

# tables

# table a

## subwatersheds

No.	Hydrologic Unit Code	Watercourse	Description
1	4050001260020	Brandywine Creek	at Mouth
2	4050001260010	N Br Paw Paw River	Above Ritter Creek
3	4050001260030	N Br Paw Paw River	at Mouth
4	4050001270030	Mud Lake Drain	at Mouth
5	4050001260080	Paw Paw River	at Brush Creek
6	4050001270040	Paw Paw Lake	at Outlet
7	4050001060010	Portage River	at Indian Lake
8	4050001270020	Paw Paw River	Above Mud Lake Drain
9	4050001040020	Nottawa Creek	at Mud Creek
10	4050001270070	Paw Paw River	at Gage #04102500
11	4050001060040	Gourdneck Creek	at Gage #04097200
12	4050001060060	Gourdneck Creek	Above Sunset Lake
13	4050001260060	E Br Paw Paw River	at Mouth
14	4050001270060	Paw Paw River	at Mill Creek
15	4050001040010	Nottawa Creek	at Unnamed Trib
16	4050001040040	Pine Creek	at Waterman Drain
17	4050001260050	Eagle Lake Drain	Above Unnamed Trib
18	4050001040030	Alder Creek	at Mouth
19	4050001060020	Portage River	at Gage #04097170
20	4050001260040	S Br Paw Paw River	at Lawton Drain
21	4050001040050	Pine Creek	Above Nottawa Creek
22	4050001010100	St. Joseph River	at Gage #04096405
23	4050001050010	Little Portage Creek	at Gage #04097060
24	4050001270050	Mill Creek	at Mouth
25	4050001270010	Brush Creek	at Mouth
26	4050001270080	Paw Paw River	at Blue Creek
27	4050001010090	St. Joseph River	at Gage #04096405
28	4050001010070	St. Joseph River	at Gage #04096340
29	4050001060070	Portage Creek	at Mouth
30	4050001060030	Portage River	Above Portage Creek
31	4050001070020	Flowerfield Creek	at Gage #04097370
32	4050001270090	Paw Paw River	at Mouth

<b>No.</b>	<b>Hydrologic Unit Code</b>	<b>Watercourse</b>	<b>Description</b>
33	4050001070010	Flowerfield Creek	Above Unnamed Tributary
34	4050001060080	Bear Creek	at Mouth
35	4050001010080	Tekonsha Creek	at Mouth
36	4050001280110	St. Joseph River	at Lake Michigan
37	4050001030010	St. Joseph River	at Union City Dam
38	4050001040060	Nottawa Creek	at Gage #04096900
39	4050001010110	St. Joseph River	Above Coldwater River
40	4050001040070	Bear Creek	at Mouth
41	4050001070030	Flowerfield Creek	Above Spring Creek
42	4050001250010	Dowagiac River	Above Osborn Drain
43	4050001020130	Hog Creek	at Mouth
44	4050001070040	Flowerfield Creek	at Mouth
45	4050001250020	Silver Creek	at Mouth
46	4050001280080	Pipestone Creek	at Mouth
47	4050001060090	Portage River	at Garman Foster Drain
48	4050001040080	Nottawa Creek	at Mouth
49	4050001050020	Little Portage Creek	at Mouth
50	4050001020140	Coldwater River	at Gage #04096600
51	4050001250040	Dowagiac Creek	at Bunker Lake
52	4050001280070	Pipestone Creek	at Unnamed Trib
53	4050001070060	Rocky River	at Flowerfield Creek
54	4050001030020	St. Joseph River	at Arney Road
55	4050001250030	Dowagiac River	Above Dowagiac Creek
56	4050001020150	Coldwater River	at Mouth
57	4050001010050	Soap Creek	at Gage #04096325
58	4050001020110	S Br Hog Creek	at Bowen Creek
59	4050001030080	St. Joseph River	Above Nottawa Creek
60	4050001050030	St. Joseph River	at Sturgis Dam
61	4050001010030	Beebe Creek	at Mouth
62	4050001010060	St. Joseph River	at Soap Creek
63	4050001020120	S Br Hog Creek	at Mouth
64	4050001280110	Big Meadow Drain	at Mouth
65	4050001060100	Portage River	at Mouth
66	4050001250060	Dowagiac Creek	at Mouth
67	4050001020070	Mud Creek	at Mouth
68	4050001030070	St. Joseph River	Above Sturgeon Lake
69	4050001280040	St. Joseph River	above Lemon Creek
70	4050001070050	Rocky River	Above Sheldon Creek

