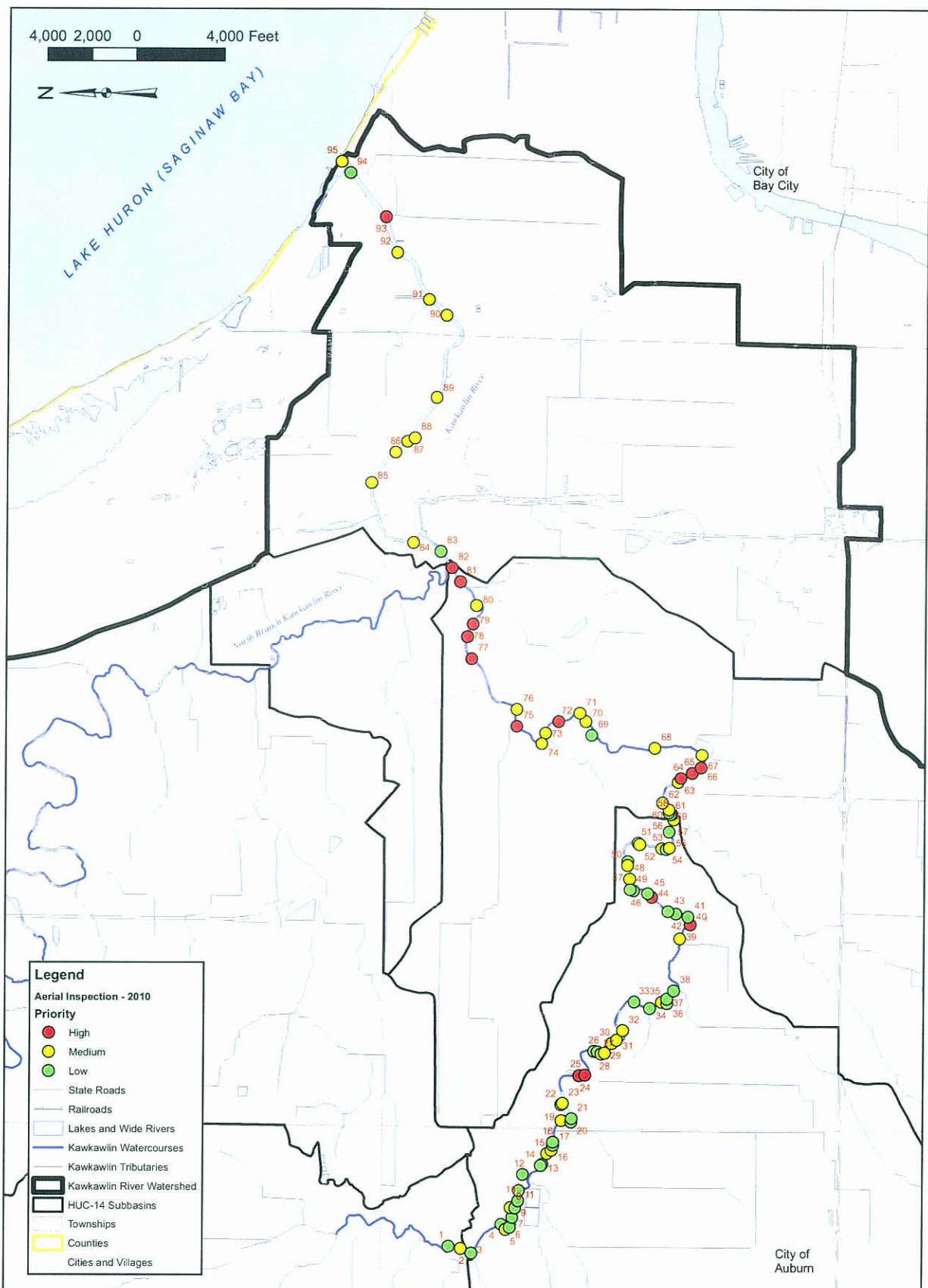


Appendix H

4,000 2,000 0 4,000 Feet



Legend

Aerial Inspection - 2010

Priority

- High
- Medium
- Low

- State Roads
- Railroads
- Lakes and Wide Rivers
- Kawawlin Watercourses
- Kawawlin Tributaries
- Kawawlin River Watershed
- HUC-14 Subbasins
- Townships
- Counties
- Cities and Villages



JOSEPH RIVET
 BAY COUNTY DRAIN COMMISSIONER
 EXHIBIT 27
 AERIAL INSPECTION - 2010

KAWAWLIN RIVER WATERSHED MANAGEMENT PLAN
 GLADWIN, MIDLAND, SAGINAW, & BAY COUNTIES
 MICHIGAN

DATE: AUGUST, 2009

OFFICE LOCATIONS
 SAGINAW, MI
 ST. JOHNS, MI
 CARO, MI
 DETROIT, MI
 TEMPE, AZ

DR. BY: MMC CHK. BY: RAB
 DE. BY: MMC APP. BY: RAB

FILE NO. **F-1090-27**

PROJECT NO.
 117345SG2008

SHEET 1 OF 1



SAGINAW OFFICE
 230 S. WASHINGTON AVE.
 SAGINAW, MI 48605
 TEL. 989-754-4717
 FAX 989-754-4440
 www.SpicerGroup.com

Reference Exhibit 27 for locations

#	Coordinates		Description	Branch of River	Subwatershed ID Number	Erosion Width (ft)	Erosion Height (ft)	Erosion Length (ft)	Erosion Volume (ft³)	Sediment Load (tons)	Est. Load / Phosphorus (lbs)	Est. Load / Nitrogen (lbs)	Total Cost BMP	Ranking Priority
	Latitude	Longitude												
24	43 37' 44.03"N	84 02' 24.50"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	44	4	126	22,176	277.20	304.9	609.8	\$60,984.00	High
25	43 37' 41.40"N	84 02' 24.00"W	Bank Erosion & Many Sediment Bars	South Branch Kawkawlin	6	55	4	120	26,400	330.00	363.0	726.0	\$72,600.00	High
40	43 36' 54.47"N	84 00' 51.65"W	Large Sediment Bars & Bank Erosion	South Branch Kawkawlin	6	20	3	100	6,000	75.00	82.5	165.0	\$16,500.00	High
44	43 37' 11.67"N	84 00' 34.57"W	Bank Erosion & Sediment Bars	South Branch Kawkawlin	6	40	3	50	6,000	75.00	82.5	165.0	\$16,500.00	High
64	43 36' 58.73"N	83 59' 21.41"W	Sediment Bar	South Branch Kawkawlin	7	65	3	88	17,160	214.50	236.0	471.9	\$47,190.00	High
65	43 36' 53.70"N	83 59' 18.12"W	Sediment Bars	South Branch Kawkawlin	7	40	2	400	32,000	400.00	440.0	880.0	\$88,000.00	High
66	43 36' 49.66"N	83 59' 14.88"W	Sediment Bars	South Branch Kawkawlin	7	16	2	250	8,000	100.00	110.0	220.0	\$22,000.00	High
72	43 37' 53.21"N	83 58' 46.15"W	Sediment Bar	South Branch Kawkawlin	7	50	2	250	25,000	312.50	343.8	687.5	\$68,750.00	High
75	43 38' 12.01"N	83 58' 49.04"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	53	3	93	14,787	184.84	203.3	406.6	\$40,664.25	High
77	43 38' 32.41"N	83 58' 60.52"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	13	3	195	7,605	95.06	104.6	209.1	\$20,913.75	High
78	43 38' 34.32"N	83 57' 53.64"W	Bank Erosion	South Branch Kawkawlin	7	9	3	360	9,720	121.50	133.7	267.3	\$26,730.00	High
79	43 38' 31.79"N	83 57' 45.81"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	20	3	380	22,800	285.00	313.5	627.0	\$62,700.00	High
81	43 38' 37.44"N	83 57' 19.74"W	Bank Erosion	South Branch Kawkawlin	7	15	2	450	13,500	168.75	185.6	371.3	\$37,125.00	High
82	43 38' 41.16"N	83 57' 11.12"W	Sediment Bar	Main Branch Kawkawlin	8	48	3	200	28,800	360.00	396.0	792.0	\$79,200.00	High
93	43 39' 10.66"N	83 53' 34.62"W	Sediment Bar	Main Branch Kawkawlin	8	50	1	260	13,000	162.50	178.8	357.5	\$35,750.00	High
2	43 38' 36.83"N	84 04' 10.66"W	Bank Erosion	South Branch Kawkawlin	5	5	4	30	600	7.50	8.3	16.5	\$1,650.00	Medium
5	43 38' 16.84"N	84 03' 58.95"W	Sediment Bar	South Branch Kawkawlin	6	14	2	24	672	8.40	9.2	18.5	\$1,848.00	Medium
8	43 38' 14.52"N	84 03' 45.51"W	Sediment Bar	South Branch Kawkawlin	6	15	4	40	2,400	30.00	33.0	66.0	\$6,600.00	Medium
15	43 37' 58.24"N	84 03' 12.43"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	10	2	25	500	6.25	6.9	13.8	\$1,375.00	Medium
16	43 37' 56.19"N	84 03' 10.47"W	Bank Erosion	South Branch Kawkawlin	6	12	3	20	720	9.00	9.9	19.8	\$1,980.00	Medium
19	43 37' 51.84"N	84 02' 52.22"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	9	3	20	540	6.75	7.4	14.9	\$1,485.00	Medium
22	43 37' 52.01"N	84 02' 42.24"W	Bank Erosion	South Branch Kawkawlin	6	3	2	108	648	8.10	8.9	17.8	\$1,782.00	Medium
23	43 37' 51.30"N	84 02' 41.40"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	14	3	40	1,680	21.00	23.1	46.2	\$4,620.00	Medium
28	43 37' 34.15"N	84 02' 11.04"W	Several Sediment Bars	South Branch Kawkawlin	6	3	3	120	1,080	13.50	14.9	29.7	\$2,970.00	Medium
29	43 37' 32.68"N	84 02' 10.59"W	Bank Erosion	South Branch Kawkawlin	6	4	3	135	1,620	20.25	22.3	44.6	\$4,455.00	Medium
30	43 37' 29.42"N	84 02' 04.56"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	15	3	54	2,430	30.38	33.4	66.8	\$6,682.50	Medium

