	CR	402417.708	26823525.58	699.066	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA324-COVER STUCK		1		0	0	0	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA325		1		0	0	0	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA326	48	1	CR	402457.231	26823764.38	696.446	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA327	48	1	CR	402093.517	26823875.18	699.46	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA328	48	1	CR	401780.445	26824024.07	703.035	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA329	48	1	CR	401474.496	26824194.91	711.027	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA330	48	1	CR	401239.812	26824351.34	716.481	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA331	48	1	CR	401792.166	26824059.28	703.039	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA332	48	1	CR	401480.023	26824213.39	711.001	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA333	48	1	CR	401318.637	26824332.03	715.302	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA334	48	1	CR	0	0	0	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA335	48	1	CR	400825.86	26824613.39	710.22	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA336	48	1	CR	400494.32	26824475.65	711.519	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA337	48	1	CR	400123.783	26824334.96	711.021	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA338	48	1	CR	399855.287	26824380.99	709.809	$3,223	01-Jan-86	36	75	39	$1,671	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA339	60	1	CR	399846.445	26824327.69	710.485	$3,223	01-Jan-86	36	75	39	$1,671	$9,975	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA340	48	1	CR	399693.078	26824348.57	708.668	$3,223	01-Jan-85	37	75	38	$1,628	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA341	48	1	CR	399786.663	26824030.41	711.205	$3,223	01-Jan-85	37	75	38	$1,628	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA342	48	1	CR	399729.26	26823737.7	712.328	$3,223	01-Jan-85	37	75	38	$1,628	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA343	48	1	BR	399690.791	26823543.53	712.828	$3,223	01-Jan-85	37	30	-7	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA344	48	1	BR	399647.841	26823316.69	713.591	$3,223	01-Jan-85	37	30	-7	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA345	48	1	BR	399605.518	26823094.2	712.264	$3,223	01-Jan-85	37	30	-7	$0	$7,980	1.00	2.8	2	**5.60**
	Sanitary Manhole	SA346	48	1	BR	399586.573	26822932.53	710.616	$3,223	01-Jan-85	37	30	-7	$0	$7,980	1.00	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA347	48	1	CR	399521.552	26823343.67	711.719	$3,223	01-Jan-85	37	75	38	$1,628	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA348	48	1	CR	399361.526	26823351.13	713.565	$3,223	01-Jan-85	37	75	38	$1,628	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA350	48	1	CR	396926.433	26825988.77	597.423	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA351	48	1	CR	396970.689	26826244.62	600.093	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA353	48	1	CR	396912.079	26826541.7	601.892	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA354	48	1	CR	0	0	0	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA355	48	1	CR	397226.075	26826777.38	613.361	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA356	48	1	CR	396849.719	26826878	599.808	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA357	48	1	CR	396761.481	26826892.92	598.228	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA358	48	1	CR	403543.125	26826833.97	592.945	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA359	36	1	BR	403377.973	26826716.34	608.046	$74	01-Jan-40	82	30	-52	$0	$2,500	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA361	48	1	BR	403245.883	26826103.1	631.439	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA362	48	1	BR	403166.539	26825696.48	629.155	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA363	48	1	BR	403342.978	26825664.43	634.857	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA364	48	1	CR	403034.33	26823945.75	661.98	$507	01-Jan-50	72	75	3	$19	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA365	48	1	BR	403278.356	26825310.73	637.007	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA366	48	1	BR	403096.509	26825352.51	633.208	$3,223	01-Jan-86	36	30	-6	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA367	48	1	BR	403031.348	26825032.57	635.784	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA368	48	1	BR	402964.676	26824730.1	643.102	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA369	48	1	BR	402911.893	26824466.75	653.721	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA370	48	1	BR	402718.566	26824503.8	670.943	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA371	48	1	BR	402866.595	26824253.12	661.045	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA372	48	1	BR	402823.3	26824020.14	664.984	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA373	48	1	BR	403379.845	26825289.89	642.019	$137	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA374	48	1	BR	403416.019	26824952.57	639.345	$237	01-Jan-40	82	30	-52	$0	$7,980	1.00	2.8	2.8	7.84
	Sanitary Manhole	SA375	48	1	BR	403167.592	26824419.32	648.267	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA376	48	1	CR	403996.519	26825683.13	589.634	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA377	48	1	CR	403773.246	26825647.3	611.888	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA378	48	1	CR	403696.301	26825618.5	622.064	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA379	48	1	CR	403630.367	26825329.69	645.117	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA380	48	1	CR	403572.732	26825250.54	649.324	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA381	48	1	CR	403513.393	26824936.5	644.096	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA382	48	1	CR	403467.821	26824697.12	645.983	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA383	48	1	CR	403402.245	26824375.98	650.673	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA384	48	1	CR	403343.957	26824058.69	654.683	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA385	48	1	CR	403335.571	26824019.97	654.139	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA386	48	1	CR	403314.008	26823888.84	654.813	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA387	48	1	CR	403264.485	26823630.12	656.191	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA388	48	1	CR	403219.567	26823388.17	656.514	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA389	48	1	BR	403234.447	26823364.9	656.716	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA390	48	1	CR	403156.103	26823038.01	665.654	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA391	48	1	CR	403104.078	26822759.93	669.7	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA392	48	1	CR	403046.653	26822438.13	679.46	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA393	48	1	BR	403091.731	26822431.22	676.478	$5,720	01-Jan-10	12	30	18	$3,413	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA394	48	1	BR	403036.032	26822418.93	680.749	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA395	48	1	BR	403007.085	26822262.67	689.414	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA396	48	1	BR	402954.726	26822003.24	696.203	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA397	48	1	BR	402903.077	26821758.27	698.79	$4,204	01-Jan-03	19	30	11	$1,526	$7,980	1.00	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA398-Paved Over		1		402805.373	26822458.73	694.853	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA399	48	1	BR	402558.64	26822513.35	698.763	$746	01-Jan-60	62	30	-32	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA401	48	1	CR	402657.554	26823140.39	693.811	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA402	48	1	CR	402767.19	26821797.41	696.98	$746	01-Jan-60	62	75	13	$128	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA403	48	1	CR	402732.098	26823475.32	685.641	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA404	48	1	CR	402769.861	26823675.51	684.942	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA405	48	1	CR	403012.019	26823422.86	660.76	$5,720	01-Jan-10	12	75	63	$4,797	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA406	48	1	BR	403390.242	26822992.45	659.842	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA407	48	1	BR	403603.282	26822954.92	665.038	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA408	48	1	BR	403449.694	26823323.91	656.798	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA409	48	1	BR	403664.63	26823282.24	664.082	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA410	48	1	BR	403687.798	26823394.67	660.558	$507	01-Jan-50	72	30	-42	$0	$7,980	1.00	2.8	2	5.60
	Sanitary Manhole	SA411	48	1	BR	403918.397	26823232.26	673.398	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA412	48	1	CR	404024.767	26823211.24	674.781	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA413	48	1	BR	404293.684	26823125.32	675.122	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA414	48	1	BR	404228.023	26822835.31	678.896	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA415	48	1	BR	404337.468	26822806.23	681.066	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA416	48	1	BR	403536.472	26823979.8	657.428	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA417	48	1	BR	403785.162	26823927.83	675.008	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA418		1		403756.888	26823779.45	672.124	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA419	48	1	BR	403693.38	26824318.21	667.906	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA420	48	1	BR	403853.041	26824285.85	669.409	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA421	48	1	BR	403802.069	26824017.28	674.348	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA422-Paved Over		1		403218.25	26824988.46	635.845	$0	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA423	48	1	BR	403699.81	26824653.43	651.404	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA424-PAVED		1		403915.242	26824612.46	652.687	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA425	48	1	BR	404078.255	26824539.26	651.725	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA426	48	1	BR	403969.288	26824779.48	631.847	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA427	48	1	CR	402463.06	26821851.8	697.77	$746	01-Jan-60	62	75	13	$128	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA428	48	1	BR	403951.296	26825199.96	608.498	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA429	48	1	BR	404083.255	26824916.15	608.6	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA430	48	1	BR	404175.289	26824732.43	601.303	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA431	48	1	BR	404127.546	26824695.09	617.189	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA432	48	1	BR	404342.648	26824529.72	599.393	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA433	48	1	BR	404419.94	26824465.42	597.271	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA434	48	1	BR	404446.464	26824495.48	595.918	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA435		1		0	0	0	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA436		1		0	0	0	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA437	48	1	BR	404777.665	26824570.7	589.98	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA438	48	1	BR	404488.993	26824159.59	608.231	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA439	48	1	BR	404641.643	26824037.43	605.939	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA440	48	1	BR	404990.311	26823838.79	607.386	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA441	48	1	BR	404884.981	26823613.32	627.605	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA443	48	1	BR	404817.354	26823553.41	640.748	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA444	48	1	BR	404661.787	26823679.64	652.624	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA445	48	1	BR	404506.099	26823806.13	653.41	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA446	48	1	BR	404421.673	26823819.75	660.159	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA447	48	1	BR	404113.933	26823872.13	671.091	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA448	48	1	BR	403870.838	26823912.76	671.645	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA449	48	1	BR	404344.95	26823942.67	655.239	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA450	48	1	BR	404176.459	26824185.57	660.032	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA451	48	1	BR	0	0	0	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA452-NEED PIPE INFO&PICS	60	1	CR	399854.507	26824322.95	710.434	$4,029	01-Jan-86	36	75	39	$2,089	$9,975	1	2.8	2	5.60
	Sanitary Manhole	SA453	48	1	CR	409561.199	26825922.61	600.12	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA456	48	1	CN	409665.5251	26826023.57	592.57	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA457	48	1	CR	409669.1573	26826095.01	584.32	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA458		1		408827.6312	26826259.05	590.24	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA459	48	1	CR	0	0	0	$4,204	01-Jan-97	25	75	50	$2,797	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA460	48	1	CR	402416.224	26827854.27	590.708	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA463	60	1	CR	402915.097	26827465.07	592.929	$4,029	01-Jan-89	33	75	42	$2,250	$9,975	1	2.8	2	5.60