<b>No.</b>	<b>Hydrologic Unit Code</b>	<b>Watercourse</b>	<b>Description</b>
71	4050001010020	Beebe Creek	at Lake Beebe Outlet
72	4050001050040	St. Joseph River	at Gage #04097500
73	4050001250050	Dowagiac Creek	at La Grange Lake Boat Ramp
74	4050001280090	St. Joseph River	above Pipestone Creek
75	4050001010040	Sand Creek	at Gage #04096312
76	4050001080080	Spring Creek	at Mouth
77	4050001070070	Rocky River	at Mouth
78	4050001250080	Dowagiac River	at Gage #04101800
79	4050001020060	E Br Sauk River	at Gage #04096500
80	4050001020080	Coldwater River	at Hodunk Pond Dam
81	4050001080060	Prairie River	at Unnamed Trib
82	4050001010010	St. Joseph River	Above Beebe Creek
83	4050001160020	Christiana Creek	at Brownsville Street
84	4050001030050	Little Swan Creek	at Mouth
85	4050001020050	Marble Lake	at Outlet
86	4050001160010	Paradise lake	at Outlet
87	4050001280100	Hickory Creek	at Mouth
88	4050001160030	Diamond Lake	at Outlet
89	4050001100010	Mill Creek	at Unnamed Trib
90	4050001250070	Pokagon Creek	at Mouth
91	4050001080090	Prairie River	at Mouth
92	4050001020100	S Br Hog Creek	at Gage #04096515
93	4050001080070	Prairie River	Above Spring Creek
94	4050001080100	St. Joseph River	Above Fawn Creek
95	4050001030060	Swan Creek	at Mouth
96	4050001020090	S Br Hog Creek	at Carpenter Lake
97	4050001250100	Dowagiac River	at Mouth
98	4050001280030	St. Joseph River	at US 31
99	4050001080050	Prairie River	at Gage #04097540
100	4050001030040	Swan Creek	at Unnamed Trib
101	4050001020030	Coldwater River	Above South Lake
102	4050001250090	Mudd Lake Exit Drain	at Mouth
103	4050001160040	Christiana Creek	above Painter Lake
104	4050001100020	Mill Creek	at Mouth
105	4050001280010	St. Joseph River	at Gage #04102000
106	4050001080040	Prairie River	at Stewart Lake Drain
107	4050001090140	Fawn River	at Mouth
108	4050001090130	Sherman Mill Creek	at Fawn River

<b>No.</b>	<b>Hydrologic Unit Code</b>	<b>Watercourse</b>	<b>Description</b>
109	4050001020040	Fisher Creek	at Mouth
110	4050001240090	St. Joseph River	at Gage #04101500
111	4050001020020	Coldwater Lake	at Outlet
112	4050001100030	St. Joseph River	at Gage #04099000
113	4050001160050	Christiana Creek	at State Line
114	4050001080030	Prairie River	at Unnamed Trib
115	4050001240070	St. Joseph River	above Brandywine Creek
116	4050001080020	Prairie River	at Unnamed Trib
117	4050001020010	Tallahassee Drain	at Mouth
118	4050001090070	Himebaugh Drain	at Fawn River
119	4050001090080	Fawn River	at Lee Lake Outlet
120	4050001100040	St. Joseph River	above Pigeon River
121	4050001090100	Nye Drain	at Fawn River
122	4050001240080	Brandywine Creek	at Mouth
123	4050001280020	McCoy Creek	at Mouth
124	4050001130010	Trout Creek	at Mouth
125	4050001090010	Crooked Creek	at Toll Road
126	4050001080010	Unnamed Tributary	at Prairie River
127	4050001090110	Fawn River	at Gage #04098500
128	4050001240060	St. Joseph River	at Bertrand Road
129	4050001090060	Fawn River	at Himebaugh Drain
130	4050001120080	Pigeon River	Pigeon River-Fish Lake-Stone Lake
131	4050001090090	Fawn River	above Nye Drain
132	4050001120060	Pigeon River	Pigeon River-VanNatta Ditch
133	4050001130030	St. Joseph River	above Little Elkhart River
134	4050001150040	Peterbaugh Creek	at Mouth
135	4050001110010	Pigeon Creek	Pigeon Creek-Ryan Ditch
136	4050001160060	Christiana Creek	at Mouth
137	4050001090020	Snow Lake	at Outlet
138	4050001220020	Juday Creek	at Mouth
139	4050001150010	St. Joseph River	above Washington Twp Ditch
140	4050001220020	Cobus Creek	at Mouth
141	4050001150020	St. Joseph River	above Pine Creek
142	4050001090050	Fawn River	at State Line
143	4050001090030	Crooked Creek	below Bell Lake Ditch
144	4050001140070	Little Elkhart River	at Mouth
145	4050001240020	St. Joseph River	at Main Street
146	4050001240040	St. Joseph River	above Judy Creek