Reference Exhibit 27 for locations

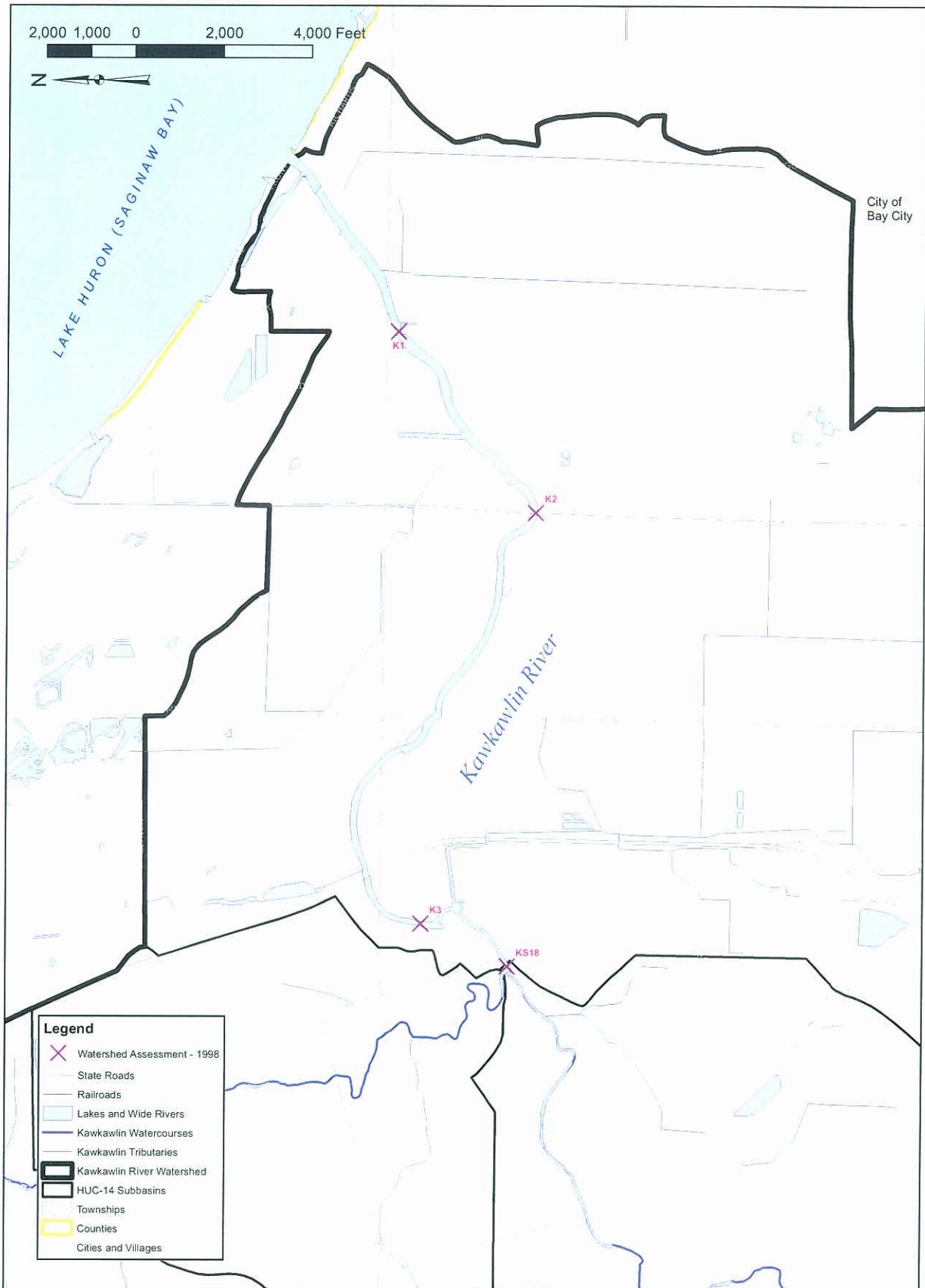
#	Coordinates		Description	Branch of River	Subwatershed ID Number	Erosion Width (ft)	Erosion Height (ft)	Erosion Length (ft)	Erosion Volume (ft ³)	Sediment Load (tons)	Est. Load / Phosphorus (lbs)	Est. Load / Nitrogen (lbs)	Total Cost BMP	Ranking Priority
	Latitude	Longitude												
31	43 37' 27.27"N	84 02' 02.67"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	18	3	50	2,700	33.75	37.1	74.3	\$7,425.00	Medium
32	43 37' 24.62"N	84 01' 56.71"W	Sediment Bars	South Branch Kawkawlin	6	25	3	50	3,750	46.88	51.6	103.1	\$10,312.50	Medium
35	43 37' 07.21"N	84 01' 39.26"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	12	3	16	576	7.20	7.9	15.8	\$1,584.00	Medium
39	43 36' 59.12"N	84 01' 00.28"W	Bank Erosion	South Branch Kawkawlin	6	12	3	20	720	9.00	9.9	19.8	\$1,980.00	Medium
47	43 37' 21.59"N	84 00' 23.55"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	15	3	25	1,425	14.06	15.5	30.9	\$3,093.75	Medium
50	43 37' 22.40"N	84 00' 14.93"W	Bank Erosion	South Branch Kawkawlin	6	4	1	144	576	7.20	7.9	15.8	\$1,584.00	Medium
51	43 37' 17.81"N	84 00' 01.25"W	Bank Erosion	South Branch Kawkawlin	6	6	3	36	648	8.10	8.9	17.8	\$1,782.00	Medium
52	43 37' 17.10"N	84 00' 02.16"W	Sediment Bar	South Branch Kawkawlin	6	15	2	27	810	10.13	11.1	22.3	\$2,227.50	Medium
53	43 37' 07.29"N	84 00' 04.68"W	Debris, Sediment Bar & Bank Erosion	South Branch Kawkawlin	6	14	3	28	1,176	14.70	16.2	32.3	\$3,234.00	Medium
55	43 37' 03.79"N	84 00' 04.30"W	Bank Erosion & Sediment Bars	South Branch Kawkawlin	6	5	3	40	600	7.50	8.3	16.5	\$1,650.00	Medium
57	43 37' 01.90"N	83 59' 47.03"W	Sediment Bar	South Branch Kawkawlin	7	20	3	57	3,420	42.75	47.0	94.1	\$9,405.00	Medium
61	43 37' 03.97"N	83 59' 40.75"W	Sediment Bar	South Branch Kawkawlin	7	23	1	46	1,058	13.23	14.5	29.1	\$2,909.50	Medium
62	43 37' 06.90"N	83 59' 36.44"W	Sediment Bars	South Branch Kawkawlin	7	7	3	40	840	10.50	11.6	23.1	\$2,310.00	Medium
63	43 36' 59.88"N	83 59' 23.86"W	Sediment Bar	South Branch Kawkawlin	7	10	3	20	600	7.50	8.3	16.5	\$1,650.00	Medium
67	43 36' 49.29"N	83 59' 07.24"W	Sediment Bars	South Branch Kawkawlin	7	10	3	66	1,980	24.75	27.2	54.5	\$5,445.00	Medium
68	43 37' 10.38"N	83 59' 02.63"W	Sediment Bar	South Branch Kawkawlin	7	13	2	110	2,860	35.75	39.3	78.7	\$7,865.00	Medium
70	43 37' 41.14"N	83 58' 46.25"W	Field Erosion	South Branch Kawkawlin	7	10	2	175	3,500	43.75	48.1	96.3	\$9,625.00	Medium
71	43 37' 43.81"N	83 58' 41.06"W	Bank Erosion	South Branch Kawkawlin	7	6	2	74	888	11.10	12.2	24.4	\$2,442.00	Medium
73	43 37' 59.16"N	83 58' 53.33"W	Sediment Bar	South Branch Kawkawlin	7	12	3	93	3,348	41.85	46.0	92.1	\$9,207.00	Medium
74	43 38' 00.71"N	83 58' 59.90"W	Sediment Bar	South Branch Kawkawlin	7	17	2	90	3,060	38.25	42.1	84.2	\$8,415.00	Medium
76	43 38' 12.06"N	83 58' 38.59"W	Bank Erosion	South Branch Kawkawlin	7	9	2	179	3,222	40.28	44.3	88.6	\$8,860.50	Medium
80	43 38' 30.21"N	83 57' 34.37"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	9	2	100	1,800	22.50	24.8	49.5	\$4,950.00	Medium
84	43 38' 58.41"N	83 56' 55.41"W	Bank Erosion	Main Branch Kawkawlin	8	20	3	30	1,800	22.50	24.8	49.5	\$4,950.00	Medium
85	43 39' 17.11"N	83 56' 18.45"W	Sediment Bar	Main Branch Kawkawlin	8	16	2	80	2,560	32.00	35.2	70.4	\$7,040.00	Medium
86	43 39' 06.40"N	83 55' 59.74"W	Sediment Bar	Main Branch Kawkawlin	8	18	2	85	3,060	38.25	42.1	84.2	\$8,415.00	Medium
87	43 39' 01.13"N	83 55' 53.06"W	Sediment Bar	Main Branch Kawkawlin	8	40	1	80	3,200	40.00	44.0	88.0	\$8,800.00	Medium