	Sanitary Manhole	SA464	48	1	BR	408661.732	26825889.65	607.548	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA465	48	1	CR	407018.287	26825118.59	629.081	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA466	48	1	BR	402518.16	26824117.01	696.503	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA467	48	1	BR	402737.736	26824450.61	665.895	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA471	48	1	CR	0	0	0	$4,029	01-Jan-89	33	75	42	$2,250	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA472	48	1	CR	409848.524	26822771.63	661.543	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA472-PRIVATE	48	1	BR	0	0	0	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA473	48	1	CR	409718.292	26823423.21	670.981	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA474	48	1	CR	409697.255	26822792.3	668.532	$5,720	01-Jan-00	22	75	53	$4,034	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA475		1		407196.296	26825411.63	655.882	$5,720	01-Jan-09	13	75	62	$4,721	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA476		1		406165.51	26824674.58	593.144	$5,720	01-Jan-89	33	75	42	$3,194	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA477	48	1	BR	404064.167	26824977.35	606.016	$237	01-Jan-40	82	30	-52	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA479	48	1	CR	402333.115	26822884.39	701.672	$5,720	01-Jan-03	19	75	56	$4,263	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA480	48	1	CR	400285.872	26828508.81	657.371	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA481	48	1	CR	400369.129	26828921.13	637.951	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA482	48	1	CR	401777.003	26828120.56	628.157	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA483	48	1	CR	401723.917	26827845.81	647.025	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA484	48	1	CR	402195.184	26826915.51	634.147	$237	01-Jan-40	82	75	-7	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA485	48	1	CR	402111.087	26826621.5	638.016	$237	01-Jan-40	82	75	-7	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA486	48	1	BR	401161.999	26829950.12	602.835	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA488	49	1		407429.265	26825879.66	621.181	$0	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA490	48	1	CR	406974.704	26824063.14	658.982	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA491	48	1	BR	399113.266	26831834.43	588.189	$507	01-Jan-50	72	30	-42	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA492	48	1	BR	402518.16	26824117.01	696.503	$0	01-Jan-00	22	30	8	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA493	48	1	CR	403494.166	26827290.17	587.256	$0	01-Jan-40	82	75	-7	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA494	48	1	CR	0	0	0	$237	01-Jan-40	82	75	-7	$0	$7,980	1	2.8	2.8	7.84
	Sanitary Manhole	SA496	48	1	CR	0	0	0	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA497	48	1	CR	0	0	0	$4,204	01-Jan-95	27	75	48	$2,684	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA498	48	1	BR	0	0	0	$5,720	01-Jan-85	37	30	-7	$0	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA499	36	1	BR	402895.37	26827401.22	596.22	$159	01-Jan-50	72	30	-42	$0	$2,500	1	2.8	2	5.60
	Sanitary Manhole	SA501	72	1	CR	0	0	0	$803	01-Jan-50	72	75	3	$31	$12,635	1	2.8	2	5.60
	Sanitary Manhole	SA503	48	1	CR	0	0	0	$507	01-Jan-50	72	75	3	$19	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA504		1		0	0	0	$5,720	01-Jan-89	33	75	42	$3,194	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA505	48	1	CR	406511.0349	26825053.25	606.35	$3,223	01-Jan-89	33	75	42	$1,800	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA506	48	1	CR	0	0	0	$207	01-Jan-50	72	75	3	$8	$7,980	1	2.8	2	5.60
	Sanitary Manhole	SA507	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Manhole	SA508	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA509	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA510	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA511	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA512	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA513	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA514	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA515	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA516	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA517	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA518	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA519	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA520	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA521	48	1	CR	409673.85	26826132.12	583.42	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA522	48	1		408531.535	26826429.27	584.89	$507	01-Jan-50	72	75	3	$19	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA523	48	1		408370.423	26826454	585.659	$507	01-Jan-50	72	75	3	$19	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA524	48	1		408107.738	26826474.21	586.757	$507	01-Jan-50	72	75	3	$19	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA525	48	1		408204.058	26826314.61	594.473	$237	01-Jan-30	92	75	-17	$0	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA526	48	1		408157.23	26826152.23	599.45	$237	01-Jan-30	92	75	-17	$0	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA527	48	1	CR	407643.753	26826510.59	585.425	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA528	48	1		407621.422	26826372.83	596.889	$507	01-Jan-50	72	75	3	$19	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA529	48	1		0	0	0	$507	01-Jan-50	72	75	3	$19	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA530	48	1		407417.695	26826067.48	614.686	$237	01-Jan-30	92	75	-17	$0	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA531	48	1		407445.806	26826306.76	598.529	$237	01-Jan-30	92	75	-17	$0	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA532	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	3.5	5	**17.50**
	Sanitary Manhole	SA533	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA534	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA535	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA536	48	1	CR	0	0	0	$7,980	01-Jan-16	6	75	69	$7,331	$7,980	1	2.8	2	**5.60**
	Sanitary Manhole	SA537	48	1	BR	406677.239	26826266.43	592.742	$7,980	01-Jan-16	6	30	24	$6,358	$7,980	1	2.8	2	**5.60**
	PIPES																		
	Force Main	FM002-SA006	18	1053	DIP				$150	01-Jan-09	13	50	37	$111	$350	1	5.0	2	**10.00**
	Force Main	FM003-SA005	18	1106	PVC				$80	01-Jan-89	33	30	-3	$0	$350	1	3.0	2	**6.00**
	Force Main	FM005-FM004	18	897	PVC				$80	01-Jan-89	33	30	-3	$0	$350	1	3.0	2	**6.00**
	Force Main	FM005-FM004	18	0	PVC				$80	01-Jan-89	33	30	-3	$0	$350	1	3.0	2	**6.00**
	Force Main	FM005-FM004-FM002	18	1403	DIP				$150	01-Jan-09	13	50	37	$111	$350	1	5.0	2	**10.00**
	Force Main	FM006-FM005	18	31					$80	01-Jan-89	33	30	-3	$0	$350	1	3.0	2	**6.00**
	Force Main	FM007-FM005-FM002	6	17					$99	01-Jan-09	13	30	17	$56	$138	1	2.8	2	**5.60**
	Force Main	FM012-SA050	6	1809	PVC				$99	01-Jan-09	13	30	17	$56	$138	1	2.8	2	**5.60**
	Force Main	FM019-SA340	4	109	PE				$30	01-Jan-85	37	30	-7	$0	$75	1	2.8	2	**5.60**
	Force Main	MV003-FM012	6	480					$99	01-Jan-09	13	30	17	$56	$138	1	2.8	2	**5.60**
	Force Main	PS004-SA182	4	345					$30	01-Jan-88	34	30	-4	$0	$75	1	2.8	2	**5.60**
	Force Main	ReagonPS -FM005-FM004	8	61	DIP				$150	01-Jan-10	12	30	18	$89	$350	1	2.8	2	**5.60**
	Force Main	SA476-FM006		23					$0	01-Jan-89	33	30	-3	$0	$0	1	2.8	2	**5.60**
	Force Main	UNK_E036-SA036	8	0	VCP				$150	01-Jan-89	33	30	-3	$0	$209	1	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
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	Sanitary Sewer	30STUB-SA046	8	33	PVC				$157	01-Jan-09	13	50	37	$116	$219	1	2.8	2	5.60
	Sanitary Sewer	CO006-SA138	8	383	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	CO007-SA363	6	153	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	CO009-SA017	8	146	PVC				$157	01-Jan-08	14	50	36	$113	$219	1	2.8	2	5.60
	Sanitary Sewer	CO010-SA329	8	584	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	5.60
	Sanitary Sewer	CO360-SA359	12	370	PVC				$8	01-Jan-40	82	50	-32	$0	$286	1	2.8	2.8	7.84
	Sanitary Sewer	COASTGUARD_PS-SA185	3	7	PE				$2	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	LO002-LO001	24	202	RCP				$0	01-Jan-10	12	75	63	$0	$432	1	5.0	2	10.00
	Sanitary Sewer	LO003-LO002	24	101	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	LO004-LO003	24	444	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	LO005-LO004	24	390	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	PS_PRIVATE-SA346	8	346	PVC				$88	01-Jan-85	37	50	13	$23	$219	1	2.8	2	5.60
	Sanitary Sewer	PS009-SA198	2	315	PE				$4	01-Jan-50	72	50	-22	$0	$70	1	2.8	2	5.60
	Sanitary Sewer	PS011-SA216	4	101	PVC				$40	01-Jan-90	32	50	18	$14	$75	1	2.8	2	5.60
	Sanitary Sewer	SA002-SA001	18	351	PVC				$185	01-Jan-89	33	50	17	$62	$352	1	2.8	2	5.60
	Sanitary Sewer	SA003-SA002	18	303	PVC				$185	01-Jan-89	33	50	17	$62	$352	1	2.8	2	5.60
	Sanitary Sewer	SA004-SA003	18	310	PVC				$185	01-Jan-89	33	50	17	$62	$352	1	2.8	2	5.60
	Sanitary Sewer	SA005-SA004	18	38	PVC				$185	01-Jan-89	33	50	17	$62	$352	1	2.8	2	5.60
	Sanitary Sewer	SA006-SA004	18	30	DIP				$252	01-Jan-09	13	75	62	$208	$352	1	2.8	2	5.60
	Sanitary Sewer	SA009-SA010	8	252	PE				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA010-SA011	8	300	PE				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA011-SA012	8	301	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA012-SA013	8	287	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA013-SA503	8	320	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA014-SA013	6	128	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA015-SA016	8	300	PE				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA016-SA018	8	170	PE				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA017-SA016	8	238	PVC				$157	01-Jan-08	14	50	36	$113	$219	1	2.8	2	5.60
	Sanitary Sewer	SA018-SA019	8	147	PE				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA019-SA020	8	124	PE				$157	01-Jan-08	14	50	36	$113	$219	1	2.8	2	5.60
	Sanitary Sewer	SA020-SA504	8	133	PE				$157	01-Jan-08	14	50	36	$113	$219	1	2.8	2	5.60
	Sanitary Sewer	SA021-PS001	27	70	PVC				$183	01-Jan-89	33	50	17	$62	$452	1	5.0	2	10.00
	Sanitary Sewer	SA022-SA019	8	300	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA023-SA021	27	134	PVC				$183	01-Jan-89	33	50	17	$62	$452	1	5.0	2	10.00
	Sanitary Sewer	SA024-SA023	18	69	PVC				$185	01-Jan-89	33	50	17	$62	$352	1	2.8	2	5.60
	Sanitary Sewer	SA025-SA024	8	142	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA026-SA025	8	349	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA027-SA026	8	214	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA028-SA027	8	351	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA029-SA028	8	109	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA030-SA029	8	248	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA031-SA023	15	67	PVC				$165	01-Jan-89	33	50	17	$56	$313	1	2.8	2	5.60
	Sanitary Sewer	SA033-SA505	15	109	RCP				$165	01-Jan-89	33	75	42	$92	$313	1	2.8	2	5.60
	Sanitary Sewer	SA034-SA033	12	15	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	5.60
	Sanitary Sewer	SA035-SA033	15	156	RCP				$165	01-Jan-89	33	75	42	$92	$313	1	2.8	2	5.60
	Sanitary Sewer	SA036-SA035	15	15	RCP				$165	01-Jan-89	33	75	42	$92	$313	1	2.8	2	5.60
	Sanitary Sewer	SA037-SA036	8	182	VCP				$88	01-Jan-89	33	65	32	$43	$219	1	2.8	2	5.60
	Sanitary Sewer	SA038-SA037	8	351	VCP				$88	01-Jan-89	33	65	32	$43	$219	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	SA039-SA038	8	343	VCP				$88	01-Jan-89	33	65	32	$43	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA040-SA034	12	359	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA043-SA042	4	237	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	SA045-SA465	12	173	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA046-SA045	12	134	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA047-SA046	12	171	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA048-SA047	12	201	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA049-SA048	12	204	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA050-SA049	12	207	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA054-SA055	8	229	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA055-SA056	8	210	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA056-SA057	8	266	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA057-SA118	8	204	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA058-SA464	8	76	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA059-SA058	6	126	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA060-SA058	8	280	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA061-SA079	12	363	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA062-SA061	12	169	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA063-SA062	8	292	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA064-SA063	8	300	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA065-SA064	8	298	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA066-SA065	8	302	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA067-SA066	8	266	PVC				$88	01-Jan-84	38	50	12	$21	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA068-SA067	8	102	PVC				$88	01-Jan-84	38	50	12	$21	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA069-SA067	8	126	PVC				$88	01-Jan-84	38	50	12	$21	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA070-SA066	8	244	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA071-SA070	8	263	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA072-SA071	8	294	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA073-SA072	8	37	PVC				$115	01-Jan-00	22	50	28	$64	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA074-SA073	6	254	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA075-SA074	6	297	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA076-SA072	8	357	PVC				$115	01-Jan-00	22	50	28	$64	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA077-SA076	8	396	PVC				$115	01-Jan-00	22	50	28	$64	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA078-SA474	6	324	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA079-SA453	12	75	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA080-SA079	12	133	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA099-SA098	10	268	RCP				$24	01-Jan-60	62	75	13	$4	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA100-SA099	8	251	RCP				$20	01-Jan-60	62	75	13	$3	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA101-SA099	8	129	RCP				$20	01-Jan-60	62	75	13	$3	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA102-SA101	8	503	RCP				$20	01-Jan-60	62	75	13	$3	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA104-SA102	12	181	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA105-SA104	12	282	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA106-SA104	12	305	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA107-SA106	12	295	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA109-SA107	12	338	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA110-SA109	12	354	VCP				$27	01-Jan-60	62	65	3	$1	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA118-SA523	8	351	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA135-SA023	24	345	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	2.8	2	**5.60**

