
CHAPTER 7

WATERSHED ACTION MATRIX

7.0 Introduction

The Upper Clinton Subwatershed is made up of communities in different stages of development. Some parts of the subwatershed are relatively undeveloped, while other parts are substantially developed. This is the reason why the Best Management Practices chosen for this plan span a range of physical and managerial actions. Some of these actions are already being used by various communities, while others are in the planning stages. Some activities are not appropriate for specific communities, and will only be used by some of the watershed partners. The matrix lists all the actions previously described in Chapter 6, and shows how these actions will help meet the Plan's goals by relating them to the subwatershed's current condition. The matrix includes the following information:

- 1) **Recommended Action:** This lists the structural and managerial BMPs that are described in detail in the previous chapter.
- 2) **Goals & Objectives Addressed:** This column shows how the action will address the goals and objectives of the Subwatershed Plan.
- 3) **Pollutants Addressed:** The information in this column lists the pollutants that will be addressed by the recommended action.
- 4) **Sources and Causes Addressed:** These two columns describe the pollutant sources and causes that the action will address.
- 5) **Uses Addressed:** This lists the designated and desired uses that will be addressed by implementation of the action.
- 6) **Estimated Cost:** This provides a rough estimate of costs for implementing the action. This information is provided solely to give communities an idea of the potential costs of an action. They will not be used as a requirement to track costs for reporting purposes to MDEQ.
- 7) **Evaluation Methods:** This column describes different methods that could be used to evaluate the success of implementing the action.

Note that each subwatershed community outlines the time frame for the actions they have committed to in Table 7.2.

7.1 Evaluation Methods for Measuring Success

To ensure that the planned activities are meeting the goals of this Subwatershed Plan, methods need to be employed that can measure the relative success of each activity. The evaluation step is an important part of any watershed planning effort in that it provides feedback on the success (or not) of an activity. It also provides communities with important information about how to conduct future efforts, or how to change the approach to a specific problem to be more successful the next time. If activities are successful, this will gain more support for future activities amongst decision makers.

Qualitative and Quantitative Evaluation Techniques

Evaluation methods generally fall under two categories: qualitative and quantitative methods. The Action Matrix includes both types of evaluation techniques, based on the BMP or activity. Qualitative methods measure whether or not people have learned new facts, changed their attitudes, or changed their behaviors about their own or others' impact on water quality. Examples of these methods include pre- and post-event surveys and tracking the number of complaints received for illegal dumping or other harmful behaviors. Tracking participation in events is another qualitative method that includes tracking the number of events, number of participants, and amount of materials distributed. While these measurements are usually applied to the general public, land use decision-makers can also follow the same path to understanding the impacts of human activities on water quality. Measurements for this specific group include the number of inventories conducted (of both natural and human-made features), development and adoption of planning documents or ordinances, standards and/or guidelines, and development and implementation of land management programs.