Reference Exhibit 27 for locations

#	Coordinates		Description	Branch of River	Subwatershed ID Number	Erosion Width (ft)	Erosion Height (ft)	Erosion Length (ft)	Erosion Volume (ft ³)	Sediment Load (tons)	Est. Load / Phosphorus (lbs)	Est. Load / Nitrogen (lbs)	Total Cost BMP	Ranking Priority
	Latitude	Longitude												
88	43 38' 57.72"N	83 55' 50.80"W	Bank Erosion	Main Branch Kawkawlin	8	5	3	180	2,700	33.75	37.1	74.3	\$7,425.00	Medium
89	43 38' 47.89"N	83 55' 25.99"W	Bank Erosion	Main Branch Kawkawlin	8	4	2	280	2,240	28.00	30.8	61.6	\$6,160.00	Medium
90	43 38' 43.51"N	83 54' 35.38"W	Sediment Bar	Main Branch Kawkawlin	8	20	1	90	1,800	22.50	24.8	49.5	\$4,950.00	Medium
91	43 38' 51.37"N	83 54' 25.70"W	Sediment Bar	Main Branch Kawkawlin	8	7	2	140	1,960	24.50	27.0	53.9	\$5,390.00	Medium
92	43 39' 05.68"N	83 53' 56.57"W	Sediment Bar	Main Branch Kawkawlin	8	8	2	130	2,080	26.00	28.6	57.2	\$5,720.00	Medium
95	43 39' 30.41"N	83 53' 00.51"W	Sediment Bar	Main Branch Kawkawlin	8	5	1	150	750	9.38	10.3	20.6	\$2,062.50	Medium
1	43 38' 42.40"N	84 04' 09.29"W	Bank Erosion	South Branch Kawkawlin	5	4	2	15	120	1.50	1.7	3.3	\$330.00	Low
3	43 38' 32.16"N	84 04' 13.56"W	Bank Erosion	South Branch Kawkawlin	6	4	2	4	32	0.40	0.4	0.9	\$88.00	Low
4	43 38' 18.75"N	84 03' 55.88"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
6	43 38' 14.93"N	84 03' 57.56"W	Bank Erosion	South Branch Kawkawlin	6	5	2	9	90	1.13	1.2	2.5	\$247.50	Low
7	43 38' 13.75"N	84 03' 51.56"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
9	43 38' 12.55"N	84 03' 45.64"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
10	43 38' 11.25"N	84 03' 41.30"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
11	43 38' 10.85"N	84 03' 34.97"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
12	43 38' 09.07"N	84 03' 25.26"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
13	43 38' 00.40"N	84 03' 19.00"W	Bank Erosion	South Branch Kawkawlin	6	5	2	10	100	1.25	1.4	2.8	\$275.00	Low
14	43 38' 01.02"N	84 03' 19.71"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
17	43 37' 55.53"N	84 03' 07.23"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
18	43 37' 55.55"N	84 03' 05.36"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
20	43 37' 47.53"N	84 02' 52.99"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	10	2	21	420	5.25	5.8	11.6	\$1,155.00	Low
21	43 37' 47.26"N	84 02' 50.86"W	Bank Erosion	South Branch Kawkawlin	6	5	3	11	165	2.06	2.3	4.5	\$453.75	Low
26	43 37' 37.34"N	84 02' 09.43"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
27	43 37' 35.85"N	84 02' 09.77"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
33	43 37' 19.37"N	84 01' 39.11"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
34	43 37' 12.58"N	84 01' 43.13"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
36	43 37' 04.96"N	84 01' 40.26"W	Bank Erosion & Weir Turn in River	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low

Reference Exhibit 27 for locations

#	Coordinates		Description	Branch of River	Subwatershed ID Number	Erosion Width (ft)	Erosion Height (ft)	Erosion Length (ft)	Erosion Volume (ft ³)	Sediment Load (tons)	Est. Load / Phosphorus (lbs)	Est. Load / Nitrogen (lbs)	Total Cost BMP	Ranking Priority
	Latitude	Longitude												
37	43 37' 04.88"N	84 01' 37.31"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	5	2	14	140	1.75	1.9	3.9	\$385.00	Low
38	43 37' 01.83"N	84 01' 32.28"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
41	43 36' 55.36"N	84 00' 46.75"W	Bank Erosion	South Branch Kawkawlin	6	8	3	8	192	2.40	2.6	5.3	\$528.00	Low
42	43 37' 00.86"N	84 00' 45.03"W	Bank Erosion	South Branch Kawkawlin	6	2	1	75	150	1.88	2.1	4.1	\$412.50	Low
43	43 37' 04.54"N	84 00' 43.44"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
45	43 37' 13.48"N	84 00' 32.39"W	Bank Erosion & Sediment Bars	South Branch Kawkawlin	6	6	3	8	144	1.80	2.0	4.0	\$396.00	Low
46	43 37' 19.70"N	84 00' 30.66"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	4	2	8	64	0.80	0.9	1.8	\$176.00	Low
48	43 37' 22.29"N	84 00' 12.52"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	6	2	2	61	244	3.05	3.4	6.7	\$671.00	Low
49	43 37' 21.27"N	84 00' 30.06"W	Bank Erosion	South Branch Kawkawlin	6	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
54	43 37' 05.29"N	84 00' 05.35"W	Sediment Bar	South Branch Kawkawlin	6	5	3	26	390	4.88	5.4	10.7	\$1,072.50	Low
56	43 37' 03.93"N	83 59' 54.47"W	Sediment Bars	South Branch Kawkawlin	6	5	2	32	320	4.00	4.4	8.8	\$880.00	Low
58	43 37' 02.67"N	83 59' 43.52"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	8	1	16	128	1.60	1.8	3.5	\$352.00	Low
59	43 37' 03.43"N	83 59' 43.74"W	Bank Erosion & Sediment Bars	South Branch Kawkawlin	7	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
60	43 37' 03.99"N	83 59' 42.38"W	Bank Erosion & Sediment Bar	South Branch Kawkawlin	7	4	1	18	72	0.90	1.0	2.0	\$198.00	Low
69	43 37' 38.54"N	83 58' 54.75"W	Bank Erosion & Debris	South Branch Kawkawlin	7	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
83	43 38' 46.14"N	83 57' 00.94"W	Bank Erosion	Main Branch Kawkawlin	8	10	3	10	300	3.75	4.1	8.3	\$825.00	Low
94	43 39' 26.44"N	83 53' 07.36"W	Sediment Bar	Main Branch Kawkawlin	8	6	1	75	450	5.63	6.2	12.4	\$1,237.50	Low
Totals =											4,626.4	9,252.8	\$925,281.50	
											Lbs-P	Lbs_N		



Legend

- ✕ Watershed Assessment - 1998
- State Roads
- Railroads
- Lakes and Wide Rivers
- Kawkawlin Watercourses
- Kawkawlin Tributaries
- ▭ Kawkawlin River Watershed
- ▭ HUC-14 Subbasins
- ▭ Townships
- ▭ Counties
- ▭ Cities and Villages



JOSEPH RIVET
 BAY COUNTY DRAIN COMMISSIONER
 EXHIBIT 26
 WATERSHED ASSESSMENT - 1998
 MAIN BRANCH
 KAWKAWLIN RIVER WATERSHED MANAGEMENT PLAN
 GLADWIN, MIDLAND, SAGINAW, & BAY COUNTIES
 MICHIGAN