No.	Hydrologic Unit Code	Watercourse	Description
147	4050001120070	Lake Shipshewana	Page Ditch-Lake Shipshewana
148	4050001090040	Tamarack Lake Outlet	at Crooked Creek
149	4050001120050	Pigeon River	Pigeon River/Pigeon Lake-Twin Lakes
150	4050001220010	St. Joseph River	above Cobus Creek
151	4050001110020	Pigeon Creek	Pigeon Creek-Pigeon Lake
152	4050001120010	Pigeon River	Pigeon River-Cline Lake Outlet/Ontario
153	4050001110080	Pigeon Creek	Pigeon Creek-Green Lake/Shallow Lake
154	4050001140040	Little Elkhart Creek	above Rowe Eden Ditch
155	4050001150030	Pine Creek	at Mouth
156	4050001140020	Emma Creek	at Little Elkhart River
157	4050001120040	Buck Creek	Buck Creek/Buck Lake-East Buck Creek
158	4050001110070	Pigeon Creek	Pigeon Creek-Otter Lake
159	4050001110120	Pigeon Creek	Mongo Reservoir-Pigeon Creek/Turkey Creek
160	4050001210060	Elkhart River	Elkhart River-Yellow Creek (lower)
161	4050001120030	Fly Creek	Fly Creek-East Fly Creek
162	4050001230040	Baugo Creek	at Baugo Bay
163	4050001110030	Pigeon Creek	Pigeon Creek-Mud Creek
164	4050001110060	Pigeon Creek	Pigeon Creek-Hogback Lake-Silver Lake
165	4050001210020	Rock Run Creek	Rock Run Creek-Hoover Ditch-Boyer Ditch
166	4050001120020	Fly Creek	Fly Creek-Headwaters (LaGrange)
167	4050001240030	St. Joseph River	at Colfax Avenue
168	4050001230020	Grimes Ditch	at Baugo Creek
169	4050001140010	Emma Lake	at Outlet
170	4050001170030	Little Elkhart Creek	Little Elkhart Creek-Messick-Oliver Lakes
171	4050001110100	Turkey Creek	Turkey Creek-Big Turkey Lake/Mud Creek
172	4050001210040	Elkhart River	Elkhart River-Leedy Ditch
173	4050001110050	Mud Lake	Mud Lake-Johnson Ditch
174	4050001110040	Pigeon Creek	Pigeon Creek-Long Lake-Pleasant/Fox Lakes
175	4050001230030	Baugo Creek	at Roger's Ditch
176	4050001210030	Rock Run Creek	Rock Run Creek-Horn Ditch
177	4050001210010	Elkhart River	Elkhart River-Goshen
178	4050001140030	Little Elkhorn River	at Emma Creek
179	4050001110110	Little Turkey Lake	Little Turkey L-Big Long L/Lake of the Woods
180	4050001210050	Yellow Creek	Yellow Creek-Headwaters (Elkhart)
181	4050001170020	Little Elkhart Creek	Little Elkhart Creek-Dallas Lake
182	4050001170040	N Br Elkhart River	North Branch Elkhart River-Jones Lake
183	4050001110090	Turkey Creek	Turkey Creek-Headwaters (Helmer)
184	4050001190030	Stony Creek	Stony Creek-Phillips Ditch