In contrast, quantitative methods show how certain water quality parameters have changed over time, and are often the result of a physical change within the subwatershed. Examples of quantitative methods include water quality monitoring results, the number of complaints or problems (such as failing septic systems) addressed, and the outcome of stewardship projects, such as the amount of trash collected or the length of stream bank replanted or restored.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
1. Implement waterfowl and pet waste management programs.	1-A	Bacteria	Waterfowl	Removal of vegetation	Fishery, aquatic life & wildlife, recreation	Brochure printing: \$0.25 - \$1 each. Riparian buffer plantings/restoration: \$350/ac. Park/common area signage additional. <i>Source: Adapted from Middle One Rouge River Subwatershed Management Plan and the Mill Creek Subwatershed Management Plan.</i>	Number of individuals reached / personal observation; quantity of materials distributed; amount of buffer area planted/restored; pre-post event survey results; monitoring results.
2. Support County inspections and/or enforcement of Health Department regulations regarding on-site sewage disposal systems.	1-A	Bacteria	Failing and/or poorly maintained septic systems.	Improper septic construction/maintenance	Fishery, aquatic life & wildlife, recreation	Costs vary depending on level of support and/or enforcement activities.	Number of OSDS cases addressed.
3. Promote and participate in existing annual watershed education and outreach events, such as River Day and the Clinton Clean-Up.	1-A, 1-B, 1-C, 2-B, 4-A, 4-B, 5-B, 5-C	All	All	All	All	Costs vary depending on the type of activity; material donations can often be obtained from local businesses for special events.	Number of events; number of participants; outcome of stewardship project (e.g. amount of trash collected, miles of stream cleaned.)
4. Promote and/or participate in the watershed education and outreach activities of local organizations as outlined in community Public Education Plans.	1-A, 1-B, 1-C, 1-D, 2-B, 4-A, 4-B, 5-B, 5-C	All	All	All	All	Costs vary depending on the type of activity.	Number of events; number of participants for workshops; pre-post surveys can be used to evaluate learning.
5. Promote and participate in the Clinton River Watershed Council's stormwater education program, as outlined in community Public Education Plans.	1-A, 1-B, 1-C, 1-D, 2-B, 4-A, 4-B, 5-B, 5-C	All	All	All	All	\$10,000 - \$11,000 per year for entire watershed; cost for each community is based on land area and population size. Additional in-kind services to be provided by the communities, such as newsletters, cable TV coverage, etc. <i>Source: CRWC.</i>	Number of events; number of participants; pre-post event survey results; monitoring results.
6. Promote, encourage, and/or participate in educational opportunities for land use decision-makers offered by the organizations listed in Action 4.	1-A, 1-B, 1-C, 2-B, 4-A, 4-B, 5-B, 5-C	All	All	All	All	Varies by activity. Costs may be offset by attendance fees.	Number of activities; number of participants; pre-post event survey results.
7. Develop comprehensive sanitary sewer infrastructure plans and/or maintenance programs.	1-A, 1-B	Bacteria	Failing and/or poorly maintained septic systems, illicit connections, CSO, SSO	Improper septic construction/maintenance, CSOs, inadequate sanitary capacity.	Fishery, aquatic life & wildlife, recreation, drinking water	Review other local plans, draft and finalize plan, public meeting, council/board adoption. 80-120 hours to develop @ \$100 - 150/hr. (consultant); 10 - 20 hours for legal review @ \$200/hr. \$500/public meeting. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community initiates development of the plan, creates a final draft through a series of input meetings, and adopts it.
8. Establish maintenance programs for stormwater management facilities.	1-A, 2-C, 5-B	All	CSO, SSO, stormwater runoff, flashy flows	CSO, inadequate sanitary capacity, poor stormwater management practices	All	Research and develop maintenance program. 80 hours to develop @ \$100 - \$150/hr. (consultant). 10 - 20 hours for legal review @ \$200/hr. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community includes a section within the Stormwater Management Ordinance, Master Deed & Bylaws, or Engineering Standards that requires maintenance for stormwater management facilities both during construction and after the owner takes over long-term responsibility for the system; creates a final draft through a series of input meetings and adopts it.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
9. Establish detention basin retrofit and enhancement programs in re-development projects.	1-A, 1-C, 2-C	Bacteria, hydrology, sediments	Waterfowl, stormwater runoff, flashy flows and stream bank erosion	Removal of vegetation, poor stormwater management practices, increased stormwater runoff	All	Varies based on project.	Number of re-development projects with improved stormwater systems.
10. Identify and eliminate illicit discharges.	1-A, 1-B	Bacteria	Illicit connections	Illicit connections	Fishery, aquatic life & wildlife, recreation	Approximately \$1,000 per stream mile for investigation; correction varies dramatically depending upon nature of problem. Communities should coordinate efforts with County and/or may wish to contract with County. <i>Source: Stony Creek Subwatershed Management Plan.</i>	Community develops and implements an Illicit Discharge Elimination Plan.
11. Develop and implement a long-term monitoring strategy.	1-A, 1-B, 1-C, 5-B	All	All	All	All	Costs vary dramatically based on parameters tested. Physical & biological monitoring can be conducted by volunteers; chemical parameters can be tested by volunteers using low-cost kits. Bacteria monitoring should be conducted by the appropriate agency.	Tracking water quality monitoring activities and results.
12. Implement lawn care education programs for residents and businesses.	1-B, 2-B, 5-C	Bacteria, hydrology, phosphorus	Waterfowl, stormwater runoff, fertilizer use	Removal of vegetation, improper or excessive fertilizer application	All	Varies by type of education activity. Training: 40 - 80 hours at \$100/hr. to prepare and coordinate workshop. Brochure printing: \$0.25 - \$1 each. <i>Source: Adapted from the Middle One Rouge River Subwatershed Management Plan.</i>	Number of activities; number of individuals reached; quantity of materials distributed; pre-post survey results; monitoring results.