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	Sanitary Sewer	SA136-SA135	24	328	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	2.8	2	5.60
	Sanitary Sewer	SA137-SA136	8	266	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA138-SA137	8	282	PE				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA139-SA136	24	189	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA140-SA139	24	44	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA143-SA142	24	134	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA144-SA143	24	140	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA145-SA144	24	229	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA146-SA145	24	287	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA147-SA146	24	178	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA148-SA147	24	131	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA149-SA148	24	302	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA150-SA149	24	147	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA151-SA150	24	238	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA152-SA151	24	293	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA153-SA152	24	301	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA154-SA153	24	297	RCP				$130	01-Jan-40	82	75	-7	$0	$432	1	5.0	2.8	14.00
	Sanitary Sewer	SA155-SA154	24	302	RCP				$13	01-Jan-40	82	75	-7	$0	$432	1	5.0	2.8	14.00
	Sanitary Sewer	SA156-SA155	12	122	RCP				$151	01-Jan-89	33	75	42	$84	$286	1	2.8	2	5.60
	Sanitary Sewer	SA157-SA155	24	291	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	2.8	2	5.60
	Sanitary Sewer	SA158-SA157	24	131	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	2.8	2	5.60
	Sanitary Sewer	SA159-SA463	8	12	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA160-SA463	24	147	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA161-SA160	24	156	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA161-SA160	24	0	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA162-SA161	12	63	RCP				$151	01-Jan-89	33	75	42	$84	$286	1	2.8	2	5.60
	Sanitary Sewer	SA165-SA460	18	340	RCP				$185	01-Jan-89	33	75	42	$103	$352	1	2.8	2	5.60
	Sanitary Sewer	SA166-SA165	18	252	RCP				$185	01-Jan-89	33	75	42	$103	$352	1	2.8	2	5.60
	Sanitary Sewer	SA170-SA169	15	294	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA171-SA170	15	427	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA172-SA171	15	313	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA175-SA174	15	293	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA176-SA175	15	372	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA177-SA176	15	208	RCP				$18	01-Jan-50	72	75	3	$1	$313	1	2.8	2	5.60
	Sanitary Sewer	SA180-SA179	12	309	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	SA181-SA180	12	299	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	SA182-SA181	12	304	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	SA183-SA182	8	215	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	SA184-SA185	10	15	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	SA185-PS004	8	15	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA186-SA491	8	70	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA187-SA186	10	269	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	SA189-SA187	10	177	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	SA190-SA189	4	214	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	SA195-SA197	6	104	PVC				$30	01-Jan-90	32	50	18	$11	$100	1	2.8	2	5.60
	Sanitary Sewer	SA197-SA216	8	186	PVC				$88	01-Jan-90	32	50	18	$31	$219	1	2.8	2	5.60
	Sanitary Sewer	SA198-SA184	12	137	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	5.60
	Sanitary Sewer	SA199-SA198	8	374	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60