DATE: AUGUST, 2009
 OFFICE LOCATIONS
 SAGINAW, MI
 ST. JOHNS, MI
 CARO, MI
 DETROIT, MI
 TEMPE, AZ

DR. BY: MMC CHK. BY: RAB
 DE. BY: MMC APP. BY: RAB
 FILE NO. **F-1090-26**

PROJECT NO.
 117345SG2008
 SHEET 1 OF 3



SAGINAW OFFICE
 230 S. WASHINGTON AVE.
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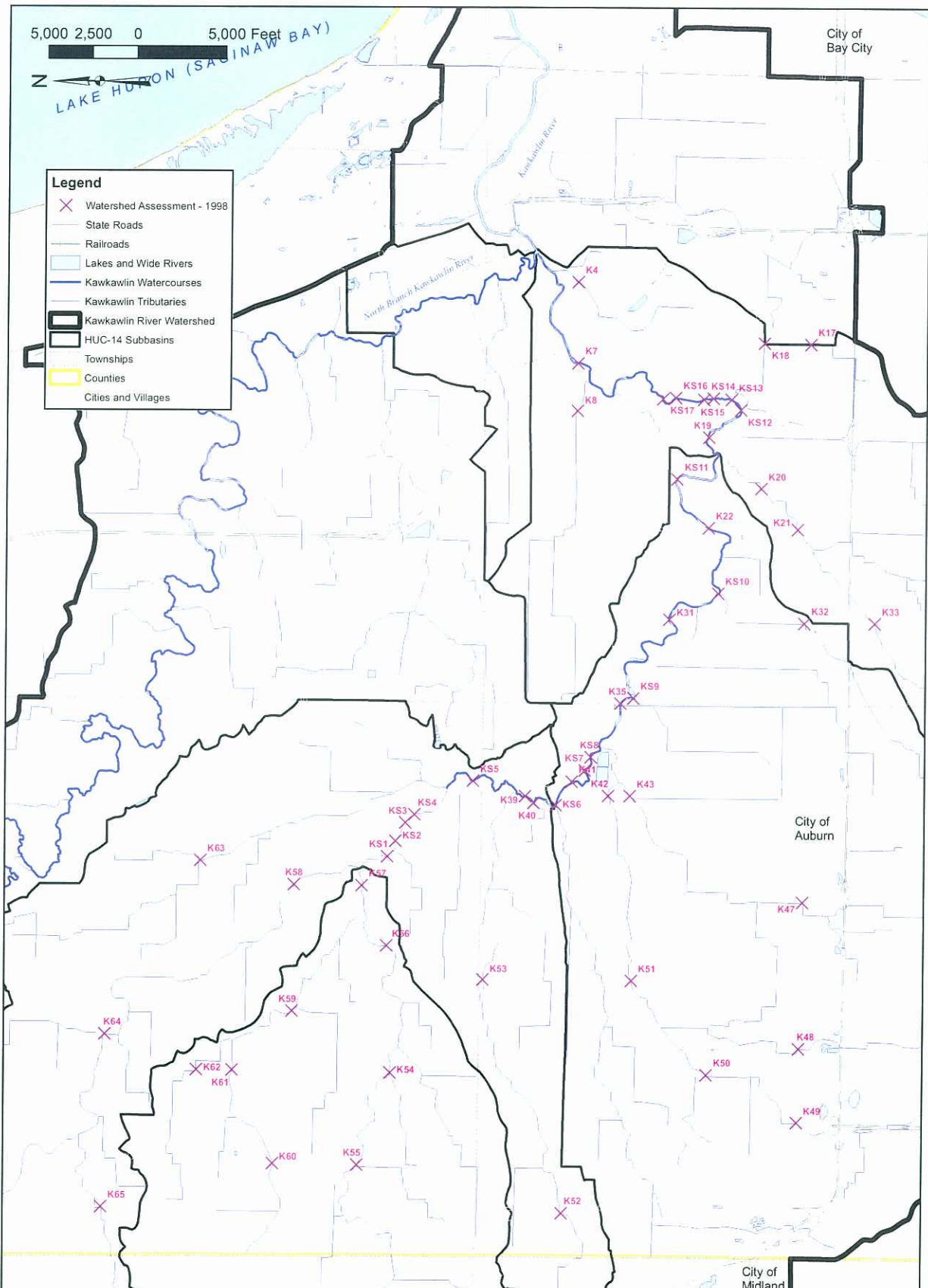
5,000 2,500 0 5,000 Feet



LAKE HURON (SAGINAW BAY)

City of Bay City

- Legend**
- ✕ Watershed Assessment - 1998
 - State Roads
 - Railroads
 - Lakes and Wide Rivers
 - Kawkawlin Watercourses
 - Kawkawlin Tributaries
 - ▭ Kawkawlin River Watershed
 - ▭ HUC-14 Subbasins
 - ▭ Townships
 - ▭ Counties
 - ▭ Cities and Villages



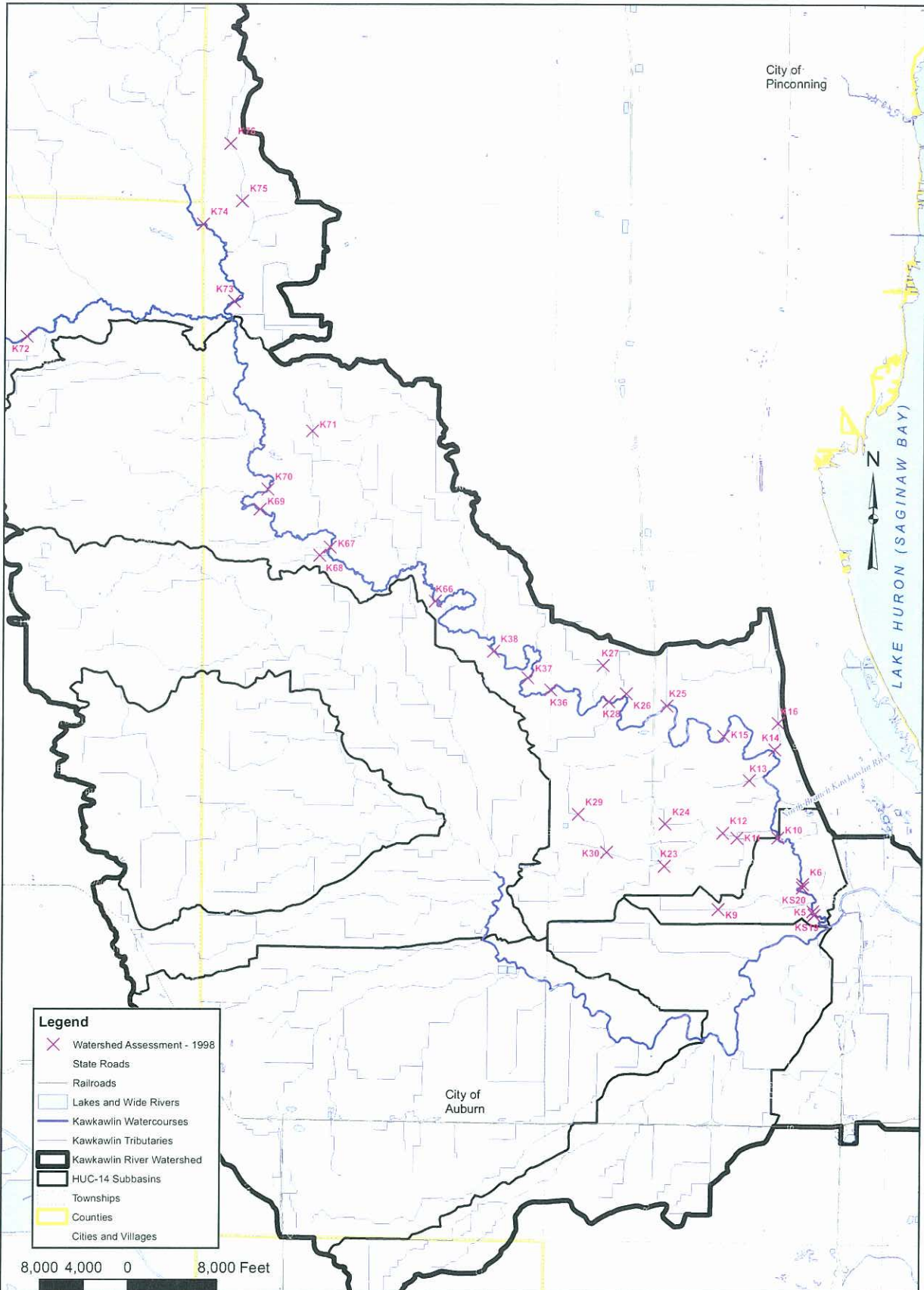
JOSEPH RIVET
 BAY COUNTY DRAIN COMMISSIONER
 EXHIBIT 26
 WATERSHED ASSESSMENT - 1998
 SOUTH BRANCH
 KAWKAWLIN RIVER WATERSHED MANAGEMENT PLAN
 GLADWIN, MIDLAND, SAGINAW, & BAY COUNTIES
 MICHIGAN

DATE: AUGUST, 2009
 OFFICE LOCATIONS
 SAGINAW, MI
 ST. JOHNS, MI
 CARO, MI
 DETROIT, MI
 TEMPE, AZ

DR. BY: MMC CHK. BY: RAB
 DE. BY: MMC APP. BY: RAB
 FILE NO. F-1090-26



PROJECT NO.
 117345SG2008
 SHEET 2 OF 3
 SAGINAW OFFICE
 230 S. WASHINGTON AVE.
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Legend

- ✕ Watershed Assessment - 1998
- State Roads
- Railroads
- ▭ Lakes and Wide Rivers
- ▭ Kawkawlin Watercourses
- ▭ Kawkawlin Tributaries
- ▭ Kawkawlin River Watershed
- ▭ HUC-14 Subbasins
- ▭ Townships
- ▭ Counties
- ▭ Cities and Villages

8,000 4,000 0 8,000 Feet



JOSEPH RIVET
 BAY COUNTY DRAIN COMMISSIONER
 EXHIBIT 26
 WATERSHED ASSESSMENT - 1998
 NORTH BRANCH
 KAWKAWLIN RIVER WATERSHED MANAGEMENT PLAN
 GLADWIN, MIDLAND, SAGINAW, & BAY COUNTIES
 MICHIGAN

DATE: AUGUST, 2009
 OFFICE LOCATIONS
 SAGINAW, MI
 ST. JOHNS, MI
 CARO, MI
 DETROIT, MI
 TEMPE, AZ

DR. BY: MMC CHK. BY: RAB
 DE. BY: MMC APP. BY: RAB
 FILE NO. **F-1090-26**

PROJECT NO.
 117345SG2008
 SHEET 3 OF 3
 SAGINAW OFFICE
 230 S. WASHINGTON AVE.
 SAGINAW, MI 48605
 TEL. 989-754-4717
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Table H-1 Developed from the Watershed Assessment performed by the Saginaw Bay RC & D and is to be used with the maps of Exhibit 26 in Appendix H

Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K1 Reach Length	EXH 26 MB	Main Branch Kawkawlin 8	N/A	N/A	Unknown	Unknown	N/A	E.coli (H), excessive chemicals & nutrients (H), algae (H), excessive aquatic vegetation (H)	Residential NPS (M), Urban NPS (M), Recreational NPS (M)	OSDS failures (H), Chemical and nutrient runoff(H), pipe / tile runoff (H)	I&E BMPs Septic system evaluation, turfgrass mgt, residue mgt, Filter BMPs, BMP maintenance, recreational access	Education BMPs \$5,000/yr Onsite Tx System Inspections \$350/system Study to expand sanitary systems	\$5,000 per year \$350/ system inspected \$6,000 /system for replacement \$35,000 for study	High	Unknown	2013
K2	EXH 26 MB	Main Branch Kawkawlin 8	N/A	N/A	N/A	N/A	0	E.coli (H), excessive chemicals & nutrients (H), algae (H), excessive aquatic vegetation (H)	Residential NPS (M), Urban NPS (M), Construction site NPS (M) Recreational NPS (M)	OSDS failures (H), Chemical and nutrient runoff(H), pipe / tile runoff (H)	I&E BMPs, Septic system evaluation, turfgrass mgt, residue mgt, Filter BMPs, BMP maintenance, recreational access, corridor enhancement with vegetation	Education BMPs \$5,000/yr Onsite Tx System Inspections \$350/system Study to expand sanitary systems Native vegetation buffers \$15/lin. ft., 5000/lin. ft. Recreational access \$3,000/ac	\$5,000 per year \$350/ system inspected \$6,000 /system for replacement \$35,000 for study \$75,000 \$1,500	High	Unknown	2013
K3	EXH 26 MB	Main Branch Kawkawlin 8	N/A	N/A	N/A	N/A	0	E.coli (H), excessive chemicals & nutrients (H), algae (H), excessive aquatic vegetation (H)	Residential NPS (M), Agricultural NPS (M), Recreational NPS (M)	OSDS failures (H), Chemical and nutrient runoff(H), pipe / tile runoff (H)	I&E BMPs, Septic system evaluation, turfgrass mgt, residue mgt, Filter BMPs,	Education BMPs \$5,000/yr Onsite Tx System Inspections \$350/system	\$5,000/ year for education \$350/ system inspected \$6,000 /system for replacement	High	Unknown	2013
K6	EXH 26 NB	North Branch Kawkawlin 3	High	High	Sediment 222.75 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 445.5 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	202.5	Bank erosion (H), sedimentation, excessive aquatic vegetation	livestock access, upland water erosion, manure runoff	Livestock access, Upland water erosion, manure runoff, nutrient runoff	Livestock exclusion BMPs, Manure Mgt BMPs, Veg. Filter BMPs	Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) 30' Veg. Filter \$3/lin. ft.	\$4,000 Varies \$9,000	High	360 lbs-P 1317 lbs-N 101 Tons Sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K13	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	55	110	50	Excessive vegetation (H)	Agricultural NPS (M)	Wind Erosion (M), Upland Water Erosion (M), Channel Erosion (M), Roadstream Crossing (M)	Windbreak BMPs (H), Filter BMPs (M), Veg Establishment BMPs (M), BMP Maintenance (M)	Windbreak \$1/lin. ft. Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. BMP Maint. \$300/site	\$800 \$800 \$2,400 \$300	High	19 lbs-P 50 lbs-N 25 Tons sed.	2013
K16	EXH 26 NB	North Branch Kawkawlin 2	Low	Low	92.8	185.6	84	Excessive chemicals and nutrients (H), algae (H)	Agricultural NPs (M), Residential NPS (M)	Wind Erosion (H), Upland Water Erosion (H), Chemical & Nutrient Runoff (H), Septic System Failures (M)	Windbreak BMPs (H), Residue Mgt Systems (M), Filter BMPs (M), Veg Establishment BMPs (M), Septic System Evaluation (M)	Windbreak \$1/lin. ft. Res. Mgt. \$500/site 30' Veg. Filter \$3/lin. ft. Onsite Tx System Inspections \$350/system	\$1,200 \$500 \$7,200 \$350/ system inspected \$6,000 /system for replacement	High	32.5 lbs-P 83.5 lbs-N 42 Tons sed.	2013
K17	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	92.8	185.6	84	Excessive aquatic vegetation (M), algae (M)	Agricultural NPS (H)	Wind Erosion (H), Instream Sources (H), Upland Water Erosion (M), Roadstream Crossing (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M), Veg Establishment BMPs (M), Windbreak BMPS (H), Residue Mgt Systems (M), Structural BMPs (M), BMP Maintenance (M)	Filter BMPs \$800/site Windbreak \$1/lin. ft. Res. Mgt. \$500/site Structural BMPs Varies BMP Maint. \$300/site	\$800 \$2,400 \$500 Varies \$300	High	32.5 lbs-P 83.5 lbs-N 42 Tons sed.	2013
K19	EXH 26 SB	South Branch Kawkawlin 7	Medium	Medium	185.6	371	169	Bank erosion (M)	Agricultural NPS (M), Transportation NPS (M)	Upland Water Erosion (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M), Veg Establishment BMPs (M), Turfgrass Mgt System (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. Turfgrass Mgt. Varies	\$800 \$1,800 Varies	High	65 lbs-P 167 lbs-N 85 Tons sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K23	EXH 26 NB	North Branch Kawkawlin 2	Medium	N/A	92.8	185.6	84	Excessive aquatic vegetation (H), excessive chemicals and nutrients (M), algae (M)	Agricultural NPS (H), Residential NPS (H), Drain & River Mgt (M)	Wind Erosion (H), Upland Water Erosion (H) (M), Channel Erosion (H), Upstream Sources (M)	Residue Mgt Systems (H), Filter BMPs (H), Veg Establishment BMPs (H) (M), Windbreak BMPs (H), Turfgrass Mgt System (H) (M), Septic System Evaluation (H), Hydrologic Evaluation (H), Structural BMPs (M), BMP Maintenance (M)	Res. Mgt. \$500/site 30' Veg. Filter \$3/lin. ft. Windbreak \$1/lin. ft. Turfgrass Mgt. Varies Onsite Tx System Inspections \$350 per system \$6,000 per system for replacement Hydr. Eval. \$1,000 Structural BMPs Varies BMP Maint. \$300/site	\$500 \$2,400 \$800 Varies \$350/ system inspected \$6,000 /system for replacement \$1,000 Varies \$300	High	32.5 lbs-P 83.5 lbs-N 42 Tons sed	2013
K39	EXH 26 SB	South Branch Kawkawlin 5	Medium	Medium	Sediment 185.6 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 371 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs /yr	169	Bank erosion (M), algae (L)	Recreational NPS (H), Agricultural NPS (M), Drain & River Mgt (M), Residential NPS (M)	Livestock Access (M), Manure Runoff (M), Chemical & Nutrient Runoff (M), Septic System Failure (M), Pipe & Tile Discharge (M), Recreational Access (M)	Livestock Exclusion BMPs (M), Manure Mgt System (M), Filter BMPs (M), Veg Establishment BMPs (M), Structural BMPs (M), Turfgrass Mgt Systems (M), Septic System Evaluation (M), Recreational Access (M)	Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) Filter BMPs \$800/site Veg. Est. \$5/lin. ft. Structural BMPs Varies Onsite Tx System Inspections \$350/system Recreational access \$3,000/ac	\$1,500 Varies \$800 \$3,000 Varies \$350/ system inspected \$6,000 /system for replacement \$6,000 for access and launch	High	360 lbs-P/yr 1317 lbs-N/yr 85 Tons Sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K40	EXH 26 SB	South Branch Kawkawlin 5	N/A	N/A	Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	Unknown	Excessive vegetation (M), excessive chemicals and nutrients (L), algae (L)	Agricultural NPs (H), Drain & River Mgt (H)	Livestock Access (H), Manure Runoff (H), Wind Erosion (H), Upland Water Erosion (H), Channel Erosion (H) (M), Chemical & Nutrient Runoff (H), Upstream Sources (M), Pipe & Tile Discharge (M)	Livestock Exclusion BMPs (H), Manure Mgt System (H), Residue Mgt System (H), Filter BMPs (H), Veg Establishment BMPs (H), Structural BMPs (H), Windbreak BMPs (H), BMP Maintenance (H), Corridor Enhancement (M), Channel Stabilization (M)	Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) Res. Mgt. \$500/site Filter BMPs \$800/site Veg. Est. \$5/lin. ft. Structural BMPs Varies Windbreak \$1/lin. ft. BMP Maint. \$300/site	\$1,500 Varies \$500 \$800 \$2,000 Varies \$800 \$300	High	281 lbs-P/yr 1117 lbs-N/yr	2013
K41	EXH 26 SB	South Branch Kawkawlin 6	Low	Low	Sediment 27.5 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 55 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	25	Bank erosion (L), excessive vegetation (M)	Residential NPS (H), Agricultural NPS (M), Drain & River Mgt (M)	Livestock Access (H), Manure Runoff (H), Upland Water Erosion (M), Channel Erosion (M), Chemical & Nutrient Runoff (M), Septic System Failures (M), Pipe & Tile Discharge (M)	Manure Mgt System (H), Livestock Exclusion BMPs (M), Filter BMPs (H) (M), Veg Establishment BMPs (H) (M), Turfgrass Mgt Systems (H), Septic System Evaluation (M), Structural BMPs (M), BMP Maintenance (M), Hydrologic Evaluations (M)	\$15,000-200,000 per manure structure (varies) Fencing \$2.50/lin. ft. Filter BMPs \$800/site Veg. Est. \$5/lin. ft. Onsite Tx System Inspections \$350/system Structural BMPs Varies Hydr. Eval. \$1,000	Varies \$1,000 \$800 \$2,500 \$350/ system inspected \$6,000 /system for replacement Varies \$1,000	High	281 lbs-P/yr 1117 lbs-N/yr 12 Tons sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K 43	EXH 26 SB	South Branch Kawkawlin 6	N/A	N/A	Livestock 0.11 lb/day ¹ Assume 10 animal 1.1 lbs /day 402 lbs /yr	Livestock 0.34 lb/day ¹ Assume 10 animal 3.4 lbs /day 1,241 lbs / yr	Unknown	Excessive vegetation (M)	Agricultural NPS (H), Drain & River Mgt (M)	Wind Erosion (H) (M), Livestock Access (H), Manure Runoff (H), Chemical & Nutrient Runoff (H), Upland Water Erosion (M), Channel Erosion (M), Roadstream Crossing (M), Pipe & Tile Discharge (M)	Residue Mgt System (H) (M), Livestock Exclusion BMPs (H), Manure Mgt Systems (H), Filter BMPs (H), Veg Establishment BMPs (H), Windbreak BMPs (M), BMP Maintenance (M), Turfgrass Mgt System (M), Septic System Evaluation (M)	Res. Mgt. \$500/site Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) Windbreak \$1/lin. ft. Structural BMPs Varies Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. BMP Maint. \$300/site Onsite Tx System Inspections \$350/system	\$500 \$5,000 Varies \$2,000 Varies \$800 \$6,000 \$300 \$350/ system inspected \$6,000 /system for replacement	High	141 lbs-P/yr 560 lbs-N/yr	2013
K47	EXH 26 SB	South Branch Kawkawlin 6	Medium	Medium	371.3	742.5	337.5	Bank erosion (M)	Transportation NPS (M), Residential NPS (M)	Roadstream Crossing (M)	Roadstream Crossing BMPs (M)	Road crossing \$200 ea.	\$400	High	130 lbs-P 334 lbs-N 169 Tons sed.	2013
K48	EXH 26 SB	South Branch Kawkawlin 6	High	High	742.5	1,485	675	Bank erosion (H)	Agricultural NPS (M/H), Drain & River Mgt (M)	Wind Erosion (H) (M), Chemical & Nutrient Runoff (H) (M), Upland Water Erosion (M), Channel Erosion (M), Pipe & Tile Discharge (M), Degraded Stream Corridor (M)	Residue Mgt Systems (H) (M), Filter BMPs (H) (M), Windbreak BMPs (H) (M), Veg Establishment BMPs (H), Channel Stabilization (M), Structural BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft. 30' Veg. Filter \$3/lin. ft. Structural BMPs Varies	\$500 \$800 \$1,000 \$6,000 Varies	High	260 lbs-P 669 lbs-N 338 Tons sed.	2013
K50	EXH 26 SB	South Branch Kawkawlin 6	High	High	1856.3	3712.5	1,687.5	Bank erosion (H), woody debris (M)	Agricultural NPS (M/H)	Wind Erosion (H) (M), Chemical & Nutrient Runoff (H) (M), Channel Erosion (M), Roadstream Crossing (M)	Windbreak BMPs (H) (M), Road/stream Crossing BMPs (M), Structural BMPs (M),	Windbreak \$1/lin. ft. Road crossing \$200 ea. Structural BMPs Varies	\$2,000 \$400 Varies	High	650 lbs – P 1670 lbs-N 844 Tons sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K51	EXH 26 SB	South Branch Kawkawlin 6	High	High	928.1	1,856.3	844.8	Bank erosion (H), woody debris (M), excessive aquatic vegetation (L)	Agricultural NPS (M), Residential NPS (M)	Wind Erosion (M), Chemical & Nutrient Runoff (M), Channel Erosion (M), Pipe & Tile Discharge (M)	Residue Mgt Systems (M), Filter BMPs (M), Windbreak BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft.	\$500 \$800 \$2,000	High	325 lbs-P 835 lbs-N 423 Tons sed.	2013
K26	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	Livestock 0.11 lb/day ¹ Assume 10 animal 1.1 lbs /day 402 lbs /yr	Livestock 0.34 lb/day ¹ Assume 10 animal 3.4 lbs /day 1,241 lbs / yr	N/A	Excessive aquatic vegetation (H), excessive chemicals and nutrients (H)	Agricultural NPS (H)	Upland Water Erosion (H), Livestock Access (H), Manure Runoff (H), Chemical & Nutrient Runoff (H)	Residue Mgt System (H), Livestock Exclusion BMPs (H), Manure Mgt Systems (H), Filter BMPs (H)	Res. Mgt. \$500/site Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) Filter BMPs \$800/site	\$500 \$5,000 Varies \$800	High	141 lbs-P/yr 558 lbs-N/yr	2013
K55	EXH 26 SB	South Branch Kawkawlin 4	Medium	Medium	371.3	742.5	337.5	High bank erosion (M), channel sedimentation (M)	Agricultural NPS (M/H), Residential NPS (M)	Wind Erosion (H) (M), Chemical & Nutrient Runoff (H) (M), Channel Erosion (M)	Filter BMPs (H) (M), Windbreak BMPs (H) (M), Residue Mgt Systems (M),	Filter BMPs \$800/site Windbreak \$1/lin. ft. Res. Mgt. \$500/site	\$800 \$800 \$500	High	130 lbs-P 335 lbs-N 169 Tons sed.	2013
K70	EXH 26 NB	North Branch Kawkawlin 2	Low	Low	Sediment 27.5 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 55 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	25	Bank erosion (L), excessive chemicals and nutrients (H)	Agricultural NPS (H)	Livestock Access (H), Manure Runoff (H), Chemical & Nutrient Runoff (H)	Livestock Exclusion BMPs (H), Manure Mgt Systems (H), Filter BMPs (H), BMP Maintenance (H)	Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) Filter BMPs \$800/site BMP Maint. \$300/site	\$3,000 Varies \$800 \$300	High	281 lbs-P/yr 1117 lbs-N/yr 12 Tons sed.	2013
KS2	EXH 26 SB	South Branch Kawkawlin 4	High	High	185.6	371	169	Bank erosion (H)	Existing Hydrology (H)	Bend in river	Rock riprap, Bank seeding or planting, Brush replacement	Riprap \$50/syd Veg. Est. \$5/lin. ft.	\$2,000 \$2,500	High	65 lbs-P 167 lbs-N 85 Tons sed.	2013
KS3	EXH 26 SB	South Branch Kawkawlin 4	High	High	185.6	371	169	Bank erosion (H)	Existing Hydrology (H)	Bend in river	Rock riprap, Log jam structure, Bank sloping, Brush replacement	Riprap \$50/syd Tree Revetment \$30/lin. ft. Veg. Est. \$5/lin. ft.	\$2,500 \$2,500 \$400	High	65 lbs-P 167 lbs-N 85 Tons sed.	2013