13. Encourage golf course management programs that protect water quality.	1-B, 2-B	Phosphorus	Fertilizer use, stormwater runoff	Improper or excessive fertilizer application, removal of vegetation	All	Varies depending on activity (may include workshops, mailings, site visits, etc.)	Golf courses develop and implement management programs and/or activities.
14. Research and evaluate the effectiveness of a fertilizer ordinance.	1-B	Phosphorus	Fertilizer use	Improper or excessive fertilizer application	All	Research material, review ordinances, draft recommendations. 80-120 hours to develop @ \$100 - \$150/hr. (consultant). 10 - 20 hours for legal review @ \$200/hr. \$5,000 per year for coordination of program. Costs are per community. <i>Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.</i>	Community to initiates research and determines effectiveness of fertilizer ordinance.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
15. Review land use planning and management practices to promote Low Impact Development (LID).	1-B, 2-A, 2-B, 2-C, 5-C	All	Waterfowl, CSO, SSO, stormwater runoff, conveyance via road-side ditches, flashy flows and stream bank erosion	Removal of vegetation, CSO, inadequate sanitary capacity, increased impervious surface, poor stormwater management practices, increased stormwater runoff	All	Research planning and management practices; review other local plans; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). Costs are per community. Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
16. Minimize directly connected impervious surfaces from new development through the implementation of Low Impact Development Plans.	1-B, 2-A, 2-C, 5-C	All	Waterfowl, stormwater runoff, conveyance via road-side ditches, flashy flows and stream bank erosion	Removal of vegetation, poor stormwater management practices, increased stormwater runoff	All	Review existing development regulations, guidelines, and standards; research other local plans; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). Costs are per community. Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
17. Develop and implement native vegetation guidelines.	1-B, 2-B, 2-C, 5-C	Hydrology, phosphorus, sediments	Stormwater runoff, fertilizer use, conveyance via road-side ditches, flashy flows and stream bank erosion	Removal of vegetation, poor stormwater management practices, improper or excessive fertilizer application, increased stormwater runoff	Fishery, aquatic life & wildlife, trails, education, aesthetics, function of water resources	Research and develop rules and/or technical guidelines for developers and property owners; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). 10-20 hours @ \$200/hr. for legal review. Costs are per community. Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
18. Establish and/or support street sweeping programs.	1-B, 1-C, 5-B	Phosphorus, sediments	Fertilizer use, construction runoff	Improper or excessive fertilizer application, improper erosion and sedimentation controls	Fishery, aquatic life & wildlife, recreation, aesthetics	Approximately \$100,000 per year based on a \$55/hr. equipment cost, \$30/hr. operator cost and operating an average of 150 days/year. Catch basin inserts cost \$250-\$1,000 each depending on size and type of filters; regular maintenance required. Costs are per community. Source: Canton Community Public Works Department and CRWC.	Community initiates development of street sweeping and/or catch basin cleaning program and implements it. Measure miles of streets swept, number of catch basins cleaned, and/or quantity of pollutants removed.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
19. Educate municipal staff and/or contractors on "good housekeeping" practices, including proper fleet and service yard maintenance and landscaping activities.	1-B	All	All	All	All	Varies by activity. May include workshops, brochures, etc.	Number, type of programs, and materials distributed. Documentation of changes in practices.
20. Implement soil erosion and sedimentation control (SESC) ordinances or standards.	1-C, 5-B	Phosphorus, sediments	Stormwater runoff, construction runoff	Poor stormwater management practices, improper erosion and sedimentation controls	Fishery, aquatic life & wildlife, aesthetics, function of water resources	Research and develop rules and/or standards; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). 10-20 hours @ \$200/hr. for legal review. Costs are per community. <i>Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.</i>	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
21. Implement soil erosion and sedimentation control education programs.	1-C, 5-B	Phosphorus, sediments	Stormwater runoff, construction runoff	Poor stormwater management practices, improper erosion and sedimentation controls	Fishery, aquatic life & wildlife, aesthetics, function of water resources	Varies by type of education activity. Training: 40 - 80 hours at \$100/hr. to prepare and coordinate workshop. Brochure printing : \$0.25 - \$1 each. <i>Source: Adapted from the Middle One Rouge River Subwatershed Management Plan.</i>	Number of activities; number of individuals reached; quantity of materials distributed.
22. Improve soil erosion inspection and enforcement practices.	1-C, 5-B	Phosphorus, sediments	Stormwater runoff, construction runoff	Poor stormwater management practices, improper erosion and sedimentation controls	Fishery, aquatic life & wildlife, aesthetics, function of water resources	Increased staffing and enforcement would be approximately \$45,000/yr. per insepctor. <i>Source: Community Average Cost for Entry Level Inspector/Engineer.</i>	Community/ County expands inspection and/or enforcement program. Track number of complaints/violations and enforcement actions.
23. Improve maintenance of unpaved roads, particularly at road-stream crossings.	1-C, 2-B, 5-B, 5-C	Sediments	Road-stream crossings, conveyance via road-side ditches	Poor road/bridge maintenance, removal of vegetation	Fishery, aquatic life & wildlife, afunction of water resources	Review practices and make recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). Costs could be shared by communities. <i>Source: Middle One Rouge River Subwatershed Plan & Cost Estimating Guidelines Best Management Practices and Engineered Controls.</i>	Road commission reviews and revises maintenance practices. Sensitive areas are targeted for special treatment.
24. Develop or modify private road ordinances or standards to incorporate impervious surface minimization techniques.	1-C, 5-B	Hydrology, phosphorus	Stormwater runoff	Increased impervious surfaces, poor stormwater management practices	Fishery, aquatic life & wildlife, drinking water, function of water resources	Research and develop rules and/or standards; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). 10-20 hours @ \$200/hr. for legal review. Costs are per community. <i>Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.</i>	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