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	Sanitary Sewer	SA200-SA199	8	169	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	SA201-SA200	8	29	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA202-SA201	8	203	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	SA203-SA201	8	78	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA204-SA203	8	350	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA205-SA206	8	126	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA206-SA207	8	395	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA207-SA219	8	136	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA208-SA207	8	185	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA209-SA208	8	256	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA210-SA209	8	293	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA211-SA210	8	227	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA212-SA211	8	217	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA213-SA212	8	324	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA214-SA213	8	250	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA215-SA214	8	240	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA216-SA215	6	277	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA217-SA214	8	110	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA218-SA217	8	256	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA219-SA220	8	297	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA220-SA224	8	104	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA221-SA220	8	253	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA222-SA221	8	294	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA223-SA222	8	446	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA224-SA225	8	153	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA225-SA226	8	183	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	SA226-SA176	8	40	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA227-SA226	8	239	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA228-SA227	8	255	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA229-SA228	6	183	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA230-SA229	6	83	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA231-SA171	10	77	PVC				$16	01-Jan-50	72	50	-22	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	SA232-SA231	8	199	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA233-SA232	8	358	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA234-SA233	8	84	PE				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA235-SA234	8	429	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA236-SA235	8	264	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA237-SA236	8	229	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA238-SA234	8	232	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA239-SA238	8	227	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA240-SA239	8	282	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA241-SA240	8	284	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA242-SA241	8	181	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA243-SA242	8	178	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA244-SA270	8	401	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA245-SA244	8	290	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA246-SA245	8	141	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA247-SA244	8	134	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	SA248-SA247	8	313	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA249-SA248	8	352	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA250-SA249	8	113	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA251-SA250	6	334	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA252-SA251	6	183	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA253-SA252	6	210	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA254-SA244	8	332	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA255-SA254	8	314	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA256-SA255	8	306	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA257-SA256	8	202	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA258-SA257	8	201	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA259-SA258	8	398	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA260-SA259	8	228	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA261-SA260	8	236	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA262-SA261	8	231	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA263-SA262	8	275	VCP				$47	01-Jan-80	42	65	23	$17	$219	1	2.8	2	5.60
	Sanitary Sewer	SA264-SA263	6	276	VCP				$30	01-Jan-80	42	65	23	$11	$100	1	2.8	2	5.60
	Sanitary Sewer	SA265-SA264	8	85	PVC				$47	01-Jan-80	42	50	8	$7	$219	1	2.8	2	5.60
	Sanitary Sewer	SA266-SA264	8	52	PVC				$47	01-Jan-80	42	50	8	$7	$219	1	2.8	2	5.60
	Sanitary Sewer	SA266-SA264	8	0	PVC				$47	01-Jan-80	42	50	8	$7	$219	1	2.8	2	5.60
	Sanitary Sewer	SA267-SA266	8	155	PVC				$47	01-Jan-80	42	50	8	$7	$219	1	2.8	2	5.60
	Sanitary Sewer	SA269-SA267	8	311	PVC				$47	01-Jan-80	42	50	8	$7	$219	1	2.8	2	5.60
	Sanitary Sewer	SA270-SA231	8	228	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA271-SA166	8	117	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA272-SA271	8	319	CT				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA273-SA272	8	306	CT				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA274-SA273	8	20	CT				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA275-SA274	8	165	CT				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA276-SA275	8	151	CT				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA277-SA276	8	285	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA278-SA275	8	195	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA279-SA278	8	113	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA280-SA278	8	153	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA281-SA280	6	77	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA282-SA278	8	153	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA283-SA282	8	299	PVC				$115	01-Jan-94	28	50	22	$50	$219	1	2.8	2	5.60
	Sanitary Sewer	SA284-SA283	8	302	PVC				$115	01-Jan-94	28	50	22	$50	$219	1	2.8	2	5.60
	Sanitary Sewer	SA285-SA284	8	142	PVC				$115	01-Jan-94	28	50	22	$50	$219	1	2.8	2	5.60
	Sanitary Sewer	SA287-SA285	8	369	PVC				$157	01-Jan-05	17	50	33	$103	$219	1	2.8	2	5.60
	Sanitary Sewer	SA288-SA287	6	290	PVC				$45	01-Jan-05	17	50	33	$30	$100	1	2.8	2	5.60
	Sanitary Sewer	SA291-SA290	8	185	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA293-SA292	10	142	VCP				$102	01-Jan-86	36	65	29	$45	$253	1	2.8	2	5.60
	Sanitary Sewer	SA294-SA293	10	336	VCP				$8	01-Jan-40	82	65	-17	$0	$253	1	2.8	2.8	7.84
	Sanitary Sewer	SA295-SA294	10	349	VCP				$8	01-Jan-40	82	65	-17	$0	$253	1	2.8	2.8	7.84
	Sanitary Sewer	SA297-SA296	8	38	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA298-SA296	12	170	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	7.84
	Sanitary Sewer	SA299-SA298	8	227	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA301-SA298	12	147	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	7.84