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
KS6	EXH 26 SB	South Branch Kawkawlin 6	High	High	Sediment 55.7 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 111.4 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	50.6	Toe undercutting (H)	Agricultural PS (H)	Foot traffic, Cattle	Rock riprap, Bank seeding or planting, Fencing	Riprap \$50/syd Veg. Est. \$5/lin. ft. Fencing \$2.50/lin. ft.	\$1,000 \$500 \$150	High	281 lbs-P/yr 1117 lbs-N/yr 25 Tons sed.	2013
KS8	EXH 26 SB	South Branch Kawkawlin 6	High	High	28	55	25	Bank erosion (H)	Existing Hydrology (H)	Bend in river	Rock riprap, Bank seeding or planting	Riprap \$50/syd Veg. Est. \$5/lin. ft.	\$1,000 \$200	High	9.8 lbs-P 25 lbs-N 12 Tons sed.	2013
KS18	EXH 26 MB	Main Branch Kawkawlin 8	High	High	185.6	371.25	169	Bank erosion (H)	Existing Hydrology (H)	Gullyng of bank from side channels, North Branch meets Main Branch	Rock riprap	Riprap \$50/syd	\$2,000	High	65 lbs-P 167 lbs-N 85 Tons sed.	2013
K8	EXH 26 SB	South Branch Kawkawlin 7	Medium	Medium	185.6	371.25	169	Downstream erosion (M) and trash (M), Upstream high bank erosion (M) and excessive vegetation (M)	Agricultural NPS (H), Transportation NPS (M), Residential NPS (H), Drain & River Mgt (M)	Wind Erosion (M), Chemical & Nutrient Runoff (M), Recreational Access (H), Dredged Stream Corridor (H), Channel Erosion (M)	Residue Mgt Systems (M), Corridor Enhancement (M), Channel Stabilization (M), Filter BMPs (M), Veg Establishment BMPs (M), Turfgrass Mgt System (M)	Res. Mgt. \$500/site Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft.	\$500 \$800 \$6,000	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
K9	EXH 26 NB	North Branch Kawkawlin 3	Low	Low	92.8	185.6	85	Bank erosion near roadside (L), excessive vegetation (H)	Agricultural NPS (H)	Channel Erosion (H), Roadstream Crossing (H), Chemical & Nutrient Runoff (H), Wind Erosion (M)	Roadstream Crossing BMPs (H), Residue Mgt Systems (H), Filter BMPs (H) Veg Establishment BMPs (H), Structural BMPs (H), Windbreak BMPs (H), BMP Maintenance (H)	Road crossing \$200 ea. Veg. Est. \$5/lin. ft. Structural BMPs Varies Windbreak \$1/lin. ft. BMP Maint. \$300/site	\$800 \$500 Varies \$1,000 \$300	Medium	32.5 lbs-P 83.5 lbs-N 42 Tons sed	2014-15
K10	EXH 26 NB	North Branch Kawkawlin 3	N/A	N/A	N/A	N/A	N/A	Excessive aquatic vegetation (H), excessive chemicals and nutrients (H), algae (H)	Agricultural NPS (H)	Chemical & Nutrient Runoff (M)	Residue Mgt System (M), Veg Establishment BMPs (M), BMP Maintenance (M)	Res. Mgt. \$500/site Veg. Est. \$5/lin. ft. BMP Maint. \$300/site	\$500 \$2,500 \$300	Medium	Unknown	2014-15