25. Cooperate with the County and other Clinton watershed groups and agencies on stream bank stabilization projects.	1-C, 2-B, 5-B, 5-C	Hydrology, sediments	Stormwater runoff, flashy flows and stream bank erosion	Increased impervious surfaces, poor stormwater management practices, increased stormwater runoff	Fishery, aquatic life & wildlife, trails, education, function of water resources	Survey streams @ \$2,000/stream mile. Design/permit costs roughly 10 - 20% of construction costs. Bioengineering techniques range from \$10 - \$100 per lineal foot of stream. Labor/materials may be donated. Costs can be shared by communities. <i>Source: Middle One Rouge River Subwatershed Management Plan, ECT (Formerly Tilton & Associates, Inc.) and Cost Estimating Guidelines Best Management Practices and Engineered Controls.</i>	Geomorphology or other study is conducted to identify and prioritize sites; number of sites/length of stream bank stabilized; monitoring results.
26. Create and adopt local Impervious Surface Minimization/Mitigation provisions.	2-A	Hydrology, sediments	Stormwater runoff, flashy flows and stream bank erosion	Increased impervious surfaces, increased stormwater runoff	Fishery, aquatic life & wildlife, drinking water, function of water resources	Research and develop rules and/or standards; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). 10-20 hours @ \$200/hr. for legal review. Costs are per community. <i>Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.</i>	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
27. Create and adopt local regulations requiring a buffer along riparian corridors.	2-B, 5-C	Bacteria, hydrology, phosphorus	Waterfowl, stormwater runoff	Removal of vegetation	Fishery, aquatic life & wildlife, trails, function of water resources	Research and develop rules and/or standards; draft and finalize recommendations. 80 - 120 hours @ \$100 - \$150/hr. (consultant). 10-20 hours @ \$200/hr. for legal review. Costs are per community. <i>Source: Adapted from Anchor Bay watershed Plan and Middle One Rouge River Subwatershed Plan.</i>	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
28. Develop and implement local stormwater management document(s), including stormwater management ordinances or standards, and/or maintenance programs.	2-C	Hydrology, phosphorus	Stormwater runoff	Poor stormwater management practices	Fishery, aquatic life & wildlife, recreation, drinking water, function of water resources	Research and develop rules and/or standards; draft and finalize recommendations. 80-120 hours to develop @ \$100 - \$150/hr. (consultant); 10-20 hours for legal review @ \$200/hr. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan</i>	Community initiates development of regulations, guidelines or standards, creates a final draft through a series of input meetings, and adopts it.
29. Inventory natural features (e.g. wetlands, floodplains, steep slopes, woodlands, unique ecosystems, etc.) and develop Natural Areas Resource Protection Plans.	3-A, 5-D, 6-B	Hydrology, phosphorus, sediments	Stormwater runoff, flashy flows and stream bank erosion	Removal of vegetation, increased stormwater runoff	All	Research existing GIS data coverages; general ground-truthing of features and qualities assessment; create GIS database of high-, medium-, and low-quality priorities Cost estimates: \$5,000 - \$10,000 for data gathering; \$5,000 - \$20,000/acre for field inspections. Costs for individual communities can be reduced if Michigan Natural Features Inventory (MNFI) information is used. <i>Source: Anchor Bay Watershed Plan.</i>	Community initiates inventory/assessments, creates a final draft, and adopts it.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
30. Update community Master Plans to enhance natural feature preservation and create a basis for environmental protection ordinances.	3-B, 5-A	Hydrology, phosphorus, sediments	Stormwater runoff, flashy flows and stream bank erosion	Removal of vegetation, increased stormwater runoff	All	Review local plans and policies, draft and finalize plan modifications, public meeting, council/board adoption. 80-120 hours to develop @ \$100 - \$150/hr. (consultant). 10-20 hours for legal review @ \$200/hr. \$500/public meeting. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community initiates updates to the plan, creates a final draft through a series of input meetings, and adopts it.
31. Develop water resource and natural feature protection standards, ordinances, and/or programs.	3-C, 5-F	Hydrology, phosphorus, sediments	Stormwater runoff, flashy flows and stream bank erosion	Removal of vegetation, increased stormwater runoff	All	Review local ordinance, standards and/or guidelines; draft and finalize language; public meeting, council/board adoption. 80-120 hours to develop @ \$100 - \$150/hr. (consultant); 10-20 hours for legal review @ \$200/hr. \$500/public meeting. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community initiates development of the ordinance, standards, and/or guidelines; creates a final draft through a series of input meetings, and adopts it.
32. Cooperate with the County, other Clinton River watershed groups, or agencies to identify, prioritize, and implement projects to construct, restore, and enhance wetlands.	3-C, 5-F	Hydrology	Stormwater runoff	Poor stormwater management practices	Fishery, aquatic life & wildlife, education, aesthetics, function of water resources	Work with other groups to prioritize wetlands for construction/ restoration; 160-320 hours @ \$150/hr. Costs to construct wetland vary by type, size, extent of hydrological restoration needed, and extent of plantings; estimated at \$75,000/acre. <i>Source: ECT (Formerly Tilton & Associates, Inc.).</i>	Wetland restoration maps are completed; projects are prioritized and implemented. Measure: acres of wetlands constructed/restored.
33. Cooperate with the County, other Clinton River watershed groups, and agencies to identify, prioritize, and implement projects to restore and enhance instream habitat.	5-A	Hydrology	Stormwater runoff	Poor stormwater management practices	Fishery, aquatic life & wildlife, education, aesthetics, function of water resources	Work with other groups to prioritize projects for instream habitat enhancement; costs vary depending on type and size of project. <i>Source: ECT (Formerly Tilton & Associates, Inc.) and Middle One Rouge River Subwatershed Management Plan.</i>	Sites are identified and prioritized; number of sites/amount of stream habitat restored; monitoring results.