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	Sanitary Sewer	SA302-SA301	12	317	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA303-SA302	12	262	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA304-SA303	12	262	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA305-SA304	8	287	VCP				$157	01-Jan-05	17	65	48	$116	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA309-SA308	6	41	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA310-SA311	8	320	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA311-SA312	8	282	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA312-SA370	8	132	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA313-SA314	8	423	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA314-SA317	8	157	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA315-SA294	10	219	VCP				$8	01-Jan-40	82	65	-17	$0	$253	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA317-SA318	8	421	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA318-SA319	8	248	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA319-SA160	12	22	RCP				$151	01-Jan-89	33	75	42	$84	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA320-SA479	6	53	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA320-SA479	6	0	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA321-SA401	6	281	PVC				$0	01-Jan-60	62	50	-12	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	SA323-SA403	12	318	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA326-SA323	8	242	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA327-SA326	10	380	PVC				$24	01-Jan-60	62	50	-12	$0	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA328-SA327	10	347	PVC				$24	01-Jan-60	62	50	-12	$0	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA329-SA328	10	350	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA330-SA329	8	282	PVC				$88	01-Jan-86	36	50	14	$24	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA331-SA328	10	37	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA332-SA331	10	348	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA333-SA332	10	200	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA335-SA334	10	113	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA336-SA335	10	359	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA337-SA336	10	396	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA338-SA337	10	272	PVC				$102	01-Jan-86	36	50	14	$28	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA339-SA338	10	54	RCP				$102	01-Jan-86	36	75	39	$53	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA340-SA339	8	155	VCP				$88	01-Jan-85	37	65	28	$38	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA341-SA339	10	303	VCP				$102	01-Jan-85	37	65	28	$44	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA342-SA341	10	298	PVC				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA343-SA342	10	198	PVC				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA344-SA343	10	231	PVC				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA345-SA344	10	226	PVC				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA346-SA345	10	163	PVC				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA347-SA344	10	129	VCP				$102	01-Jan-85	37	65	28	$44	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA348-SA347	10	160	PE				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	**5.60**
	Sanitary Sewer	SA350-PS005	8	240	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA351-SA350	8	260	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA353-SA351	8	303	PVC				$0	01-Jan-95	27	50	23	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA354-SA353	8	226	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA355-SA354	8	287	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA356-SA354	8	143	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA357-SA356	8	89	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA358-SA154	12	67	RCP				$8	01-Jan-40	82	75	-7	$0	$286	1	2.8	2.8	**7.84**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	SA359-SA507	8	47	PVC				$219	01-Jan-16	6	50	44	$192	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA361-SA362	6	414	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA362-SA304	12	333	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA363-SA362	8	179	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA364-SA386	8	285	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA365-SA363	8	360	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA366-SA362	8	351	VCP				$88	01-Jan-86	36	65	29	$39	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA367-SA366	8	327	VCP				$88	01-Jan-86	36	65	29	$39	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA368-SA367	8	310	VCP				$88	01-Jan-86	36	65	29	$39	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA369-SA368	8	269	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA370-SA369	8	197	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA371-SA369	8	218	VCP				$88	01-Jan-86	36	65	29	$39	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA372-SA371	8	237	VCP				$88	01-Jan-86	36	65	29	$39	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA373-SA365	8	104	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	SA376-SA149	12	39	PVC				$151	01-Jan-89	33	50	17	$51	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA377-SA376	12	226	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA378-SA377	12	82	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA379-SA378	12	296	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA380-SA373	8	197	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA380-SA379	12	97	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA381-SA374	8	99	VCP				$157	01-Jan-10	12	65	53	$128	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA381-SA380	12	320	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA382-SA381	12	244	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA383-SA382	12	239	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA384-SA383	12	328	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA385-SA384	12	323	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA386-SA385	12	133	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA387-SA386	12	263	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA388-SA387	12	246	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA389-SA388	12	28	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA390-SA388	12	356	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA391-SA390	12	283	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA392-SA391	12	327	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA393-SA392	8	46	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA394-SA392	8	21	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA395-SA394	8	160	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA396-SA395	8	265	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA397-SA396	8	250	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA401-SA390	8	509	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA402-SA397	8	141	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA403-SA405	12	285	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA404-SA403	8	204	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA405-SA388	12	210	PVC				$205	01-Jan-10	12	50	38	$155	$286	1	2.8	2	**5.60**
	Sanitary Sewer	SA406-SA390	8	239	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA407-SA406	8	216	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA407-SA409	8	333	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA408-SA389	8	219	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	SA409-SA408	8	219	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	SA410-SA409	8	115	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA411-SA409	12	258	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	5.60
	Sanitary Sewer	SA412-SA411	12	109	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	5.60
	Sanitary Sewer	SA413-SA412	12	282	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	5.60
	Sanitary Sewer	SA414-SA413	8	297	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA415-SA414	8	113	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA416-SA385	8	205	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA417-SA416	12	254	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	SA419-SA383	8	297	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA421-SA420	8	273	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA423-SA382	8	236	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA426-SA429	8	185	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA427-SA402	8	309	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA428-SA477	8	250	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA429-SA430	8	205	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA430-SA432	8	263	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA431-SA430	8	61	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA432-SA433	8	101	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA433-SA434	8	40	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA437-SA142	12	44	RCP				$151	01-Jan-89	33	75	42	$84	$286	1	2.8	2	5.60
	Sanitary Sewer	SA438-SA433	8	314	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA439-SA438	8	196	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA441-SA440	8	249	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA443-SA441	8	90	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA444-SA443	8	200	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA445-SA444	8	201	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA446-SA445	8	86	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA447-SA446	8	312	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA448-SA447	8	246	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA449-SA445	8	211	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA450-SA449	8	296	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA451-SA450	8	218	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA453-SA501	12	231	RCP				$18	01-Jan-50	72	75	3	$1	$286	1	2.8	2	5.60
	Sanitary Sewer	SA456-PS003	12	14	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	5.60
	Sanitary Sewer	SA457-SA456	12	72	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	5.60
	Sanitary Sewer	SA459-SA099	8	399	PVC				$115	01-Jan-97	25	50	25	$57	$219	1	2.8	2	5.60
	Sanitary Sewer	SA460-SA161	24	336	RCP				$174	01-Jan-89	33	75	42	$97	$432	1	5.0	2	10.00
	Sanitary Sewer	SA463-SA158	30	193	RCP				$191	01-Jan-89	33	75	42	$107	$472	1	5.0	2	10.00
	Sanitary Sewer	SA464-SA057	8	300	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA465-SA040	12	55	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	5.60
	Sanitary Sewer	SA466-SA243	8	107	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA467-UNK_W467	8	138	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA473-SA078	6	308	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	5.60
	Sanitary Sewer	SA477-SA429	8	64	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA479-SA321	6	303	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	5.60
	Sanitary Sewer	SA480-SA481	8	421	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA481-SA254	8	411	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA482-SA167	8	270	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
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	Sanitary Sewer	SA483-SA482	8	280	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA484-SA291	8	235	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA485-SA484	8	306	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA486-SA174	8	37	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA490-SA014	6	173	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	SA491-PS009	8	10	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA492-SA372	10	320	RCP				$133	01-Jan-00	22	75	53	$94	$253	1	2.8	2	5.60
	Sanitary Sewer	SA493-SA156	6	56	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	SA494-SA315	8	167	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	SA496-SA497	8	172	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	5.60
	Sanitary Sewer	SA497-SA350	8	357	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	5.60
	Sanitary Sewer	SA498-SA340	8	46	VCP				$88	01-Jan-85	37	65	28	$38	$219	1	2.8	2	5.60
	Sanitary Sewer	SA499-SA159	8	55	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA501-SA457	12	92	PVC				$205	01-Jan-09	13	50	37	$151	$286	1	2.8	2	5.60
	Sanitary Sewer	SA503-SA015	8	137	PE				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA504-SA021	8	35	PVC				$88	01-Jan-89	33	50	17	$30	$219	1	2.8	2	5.60
	Sanitary Sewer	SA505-SA031	15	385	RCP				$165	01-Jan-89	33	75	42	$92	$313	1	2.8	2	5.60
	Sanitary Sewer	SA507-SA358	12	160	VCP				$8	01-Jan-40	82	65	-17	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	SA510-SA511	12	340	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA511-SA512	12	100	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA512-SA513	12	281	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA513-SA514	12	283	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA514-SA515	12	188	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA515-SA516	12	285	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA516-SA517	12	298	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA517-SA518	12	282	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA518-SA519	12	365	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA519-SA520	12	185	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA520-SA521	12	64	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA521-SA457	12	70	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA524-SA527	8	465	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	SA527-SA532	12	158	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA532-SA533	12	154	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA533-SA534	12	314	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	SA536-SA537	12	77	PVC				$286	01-Jan-16	6	50	44	$251	$286	1	2.8	2	5.60
	Sanitary Sewer	UNK_E016-SA016	4	48	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_E028-SA028	6	85	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_E030-SA030	8	49	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_E175-SA175	6	36	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_E185-SA185	8	6	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_E212-SA212	8	155	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_E217-SA217	8	131	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_E320-SA320	6	36	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_E347-SA347	8	59	PVC				$88	01-Jan-85	37	50	13	$23	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_E357-SA357	6	70	PVC				$40	01-Jan-95	27	50	23	$18	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_E490-SA490	6	126	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_E537-SA537	6	58	PVC				$30	01-Jan-86	36	50	14	$8	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N029-SA029	8	37	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	UNK_N033-SA033	8	22	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_N036-SA036	12	8	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	5.60
	Sanitary Sewer	UNK_N037-SA037	4	18	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_N043-SA043	4	19	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_N059-SA059	6	44	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N070-SA070	4	45	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_N080-SA080	4	38	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_N118-SA118	6	101	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N135-SA135	6	20	PVC				$30	01-Jan-89	33	50	17	$10	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N162-SA162	6	36	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N218-SA218	6	73	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N223-SA223	8	73	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	3.5	5	17.50
	Sanitary Sewer	UNK_N341-SA341	6	18	PVC				$30	01-Jan-85	37	50	13	$8	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N366-SA366	8	51	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_N437-SA437	6	14	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_N494-SA494	8	68	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_N496-SA496	6	24	PVC				$40	01-Jan-95	27	50	23	$18	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE021-SA021	6	29	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE027-SA027	4	23	DIP				$6	01-Jan-50	72	75	3	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE039-SA039	6	25	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE156-SA156	2	36	PVC				$2	01-Jan-40	82	50	-32	$0	$70	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_NE179-SA179	3	66	PVC				$2	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE211-SA211	4	57	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE300-SA300	4	25	PVC				$4	01-Jan-40	82	50	-32	$0	$75	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_NE355-SA355	8	190	PVC				$115	01-Jan-95	27	50	23	$53	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE358-SA358	8	23	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_NE467-SA467	6	40	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE491-SA491	8	26	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NE493-SA493	6	28	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_NNW100-SA100	3	50	PVC				$4	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW016-SA016	8	60	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW021-SA021	2	20	PE				$30	01-Jan-89	33	50	17	$10	$70	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW040-SA040	6	17	PVC				$45	01-Jan-09	13	50	37	$33	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW045-SA045	8	22	PVC				$157	01-Jan-09	13	50	37	$116	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW100-SA100	4	50	VCP				$6	01-Jan-60	62	65	3	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW105-SA105	4	32	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW135-SA135	6	26	PVC				$30	01-Jan-89	33	50	17	$10	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW166-SA166	8	32	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW184-SA184	10	48	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW208-SA208	4	153	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW223-SA223	6	118	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW344-SA344	6	67	PVC				$30	01-Jan-85	37	50	13	$8	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW357_SA357	6	48	PVC				$40	01-Jan-95	27	50	23	$18	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW377-SA377	8	0	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW486-SA486	8	88	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_NW505-SA505	8	20	PVC				$88	01-Jan-89	33	50	17	$30	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S054-SA054	8	11	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S069-SA069	6	48	PVC				$30	01-Jan-84	38	50	12	$7	$100	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	UNK_S110-SA110	12	142	RCP				$27	01-Jan-60	62	75	13	$5	$286	1	2.8	2	5.60
	Sanitary Sewer	UNK_S120-SA120	6	67	CT				$4	01-Jan-30	92	50	-42	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_S202-SA202	4	29	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_S205-SA205	8	24	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S210-SA210	4	71	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_S212-SA212	8	80	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S223-SA223	8	73	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S253-SA253	8	73	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S261-SA261	4	52	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_S262-SA262	4	0	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_S269-SA269	6	83	PVC				$30	01-Jan-80	42	50	8	$5	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_S366-SA366	6	34	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_S427-SA427	8	124	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_S467-SA467	6	55	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_S498-SA498	4	93	VCP				$30	01-Jan-85	37	65	28	$13	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_S501-SA501	8	65	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE012-SA012	6	72	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE025-SA025	8	48	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE068-SA068	6	33	PVC				$30	01-Jan-84	38	50	12	$7	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE149-SA149	6	23	VCP				$30	01-Jan-89	33	65	32	$15	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE185-SA185	8	7	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE186-SA186	4	50	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE190-SA190	4	77	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE208-SA208	4	66	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE259-SA259	6	119	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE259-SA259	6	202	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE321-SA321	6	42	PVC				$14	01-Jan-60	62	50	-12	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE485-SA485	8	53	PVC				$4	01-Jan-40	82	50	-32	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE486-SA486	8	83	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SE496-SA496	6	21	PVC				$40	01-Jan-95	27	50	23	$18	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW011-SA011	6	79	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW036-SA036	8	24	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW118-SA118	6	67	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW183-SA183	6	32	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW187-SA187	10	53	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW211-SA211	8	61	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW215-SA215	6	73	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW226-SA226	6	34	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW230-SA230	4	40	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW259-SA259	4	81	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW479-SA479	6	30	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW483-SA483	8	71	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_SW494-SA494	6	126	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_SW499-SA499	6	44	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_W022-SA022	8	32	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_W059-SA059	6	45	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_W100-SA100	4	50	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_W101-SA101	8	59	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
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	Sanitary Sewer	UNK_W105-SA105	8	84	PVC				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_W120-SA120	4	80	CT				$4	01-Jan-30	92	50	-42	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_W182-SA182	6	24	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_W183-SA183	8	71	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_W195-SA197	4	105	PVC				$40	01-Jan-90	32	50	18	$14	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_W206-SA206	4	43	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_W218-SA218	6	85	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_W223-SA223	8	116	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_W299-SA299	8	104	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK_W320-SA320	6	42	PVC				$40	01-Jan-03	19	50	31	$25	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK_W347-SA347	4	60	PVC				$30	01-Jan-85	37	50	13	$8	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK_W459-SA459	8	136	PVC				$115	01-Jan-97	25	50	25	$57	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK_W506-SA506	6	16	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E042-SA042	4	35	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E073-SA073	8	75	PVC				$115	01-Jan-00	22	50	28	$64	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E245-SA245	6	34	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E310-SA310	8	50	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E312-SA312	8	39	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E348-SA348	4	14	VCP				$30	01-Jan-85	37	65	28	$13	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E399-SA399	8	59	PE				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E404-SA404	6	26	PVC				$45	01-Jan-10	12	50	38	$34	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E410-SA410	8	23	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_E423-SA423	8	39	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_E434-SA434	6	38	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_E492-SA492	4	77	PVC				$40	01-Jan-00	22	50	28	$22	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N023-SA023	15	33	PVC				$165	01-Jan-89	33	50	17	$56	$313	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N042-SA042	6	57	RCP				$6	01-Jan-50	72	75	3	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N070-SA070	4	44	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N071-SA071	4	44	PVC				$6	01-Jan-60	62	50	-12	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N072-SA072	8	80	PVC				$115	01-Jan-00	22	50	28	$64	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N077-SA077	4	60	PVC				$40	01-Jan-00	22	50	28	$22	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N240-SA240	6	29	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N247-SA247	6	26	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N248-SA248	6	25	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N283-SA283	4	15	PVC				$40	01-Jan-94	28	50	22	$18	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N284-SA284	4	20	PVC				$40	01-Jan-94	28	50	22	$18	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N313-SA313	4	28	PVC				$4	01-Jan-40	82	50	-32	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N315-SA315	10	311	VCP				$8	01-Jan-40	82	65	-17	$0	$253	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N336-SA336	2	71					$30	01-Jan-86	36	50	14	$8	$70	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N363-SA363	8	25	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N368-SA368	6	18	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N381-SA381	8	32	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N386-SA386	6	33	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N407-SA407	4	130	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N415-SA415	8	75	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_N419-SA419	8	53	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_N506-SA506	4	14	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_NE042-SA042	6	65	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
#	Equipment Description	Asset ID	Capacity or Size	Material or Length	Material or Comment	Northing State Plane Coordinate	Easting State Plane Coordinate	Elevation	Original Cost	Year Installed (01/01/YY)	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R) (Reduces (C))	Criticality (C) (see back-up sheets) 1 = very low 5 = very high	Probability of Failure (P) (see back-up sheets) 1 = very low 5 = very high	Business Risk (BRE=PxCxR) 1 = very low 25 = very high
	Sanitary Sewer	UNK1_NE076-SA076	3	63	PVC				$40	01-Jan-00	22	50	28	$22	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NE245-SA245	8	27	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NE373-SA373	6	39	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_NE416-SA416	12	92	VCP				$18	01-Jan-50	72	65	-7	$0	$286	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NE423-SA423	4	43	PVC				$4	01-Jan-40	82	50	-32	$0	$75	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_NE473-SA473	6	59	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW227-SA227	6	69	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW235-SA235	4	35	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW241-SA241	6	30	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW250-SA250	4	10	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW272-SA272	6	208	CT				$0	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW344-SA344	6	71	PVC				$30	01-Jan-85	37	50	13	$8	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW348-SA348	4	18	PE				$30	01-Jan-85	37	50	13	$8	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW373-SA373	6	46	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_NW393-SA393	4	61	PVC				$54	01-Jan-10	12	50	38	$41	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_NW425-SA425	6	19	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_NW431-SA431	4	54	VCP				$4	01-Jan-40	82	65	-17	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S166-SA166	8	30	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S236-SA236	4	36	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S246-SA246	6	38	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S250-SA250	6	9	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S272-SA272	6	126	CT				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S281-SA281	6	18	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S283-SA283	4	15	PVC				$40	01-Jan-94	28	50	22	$18	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S284-SA284	4	18	PVC				$40	01-Jan-94	28	50	22	$18	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S287-SA287	8	34	PVC				$157	01-Jan-05	17	50	33	$103	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S290-SA290	8	29	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S296-SA296	8	23	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_S297-SA297	8	14	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S323-SA323	6	42	PVC				$14	01-Jan-60	62	50	-12	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S367-SA367	8	65	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S368-SA368	8	24	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S371-SA371	6	37	VCP				$30	01-Jan-86	36	65	29	$13	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S384-SA384	8	31	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S391-SA391	8	141	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S396-SA396	6	0	VCP				$14	01-Jan-60	62	65	3	$1	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S397-SA397	8	45	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S420-SA420	8	62	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_S426-SA426	6	14	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_S437-SA437	6	0	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S466-SA466	8	46	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_S473-SA473	6	51	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE166-SA166	8	31	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE201-SA201	10	40	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE252-SA252	6	26	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE279-SA279	4	25	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE292-SA292	10	33	VCP				$16	01-Jan-50	72	65	-7	$0	$253	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_SE310-SA310	4	41	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	**5.60**