<b>No.</b>	<b>Hydrologic Unit Code</b>	<b>Watercourse</b>	<b>Description</b>
185	4050001140050	Rowe Eden Ditch	at Little Elkhart
186	4050001190040	Elkhart River	Elkhart River-Dry Run
187	4050001170010	Little Elkhart Creek	Little Elkhart Creek-Tamarack-Cree Lakes
188	4050001230010	Baugo Creek	at Grimes Ditch
189	4050001170060	Middle Branch Elkhart River	Middle Branch Elkhart River-Oviatt Ditch
190	4050001200100	Turkey Creek	Turkey Creek-Swoveland Ditch
191	4050001200090	Dausman Ditch	Dausman Ditch
192	4050001190070	Elkhart River	Elkhart River-Whetten Ditch
193	4050001190010	Elkhart River	Elkhart River-Sparta Lake Outlet
194	4050001190060	Solomon Creek	Solomon Creek-Meyer/Hire Ditches
195	4050001200070	Berlin Court Ditch	Berlin Court Ditch
196	4050001170070	Waldron Lake	Waldron Lake-Clock Creek/Dry Run
197	4050001170080	N Br Elkhart River	North Branch Elkhart River-Boyd/Huston Dts
198	4050001170050	Henderson Lake	Henderson Lake Ditch-Waterhouse Ditch
199	4050001200080	Turkey Creek	Turkey Creek-Kieffler Ditch
200	4050001190020	Elkhart River	Elkhart River-Ligonier
201	4050001200030	Turkey Creek	Turkey Creek-Skinner/Hoopingarner Ditches
202	4050001180050	S Br Elkhart River	South Branch Elkhart River-Long Dt/Long L
203	4050001180040	Croft Ditch	Croft Ditch-Skinner Lake-Rimmell Branch
204	4050001180060	S Br Elkhart River	South Branch Elkhart River-Diamond-Eagle L
205	4050001200020	Turkey Creek	Turkey Creek-Lake Wawasee
206	4050001200060	Turkey Creek	Turkey Creek-Omar Neff Ditch
207	4050001200040	Wabee Lake	Wabee Lake-Dewart Lake Outlet
208	4050001190050	Solomon Creek	Solomon Creek-Headwaters
209	4050001200010	Turkey Creek	Turkey Creek-Headwaters (Noble)
210	4050001180010	Forker Creek	Forker Creek-Rivir Lake-Long Lake
211	4050001180030	S Br Elkhart River	South Branch Elkhart River-Muncie Lake
212	4050001180020	Carrol Creek	Carrol Creek-Winebrenner Branch
213	4050001200050	Turkey Creek	Turkey Creek-Coppes Ditch
214	4050001140060	Little Elkhart Creek	at Mather's Ditch
215	4050001260070	S Br Paw Paw River	at Mouth
216	4050001150050	St. Joseph River	above Christiana Creek
217	4050001240010	St. Joseph River	at Laing Park

# table b

## river valley segments

Valley Segment	Major Tributaries	Extent	Drainage Area
Headwaters	Beebe Creek Soap Creek	59 miles along main stem: Baw Beese Lake to Union City, MI	124,000 acres
Upper	Hog Creek Coldwater River Swan Creek Nottawa Creek Little Portage Creek	26 miles along main stem: Union City to Mendon, MI	491,000 acres
Middle	Portage River Rocky River Prairie River Fawn River Mill Creek Pigeon River Pine Creek Little Elkhart River Elkhart River Christiana Creek	52 miles along main stem: Mendon, MI to Elkhart, IN	1,500,000 acres
Lower	Baugo Creek Juday Creek Brandywine Creek Dowagiac Creek McCoy Creek Pipestone Creek	65 miles along main stem: Elkhart to confluence with Pipestone Creek	506,000 acres
Mouth	Paw Paw River Hickory Creek	8 miles along main stem: to Lake Michigan	337,000 acres