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K12	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	Unknown	Excessive vegetation (M)	Agricultural NPS (M), Industrial PS (M)	Livestock Access (M), Manure Runoff (M), Chemical & Nutrient Runoff (M)	Livestock Exclusion BMPs (M), Manure Mgt Systems (M)	Fencing \$2.50/lin. ft. \$15,000-200,000 per manure structure (varies) 30' Veg. Filter \$3/lin. ft.	\$1,000 Varies \$1,200	Medium	281 lbs-P/yr 1117 lbs-N/yr	2014-15
K14	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	55	110	50	Excessive vegetation (M), excessive chemicals and nutrients (H), algae (H)	Agricultural NPS (H)	Chemical & Nutrient Runoff (M)	Residue Mgt Systems (M), Filter BMPs (M), Veg Establishment BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft.	\$500 \$800 \$1,600	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15
K15	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	28	55	25	Excessive chemicals and nutrients (L), algae (L)	Agricultural NPS (H)	Chemical & Nutrient Runoff (M)	Veg Establishment BMPs (M)	30' Veg. Filter \$3/lin. ft.	\$2,000	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15
K20	EXH 26 Culver Ck	South Branch Kawkawlin 7	N/A	N/A	55	110	50	Sedimentation (M), excessive vegetation (H)	Agricultural NPS (M), Transportation NPS (M)	Upland Water Erosion (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M), Veg Establishment BMPs (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft.	\$800 \$900	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15
K33	EXH 26 Culver Ck	South Branch Kawkawlin 7	Medium	Medium	185.6	371	169	Bank erosion (M)	Agricultural NPS (M)	Wind Erosion (M), Chemical & Nutrient Runoff (M)	Residue Mgt Systems (M), Filter BMPs (M), Windbreak BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft.	\$500 \$800 \$1,400	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
K32	EXH 26 Bradford Ck	North Branch Kawkawlin 2	N/A	N/A	39.6	79.2	36	Sedimentation (M)	Agricultural NPS (H), Residential NPS (M), Transportation NPS (M)	Wind Erosion (M), Chemical & Nutrient Runoff (M)	Residue Mgt Systems (M), Filter BMPs (M), Windbreak BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft.	\$500 \$800 \$5,000	Medium	14 lbs-P 36 lbs-N 18 Tons sed.	2014-15
K31	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	28	55	25	Outer bank erosion (L)	Transportation NPS (L)		Veg Establishment BMPs (M), Turfgrass Mgt System (M)	30' Veg. Filter \$3/lin. ft. Turfgrass Mgt. Varies	\$1,400 Varies	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15
K35	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	28	55	25	Outer bank erosion (L), excessive vegetation (M)	Agricultural NPS (M)	Channel Erosion (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M), Veg Establishment BMPs (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft.	\$800 \$1,200	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K29	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	28	55	25	Excessive vegetation (M), excessive chemicals and nutrients (M), algae (M)	Agricultural NPS (M/H)	Wind Erosion (H), Chemical & Nutrient Runoff (M)	Residue Mgt Systems (H), Filter BMPs (H), Windbreak BMPs (H), Veg Establishment BMPs (M)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft. Veg. Est. \$5/lin. ft.	\$500 \$800 \$1,500 \$10,000	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15
K30	EXH 26 NB	North Branch Kawkawlin 2	Medium	Medium	185.6	371	169	Excessive vegetation (M), bank erosion (M)	Agricultural NPS (M/H)	Wind Erosion (H), Upland Water Erosion (H), Chemical & Nutrient Runoff (H) (M), Pipe & Tile Discharge (M)	Windbreak BMPs (H), Structural BMPs (H), Residue Mgt Systems (M), Filter BMPs (M), Veg Establishment BMPs (M)	Windbreak \$1/lin. ft. Structural BMPs Varies Res. Mgt. \$500/site Filter BMPs \$800/site Veg. Est. \$5/lin. ft.	\$4,000 Varies \$500 \$800 \$15,000	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
K 49	EXH 26 SB	South Branch Kawkawlin 6	Medium	Medium	556.9	1,114	506.25	Bank erosion (M), excessive vegetation (M)	Agricultural NPS (M), Construction Site NPS (M), Residential NPS (M)	Chemical & Nutrient Runoff (M), Pipe & Tile Discharge (M)	Veg Establishment BMPs (H), Structural BMPs (M)	30' Veg. Filter \$3/lin. ft. Structural BMPs Varies	\$6,600 Varies	Medium	195 lbs-P 501 lbs-N 253 Tons sed.	2014-15
K52	EXH 26 SB	South Branch Kawkawlin 5	Low	Low	28	55	25	Bank erosion (L), woody debris (M)	Agricultural NPS (M), Drain & River Mgt (M), Transportation NPS (M)	Wind Erosion (M), Road/stream Crossing (M), Chemical & Nutrient Runoff (M), Pipe & Tile Discharge (M), Degraded Stream Corridor (M)	Road/stream Crossing BMPs (M), Residue Mgt Systems (M), Filter BMPs (M), Structural BMPs (M), Windbreak BMPs (M)	Road crossing \$200 ea. Res. Mgt. \$500/site Structural BMPs Varies Windbreak \$1/lin. ft.	\$400 \$500 Varies \$1,800	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15
K53	EXH 26 SB	South Branch Kawkawlin 5	Low	Low	185.6	371	169	Bank erosion (M), channel sedimentation (M), woody debris (L)	Residential NPS (M), Agricultural NPS (H)	Pipe & Tile Discharge (M), Wind Erosion (H), Chemical & Nutrient Runoff (H)	Residue Mgt Systems (H), Filter BMPs (H), Windbreak BMPs (H)	Res. Mgt. \$500/site Filter BMPs \$800/site Windbreak \$1/lin. ft.	\$500 \$800 \$900	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
K62	EXH 26 SB	South Branch Kawkawlin 4	Medium	Medium	371.3	742.5	337.5	High bank erosion (M), channel sedimentation (M), excessive chemicals and nutrients (M)	Agricultural NPS (M), Transportation NPS (M)	Wind Erosion (H), Chemical & Nutrient Runoff (M)	Windbreak BMPs (H), Residue Mgt Systems (M), Filter BMPs (M)	Windbreak \$1/lin. ft. Res. Mgt. \$500/site Filter BMPs \$800/site	\$700 \$500 \$800	Medium	130 lbs-P 334 lbs-N 169 Tons sed.	2014-15

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K64	EXH 26 SB	South Branch Kawkawlin 4	Medium	Medium	371.3	742.5	337.5	High bank erosion (M), channel sedimentation (L), woody debris (M), excessive chemicals and nutrients (M)	Agricultural NPS (M/H)	Chemical & Nutrient Runoff (H), Wind Erosion (H) (M),	Residue Mgt Systems (H) (M), Windbreak BMPs (H) (M), Filter BMPs (H), Channel Stabilization (M),	Res. Mgt. \$500/site Windbreak \$1/lin. ft. Filter BMPs \$800/site	\$500 \$1,200 \$800	Medium	130 lbs-P 334 lbs-N 169 Tons sed.	2014-15
K67	EXH 26 NB	North Branch Kawkawlin 2	Medium	Medium	185.6	371	169	High bank erosion (M), channel sedimentation (H), woody debris (L), excessive chemicals and nutrients (M)	Agricultural NPS (H)	Upland Water Erosion (M), Chemical & Nutrient Runoff (H), Wind Erosion (M)	Channel Stabilization (M), Veg Establishment BMPs (M), Structural BMPs	30' Veg. Filter \$3/lin. ft. Structural BMPs Varies	\$1,700 Varies	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
KS4	EXH 26 SB	South Branch Kawkawlin 4	Medium	Medium	Sediment 278.4 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 556.9 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	253.1	Bank erosion (M)	Existing Hydrology (M), Agricultural PS (M)	Bend in river, Cattle crossing	Rock riprap, Bank seeding or planting, Cattle exclusion	Riprap \$50/syd Veg. Est. \$5/lin. ft. Fencing \$2.50/lin. ft.	\$5,000 \$500 \$250	Medium	281 lbs-P/yr 1117 lbs-N/yr 125 Tons sed.	2014-15
KS5	EXH 26 SB	South Branch Kawkawlin 4	Medium	Medium	278.4	556.9	253.1	Bank erosion (M)	Existing Hydrology (M)	Bend in river	Rock riprap, Bank seeding or planting, Brush replacement	Riprap \$50/syd Veg. Est. \$5/lin. ft.	\$5,000 \$500	Medium	97 lbs-P 250 lbs-N 126 Tons sed.	2014-15
KS7	EXH 26 SB	South Branch Kawkawlin 6	Medium	Medium	Sediment 55.7 Livestock 0.11 lb/day ¹ Assume 20 animal 2.2 lbs /day 803 lbs /yr	Sediment 111.4 Livestock 0.34 lb/day ¹ Assume 20 animal 6.8 lbs /day 2,482 lbs / yr	50.6	High bank erosion (M)	Agricultural PS (M)	Cattle crossing	Bank seeding or planting, Fencing, Cattle crossing structure	Veg. Est. \$5/lin. ft. Fencing \$2.50/lin. ft. Riprap cattle crossing \$2,500 ea.	\$500 \$150 \$2,500	Medium	281 lbs-P/yr 1117 lbs-N/yr 25 Tons sed.	2014-15
KS10	EXH 26 SB	South Branch Kawkawlin 6	Medium	Medium	55.7	111.4	50.6	Toe undercutting (M)	Existing Hydrology (M)	Bend in river	Bank seeding or planting	Veg. Est. \$5/lin. ft.	\$300	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
KS11	EXH 26 SB	South Branch Kawkawlin 6	Medium	Medium	28	55	25	Toe undercutting (M)	Existing Hydrology (M)	Bend in river	Tree revetment, Log jam	Tree Revetment \$30/lin. ft.	\$3,000	Medium	10 lbs-P 24.8 lbs-N 12 Tons sed.	2014-15
KS15	EXH 26 SB	South Branch Kawkawlin 7	Medium	Medium	55.7	111.4	50.6	Bank erosion (M)	Existing Hydrology (M)	Bend in river, Bank seepage	Rock riprap	Riprap \$50/syd	\$1,000	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15
KS16	EXH 26 SB	South Branch Kawkawlin 7	Medium	Medium	55.7	111.4	50.6	Toe undercutting (M)	Existing Hydrology (M)	Bend in river, Bank seepage	Rock riprap	Riprap \$50/syd	\$2,000	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15
KS17	EXH 26 SB	South Branch Kawkawlin 7	N/A	N/A	Horses 0.08 lb/day ¹ Assume 3 horses 0.24 lbs /day 87.6 lbs /yr	Horses 0.36 lb/day ¹ Assume 3 horses 1.08 lbs /day 394.2 lbs / yr	Unknown	Livestock access to river (H)	Agricultural PS (H)	Foot traffic (horses)	Fencing	Fencing \$2.50/lin. ft.	\$200	Medium	31 lbs-P/yr 177 lbs-N/yr	2014-15
KS19	EXH 26 SB	South Branch Kawkawlin 7	Medium	Medium	185.6	371	169	Toe undercutting (M)	Existing Hydrology (M)	Bend in river	Rock riprap, Bank sloping, Bank seeding or planting	Riprap \$50/syd Sloping \$5/lin. ft. Veg. Est. \$5/lin. ft.	\$3,500 \$500 \$500	Medium	65 lbs-P 167 lbs-N 85 Tons sed.	2014-15
KS20	EXH 26 SB	South Branch Kawkawlin 3	Medium	Medium	55.7	111.4	50.6	Toe undercutting (M)	Existing Hydrology (M)	Bend in river	Rock riprap	Riprap \$50/syd	\$1,000	Medium	19 lbs-P 50 lbs-N 25 Tons sed.	2014-15
K11	EXH 26 NB	North Branch Kawkawlin 2	N/A	N/A	28	55	25	Excessive vegetation (H), algae (P)	Agricultural NPS (M), Drain & River Mgt (M)	Pipe & Tile Discharge (M)	Erosion BMPs	\$200 ea.	\$200	Low	*	2016