Project:	St. Ignace Wastewater System		Date:	03/13/17								ASSET LIST					BUSINESS RISK SCORING SHEET		
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	Sanitary Sewer	UNK1_SE312-SA312	4	32	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SE330-SA330	8	208	PVC				$88	01-Jan-86	36	50	14	$24	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SE361-SA361	6	29	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SE367-SA367	4	74	PVC				$4	01-Jan-40	82	50	-32	$0	$75	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SE421-SA421	8	32	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SE428-SA428	8	66	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SE431-SA431	6	46	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SE434-SA434	8	44	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SW137-SA137	4	39	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW161-SA161	6	32	PVC				$30	01-Jan-89	33	50	17	$10	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW170-SA170	8	33	RCP				$14	01-Jan-50	72	75	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW211-SA211	4	80	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW232-SA232	4	33	CAS				$6	01-Jan-50	72	75	3	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW240-SA240	4	32	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW251-SA251	6	25	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW265-SA265	6	60	VCP				$30	01-Jan-80	42	65	23	$11	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW299-SA299	4	30	VCP				$4	01-Jan-40	82	65	-17	$0	$75	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SW305-SA305	6	54	PVC				$45	01-Jan-05	17	50	33	$30	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW312-SA312	6	33	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW394-SA394	4	49	VCP				$6	01-Jan-60	62	65	3	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW428-SA428	6	33	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SW432-SA432	8	17	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_SW438-SA438	6	50	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW439-SA439	8	77	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_SW443-SA443	4	31	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W005-SA005	4	12	PVC				$30	01-Jan-89	33	50	17	$10	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W075-SA075	6	46	PVC				$40	01-Jan-00	22	50	28	$22	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W237-SA237	8	83	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W243-SA243	6	39	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W249-SA249	4	12	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W277-SA277	8	58	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W281-SA281	4	18	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W297-SA297	8	34	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W301-SA301	4	21	PVC				$4	01-Jan-40	82	50	-32	$0	$75	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W305-SA305	8	38	PVC				$157	01-Jan-05	17	50	33	$103	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W308-SA308	6	31	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W309-SA309	6	29	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W311-SA311	8	30	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W312-SA312	8	43	VCP				$14	01-Jan-50	72	65	-7	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W313-SA313	6	61	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W348-SA348	10	25	PE				$102	01-Jan-85	37	50	13	$26	$253	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W359-SA359	6	26	PVC				$4	01-Jan-40	82	50	-32	$0	$100	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W360-CO360	12	294	PVC				$8	01-Jan-40	82	50	-32	$0	$286	1	2.8	2.8	7.84
	Sanitary Sewer	UNK1_W365-SA365	6	26	VCP				$4	01-Jan-40	82	65	-17	$0	$100	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W372-SA372	10	53	VCP				$102	01-Jan-86	36	65	29	$45	$253	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W374-SA374	8	33	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W397-SA397	8	60	VCP				$20	01-Jan-60	62	65	3	$1	$219	1	2.8	2	5.60
	Sanitary Sewer	UNK1_W399-SA399	8	76	PE				$20	01-Jan-60	62	50	-12	$0	$219	1	2.8	2	5.60