# table c

## impaired designated uses

<b>Impaired Designated Use</b>	<b>Location</b>	<b>Pollutants &amp; Stressors Impacting Use</b>	<b>Sources</b>	<b>Causes</b>
Agricultural Water Supply	Upper (Nottawa) and Middle (Elkhart County)	Pathogens (impacting drinking water for livestock)	Animal and human waste (directly and via runoff)	
Navigation	Middle (Cobus, Christiana) and Upper (Hog)	Fencing across waterways	Lack of access, illicit barriers	Riparian property rights issues
Warm Water Fishery	Middle (Fawn) and Upper (Nottawa Creek)	Sediment, toxins, habitat modification, nutrients	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, contaminated sediments	
Cold Water Fishery	Lower (Dowagiac, McKinzie, Juday) and Middle (Prairie)	Sediment, toxins, hydrological modification, nutrients, high temperatures	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, contaminated sediments	Lack of buffers, poor tillage practices, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites, historic industrial uses of toxins, dams, channelization, dredging, automobile byproducts, improper storage, application, and disposal of fertilizers and hazardous household waste, thermal loading from urban

<b>Impaired Designated Use</b>	<b>Location</b>	<b>Pollutants &amp; Stressors Impacting Use</b>	<b>Sources</b>	<b>Causes</b>
Other Indigenous Aquatic Wildlife	Mouth (Ox, Paw Paw S. Branch/Lawton Drain); Lower (Dowagiac); Middle (Silver, Emma Creek Tributary, Little Elkhart, Pigeon, Mather Ditch, Wisler Ditch, Mud Creek and Yellow, 17 Indiana Lakes: Big Otter, Seven Sisters, Meserve, Lime, Lake of the Woods, North Twin, Royer, Fish, Messick, Hackenburg, Dallas, Witmer, Jimmerson, Marsh, Snow, Lake James); Upper (Nottawa, Fisher, Hog) and Main stem (mouth, lower)	Sediment, toxins, hydrological modification, habitat loss, nutrients, temperature	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, contaminated sediments	Lack of buffers, poor tillage practices, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites, historic industrial uses of toxins, dams, channelization, dredging, automobile byproducts, improper storage, application, and disposal of fertilizers and hazardous household waste, thermal loading from urban
Partial Body Contact/Recreation	Lower (Lake of the Woods/ Dowagiac River, Farmers Creek) and Upper (Nottawa)	E. coli (pathogens)	Animal and human waste (directly and via runoff)	Livestock access to waterbodies, illicit discharges, failing septic systems, CSOs, improper manure storage and application, lack of buffers
Full Body Contact/Recreation	LLower (Baugo, Willow, Juday); Middle (Elkhart River-- Main, North & South Branches, Little Elkhart River, Fawn River, Fly Creek, Pigeon Creek, Pigeon River, Pine Creek-- North & South Forks, Rock Run Creek, Solomon Creek, Stoney Creek, Turkey Creek-Skinner & Hoopingarner ditches, Wisler Ditch, Yellow Creek); Upper (Nottawa); Main stem (mouth, lower, middle)	E. coli (pathogens)	Animal and human waste (directly and via runoff)	Livestock access to waterbodies, illicit discharges, failing septic systems, CSOs, improper manure storage and application, lack of buffers

# table d

## threatened designated uses

<b>Threatened Designated Use</b>	<b>Location</b>	<b>Pollutants &amp; Stressors Impacting Use</b>	<b>Sources</b>	<b>Causes</b>
Agricultural Water Supply	Lower (Dowagiac) Middle (Rocky)	Decreased water levels, pathogens (impacting drinking water for livestock)	Pumping of surface water, animal waste	Large scale farms with irrigation systems, increased industrial use, livestock access to waterbodies
Industrial Water Supply	Lower (Dowagiac)	Decreased water levels	Pumping of surface water	Large scale farms with irrigation systems(s), increased industrial use(s)
Navigation	Mouth (main stem) Middle (Rocky, Little Elkhart River) Upper (main stem)	Sediment	Agricultural runoff, urban runoff, erosion from stream banks and construction sites	Poor tillage practices, lack of buffers, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites
Warm Water Fishery	Mouth (main stem, upper Paw Paw River) Lower (main stem, Dowagiac River) Middle (Rocky River, main stem, Lake Shishewana, Prairie River, Elkhart River, Fawn River, Little Portage Creek, Trout Creek, Puterbaugh Creek) Upper (main stem)	Sediment, toxins, hydrologic flow fluctuation, toxins, nutrients, habitat loss	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, hydrological modifications, contaminated sediments	Lack of buffers, poor tillage practices, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites, historic industrial uses of toxins, dams, channelization, dredging, automobile byproducts, improper storage, application, and disposal of fertilizers and hazardous household waste, habitat converted to residential and commercial uses