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K18	EXH 26 MB	Main Branch Kawkawlin 7	Low	Low	28	55	25	Excessive aquatic vegetation (L), algae (M) Sediment bar	Agricultural NPS (H), Drain & River Mgt (M)	Wind Erosion (H), Channel Erosion (H), Upland Water Erosion (M), Chemical & Nutrient Runoff (M), Pipe & Tile Discharge (M)	Filter BMPs (H), Veg Establishment BMPs (H), Windbreak BMPs (H), Channel Stabilization (M), Roadstream Crossing BMPs (M), Residue Mgt Systems (M), Structural BMPs (M), BMP Maintenance (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. Windbreak \$1/lin. ft. Res. Mgt. \$500/site Structural BMPs Varies BMP Maint. \$300/site	\$800 \$1,000 \$500 \$500 Varies \$300	Low	*	2016
K42	EXH 26 SB	South Branch Kawkawlin 6	Low	Low	28	55	25	Bank erosion (L), excessive vegetation (M/H)	Drain & River Mgt (M)	Channel Erosion (H), Wind Erosion (M), Upland Water Erosion (M), Roadstream Crossing (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M)	Filter BMPs \$800/site	\$800	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K28	EXH 26 NB	North Branch Kawkawlin 2	Low	Low	28	55	25	Bank erosion (L)	Agricultural NPS (M)	Chemical & Nutrient Runoff (M)	Veg Establishment BMPs (M)	30' Veg. Filter \$3/lin. ft.	\$1,800	Low	*10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K36	EXH 26 NB	North Branch Kawkawlin 2	Low	Low	28	55	25	Bank erosion (L), excessive chemicals and nutrients (M)	Agricultural NPS (M), Residential NPS (M)	Upland Water Erosion (M), Chemical & Nutrient Runoff (M), Septic System Failure (M)	Veg Establishment BMPs (M), Septic System Evaluation (M)	30' Veg. Filter \$3/lin. ft. Onsite Tx System Inspections \$350/system	\$3,000 \$350/ system inspected \$6,000 /system for replacement	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K54	EXH 26SB	South Branch Kawkawlin 4	Low	Low	185.6	371	169	Bank erosion (L)	Agricultural NPS (M)	Chemical & Nutrient Runoff (M)	Veg Establishment BMPs (M)	30' Veg. Filter \$3/lin. ft.	\$1,000	Low	65 lbs-P 166 lbs-N 85 Tons sed.	2016
K57	EXH 26 SB	South Branch Kawkawlin 4	Low	Low	28	55	25	Bank erosion (L)	Agricultural NPS (M), Residential NPS (L)	Upland Water Erosion (L)	Veg Establishment BMPs (M)	30' Veg. Filter \$3/lin. ft.	\$2,100	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016

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Site Code	Map Location	Branch & Sub-Watershed Number	Erosion Severity	Stream Bank Erosion	Estimated P Load (lbs)	Estimated N Load (lbs)	Sediment Load (tons)	Problems Noted	Sources	Causes	Proposed BMPs	Estimated Unit Cost	Estimated Total Cost	Priority	Estimated Load Reductions	Implementation Schedule
K58	EXH 26 SB	South Branch Kawkawlin 4	Low	Low	28	55	25	Bank erosion (L), trash (M)	Agricultural NPS (H), Residential NPS (M)	Wind Erosion (H), Chemical & Nutrient Runoff (M)	Filter BMPs (H), Veg Establishment BMPs (H), Windbreak BMPs (H) (M), Residue Mgt Systems (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. Windbreak \$1/lin. ft. Res. Mgt. \$500/site	\$800 \$2,200 \$1,000 \$500	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K59	EXH 26 SB	South Branch Kawkawlin 4	N/A	N/A	28	55	25	Woody debris (H), channel sedimentation (M)	Construction Site NPS (M), Residential NPS (M)	Chemical & Nutrient Runoff (M), Degraded Stream Corridor (M)	Filter BMPs (M), Corridor Enhancement (M), Channel Stabilization (M), Veg Establishment BMPs (M)	Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft.	\$800 \$1,200	Low	*	2016
K60	EXH 26 SB	South Branch Kawkawlin 4	Low	Low	185.6	371	169	High bank erosion (L)	Agricultural NPS (M)	Wind Erosion (H), Upland Water Erosion (M)	Windbreak BMPs (H) Veg Establishment BMPs (H)	Windbreak \$1/lin. ft. 30' Veg. Filter \$3/lin. ft.	\$800 \$1,200	Low	65 lbs-P 165 lbs-N 85 Tons sed.	2016
K63	EXH 26 SB	South Branch Kawkawlin 4	Low	Low	28	55	25	High bank erosion (L), channel sedimentation (M), excessive chemicals and nutrients (M)	Agricultural NPS (M), Residential NPS (M)	Wind Erosion (M), Chemical & Nutrient Runoff (M)	Filter BMPs (M), Windbreak BMPs (M)	Filter BMPs \$800/site Windbreak \$1/lin. ft.	\$800 \$700	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K68	EXH 26 NB	North Branch Kawkawlin 2	Low	Low	28	55	25	Bank erosion (L), excessive vegetation (M)	Agricultural NPS (H)	Chemical & Nutrient Runoff (M)	Filter BMPs (M)	Filter BMPs \$800/site	\$800	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
K73	EXH 26 NB	North Branch Kawkawlin 1	Low	Low	28	55	25	Bank erosion (L), Trash (M)	Residential NPS (H)	Channel Erosion (M), Septic System Failures (M)	Channel Stabilization (M), Residue Mgt Systems (M), Filter BMPs (M), Veg Establishment BMPs (M), Structural BMPs (M), BMP Maintenance (M), Turfgrass Mgt System (M), Septic System Evaluation (M)	Res. Mgt. \$500/site Filter BMPs \$800/site 30' Veg. Filter \$3/lin. ft. Structural BMPs Varies Onsite Tx System Inspections \$350/system	\$500 \$800 \$6,000 Varies \$350/ system inspected \$6,000 /system for replacement	Low	10 lbs-P 24.8 lbs-N 12 Tons sed.	2016
KS1	EXH 26 SB	South Branch Kawkawlin 4	Low	Low	18.6	37.1	16.9	Bank erosion from side channels (L)	Agricultural NPS (L), Residential NPS (L)	Gullyng of bank from side channels	Bankseeding or planting, Structure	Veg. Est. \$5/lin. ft. Structural BMPs Varies	\$150 Varies	Low	6 lbs-P 17 lbs-N 8 Tons sed.	2016

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KS12	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	18.6	37.1	16.9	Toe undercutting (L)	Existing Hydrology (L)	Bend in river	Bank sloping, Bank seeding or planting	Sloping \$5/lin. ft. Veg. Est. \$5/lin. ft.	\$250 \$250	Low	*	2016
KS13	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	55.7	111.4	50.6	High bank erosion (L)	Existing Hydrology (L), Natural	Obstruction in river, Island of sediment	Dredging	Dredging \$10/cyd	\$3,000	Low	*	2016
KS14	EXH 26 SB	South Branch Kawkawlin 7	Low	Low	55.7	111.4	50.6	High bank erosion (L)	Existing Hydrology (L), Natural	Obstruction in river, Sediment deposit	Dredging	Dredging \$10/cyd	\$1,500	Low	*	2016

1. University of Minnesota, 1997 Minnesota Cattle Feeder Report B-450, USDA 1990 report.
 - Unable to determine load reductions as the source is difficult to ascertain and the low priority does not easily facilitate calculation of these reductions.

SUMMARY OF LOADINGS FROM TABLE H-1

Phosphorus loading = 17,669 pounds
 Nitrogen loading = 45,867 pounds
 Sediment loading = 9,296 Tons

ESTIMATED LOAD FROM DOMESTIC ANIMALS ONLY FROM THIS STUDY

Phosphorus loading = 6,470 pounds / year
 Nitrogen loading = 24,090 pounds / year