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	Sanitary Sewer	UNK1_W401-SA401	6	72	PVC				$14	01-Jan-60	62	50	-12	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W403-SA403	8	124	PVC				$157	01-Jan-10	12	50	38	$119	$219	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W407-SA407	6	47	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W414-SA414	6	83	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W415-SA415	6	61	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W423-SA423	8	33	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_W433-SA433	8	38	VCP				$4	01-Jan-40	82	65	-17	$0	$219	1	2.8	2.8	**7.84**
	Sanitary Sewer	UNK1_W446-SA446	6	43	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK1_W466-SA466		25	VCP				$0	01-Jan-50	72	65	-7	$0	$0	1	2.8	2	**5.60**
	Sanitary Sewer	UNK2_N506-SA506	4	14	PVC				$6	01-Jan-50	72	50	-22	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK2_NW227-SA227	6	63	PVC				$6	01-Jan-50	72	50	-22	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK2_SE025-SA025	4	30	VCP				$6	01-Jan-50	72	65	-7	$0	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNK2_SW443-SA443	6	32	VCP				$6	01-Jan-50	72	65	-7	$0	$100	1	2.8	2	**5.60**
	Sanitary Sewer	UNK2_W348-SA348	4	25	PVC				$30	01-Jan-85	37	50	13	$8	$75	1	2.8	2	**5.60**
	Sanitary Sewer	UNKSE_SA189-SA189	8	0	PVC				$14	01-Jan-50	72	50	-22	$0	$219	1	2.8	2	**5.60**