<b>Threatened Designated Use</b>	<b>Location</b>	<b>Pollutants &amp; Stressors Impacting Use</b>	<b>Sources</b>	<b>Causes</b>
Cold Water Fishery	Mouth (main stem, Pipestone Creek, Hickory Creek, Yellow Creek)	Sediment, toxins, hydrological modification, nutrients, temperature, habitat loss, toxins	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, contaminated sediments	Lack of buffers, poor tillage practices, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites, historic industrial uses of toxins, dams, channelization, dredging, automobile byproducts, improper storage, application, and disposal of fertilizers and hazardous household waste, thermal loading from urban stormwater, invasive species
	Lower (main stem, McCoy Creek, Brandywine Creek)			
	Middle (Mill Creek, Willow Creek, main stem)			
	Upper (main stem)			
Other Aquatic Indigenous Wildlife	Mouth (Paw Paw River south branch, Pine Creek, Ox Creek)	Sediment, toxins, hydrological modification, habitat loss, nutrients, temperature	Agricultural runoff, urban runoff, erosion from stream banks and construction sites, contaminated sediments	Lack of buffers, poor tillage practices, high stormwater volumes due to increased imperviousness/urbanization and poor management, poor erosion control practices at construction sites, historic industrial uses of toxins, dams, channelization, dredging, automobile byproducts, improper storage, application, and disposal of fertilizers and hazardous household waste, thermal loading from urban stormwater, invasive species
	Lower (Baugo)			
	Middle (Rocky River, Elkhart River, Fawn River, Little Portage Creek, Trout Creek, main stem)			
	Upper (main stem)			
Partial Body Contact/Recreation	Mouth (main stem)	E. coli (pathogens)	Animal and human waste (directly and via runoff)	Livestock access to waterbodies, illicit discharges, failing septic systems, CSOs, improper manure storage and application, lack of buffers
	Lower (main stem)			
	Middle (main stem, Rocky)			
	Upper (main stem)			
Full Body Contact/Recreation	Upper (main stem)	E. coli (pathogens)	Animal and human waste (directly and via runoff)	Livestock access to waterbodies, illicit discharges, failing septic systems, CSOs, improper manure storage and application, lack of buffers

# table e

## bmp costs

INFORMATION AND EDUCATION BMPS		
Typical BMP/ Delivery Mechanism	Estimated Cost	Notes
Information meeting/training session/workshop	\$500.00 each	Based on a educational workshop for 25 people at free facility with lunch provided and paid speaker. Costs are highly variable depending on size, scope, and location of meeting.
Newsletter/Mailing	\$400.00 each	4 page newsletter sent to 200 addresses. First class postage used, rather than bulk rate which requires a permit. Includes 10 hours of newsletter preparation and the copying costs. Highly variable depending on size and scope of mailing
Newspaper article	Free	Plus staff/volunteer preparation time
Newspaper Ad	\$40.00 to \$55.00 per column inch	Kalamazoo Gazette; Rate depends on day of placement
	\$44.00 to \$62.00 per column inch	South Bend Tribune; Rate depends on day of placement
Newspaper Insert	\$0.05 each	Cost of service only; reproduction is not included; 1 sheet maximum
Public service announcement	Free	Plus staff/volunteer preparation time; Less control of placement and timing but items provided well in advance are usually printed or read on-air multiple times before the event
Educational signage	N/A	Highly variable
OSDS education packets	\$25 each	Include VHS cassette, copy of ordinance, and brochure on maintenance
Ordinance review/development	\$1,200 - \$1,500 per township/municipality to work with a consultant to review, develop, and adopt an ordinance	Assumes minimal consultant oversight and the majority of the work being done by local government

<b>Typical BMP/ Delivery Mechanism</b>	<b>Estimated Cost</b>	<b>Notes</b>
Audubon International Cooperative Sanctuary Program certification	\$150.00/yr membership fee plus cost of implementing BMPs	
Volunteer water quality monitoring program	\$15,000 per year	Includes part-time staff person and cost of test kits
Watershed Management Short Course	\$10,000 each	Includes materials, speaker fees, meals, and staff coordination time
Display Board	\$500.00	Based on 3 panel display with overhead lights. Does not include cost of preparing materials for display.
<b>PHYSICAL BMPS</b>		
Nutrient management	\$2.64 per acre annually	Source: US EPA
Chemical management	\$5.00 per acre	Primarily costs related to technical assistance
Conservation tillage	3.08 per acre annually	
Filter strips	\$190.00 per acre	Includes establishment and maintenance
Riparian Forested Buffer	\$500.00 per acre	Includes establishment and maintenance
Riparian Herbaceous Buffer	\$225.00 per acre	Includes establishment and maintenance
Wetland Creation/ Restoration/Enhancement	\$1,000.00 to \$2,000.00 per acre	Depends on site requirements and size
Critical area planting	\$1,300.00 per acre	Includes grading, planting, herbicides, mulch, and labor
Water and sediment control basin	\$1,700.00 each	
Grade stabilization structure	\$1,000.00 each	
Grassed waterway/ vegetated swale	\$2.00 to \$3.50 per linear foot	Depends on width and depth
Stripcropping	\$12.00 per acre	

<b>Typical BMP/ Delivery Mechanism</b>	<b>Estimated Cost</b>	<b>Notes</b>
Detention ponds	\$35,000.00 to \$110,000.00 per acre	Cost includes engineering, excavation, fill, compaction, inlet and outlet installation, landscaping, and legal fees
Field windbreaks, shelterbelts, and hedgerows	\$1.50 per linear foot	
Cover crops	\$14.00 per acre	
Pasture/Hay Planting	\$120.00 to \$150.00 per acre	Depends on type of grasses used
Livestock exclusion	\$1.60 per foot	Cost of fencing
Other conversion of crop land to habitat	N/A	Highly variable depending on cost of conversion, type of habitat, and incentive payments
Rain garden/Bioretention cell	\$5.00 - \$40.00 per square foot	Cost depends on site requirements: some industrial and commercial sites may require professional engineering and control structures
Rain barrel	\$75 to \$200 each	Depends on size and features. Includes root repellent/waterproof membranes and irrigation; costs vary depending on site requirements
Green roof	\$12 to \$24 per square foot	Depends on site and methods used
Stream bank stabilization	\$22.00 to \$32.00 per linear foot	Depends on size and species of tree; cost includes collar guards, staking, and mulch
Tree planting	\$50.00 to \$300.00 per tree	Costs are comparable to traditional structures; Costs depend on site conditions and are based on seeding rather than plugging in plants
Check dams	\$15.00 per linear foot	
Bioretention parking lot islands/Bioswales	\$0.04 to \$2.50 per square foot	Assumes a trench 2 feet wide; Costs are highly variable depending on site requirements
Downspout disconnections	\$15.00 to \$25.00 per downspout	Depends on material type
Infiltration trench	\$4.00 per linear foot	Costs depend on site conditions and are based on seeding rather than plugging in plants

Typical BMP/ Delivery Mechanism	Estimated Cost	Notes
Permeable surfaces	\$1.00 to \$5.00 per square foot	Depends on material type
Retrofit detention basin	\$0.05 to \$3.00 per square foot	Costs depend on site conditions and are based on seeding rather than plugging in plants
Cistern	\$225	200 gallon galvanized steel; degree of water treatment and location affect costs
	\$160	165 gallon polyethylene; degree of water treatment and location affect costs
	\$660	350 gallon fiberglass; degree of water treatment and location affect costs