Appendix D

Part 3: SAW Quick Rating Map

Legend

Pipe Not Televised

Pipe Quick Rating

- 0000
- 1000
- 2000
- 3000
- 4000
- 5000

Minor Civil Division

Road

City of St Ignace

Moran Township

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IG

0 500 1,000 2,000 3,000 4,000 Feet

N

FIGURE : EXISTING WASTEWATER PIPE QUICK RATING FROM TELEVISING

CITY OF ST. IGNACE
USDA RD WASTEWATER
PROJECT: 18-0085
MACKINAC COUNTY, MICHIGAN

c2ae architecture • engineering

PLOTTED BY: ASHLEY.HENDRICKS 02/23/2021 02:52 PM N:\2021\210085_StIgnaceRDPh1\WW\Drawings_GIS\Maps\StIgnace_PER_WW_210085.mxd

Appendix D

Part 4: SSO Summary in Project Areas

City of St. Ignace
396 North Street,
St. Ignace, Michigan 49781
Phone: (906) 643-7451 Fax: (906) 643-9393
Email bfraser@cityofstignace.com

SEWER MAIN BACKUPS IN PROJECT AREAS

1. 342 NORTH SECOND STARTED 2015 CLEAN APPROX. 3 TIMES ANNUALLY
2. 380 NORTH SECOND STARTED 2013 CLEAN APPROX. 2 TIMES ANNUALLY
3. 353 NORTH SECOND STARTED 2018 CLEAN APPROX. 3 TIMES ANNUALLY
4. 348 NORTH FIRST STARTED 2019 CLEAN APPROX. 4-5 TIMES ANNUALLY
5. 275 NORTH MARLEY STARTED 2010 CLEAN APPROX. 2 TIMES ANNUALLY
6. 219 EAST TRUCKEY STARTED 2008 CLEAN APPROX. 3 TIMES ANNUALLY
7. 52 EAST TRUCKEY STARTED 2009 CLEAN APPROX. 2 TIMES PER YEAR
8. 305 EAST SPRING STARTED 2005 CLEAN APPROX. 3 TIMES ANNUALLY
9. 109 DICKINSON STARTED 2010 CLEAN APPROX. 2 TIMES ANNUALLY

Could possibly be more this is what I am familiar with.

Bill Fraser
DPW Director
bfraser@cityofstignace.com
906) 430-0090

APPENDIX E

Public Participation

Appendix E

Part 1: Public Hearing Advertisement

Appendix E

Part 2: Public Hearing Transcript

Appendix E

Part 3: Comments

Appendix E

Part 4: Adoption of the Project Plan