Recommended Action	Goals & Objectives Addressed	Pollutants Addressed	Sources Addressed	Causes Addressed	Uses Addressed	Estimated Cost	Evaluation Methods & Status
34. Develop water resource recreational plans or update current Recreation Master Plans with emphasis on appropriate water-based recreational opportunities.	6-A	Bacteria, phosphorus	Waterfowl, failing and poorly maintained septic systems, illicit connections, CSO, SSO, fertilizer use, stormwater runoff	Removal of vegetation, improper septic construction/maintenance, illicit connections, CSO, inadequate sanitary capacity, improper or excessive fertilizer application, increased impervious surfaces, poor stormwater management practices	Fishery, aquatic life & wildlife, recreation, trails, education	Review local plans and policies, draft and finalize plan modifications, public meeting, council/board adoption. 80-120 hours to develop @ \$100 - \$150/hr. (consultant). 10-20 hours for legal review @ \$200/hr. \$500/public meeting. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community initiates updates to the plan, creates a final draft through a series of input meetings, and adopts it.
35. Update current Recreation Master Plans to include individual park plans that outline goals and strategies for protecting and managing key natural areas.	6-B	Bacteria, phosphorus	Waterfowl, failing and poorly maintained septic systems, illicit connections, CSO, SSO, fertilizer use, stormwater runoff	Removal of vegetation, improper septic construction/maintenance, illicit connections, CSO, inadequate sanitary capacity, improper or excessive fertilizer application, increased impervious surfaces, poor stormwater management practices	Fishery, aquatic life & wildlife, recreation, trails, education	Review local plans and policies, draft and finalize plan modifications, public meeting, council/board adoption. 80-120 hours to develop @ \$100 - \$150/hr. (consultant). 10-20 hours for legal review @ \$200/hr. \$500/public meeting. Costs are per community. <i>Source: Adapted from Anchor Bay Watershed Plan and Middle One Rouge River Subwatershed Management Plan.</i>	Community initiates updates to the plan, creates a final draft through a series of input meetings, and adopts it.

Table 7.1

Community Timeframes for Watershed Plan Actions

Actions	Auburn Hills	Brandon Twp.	Clarkston	Independence Twp.	Lake Angelus	Oakland County	Orion Twp.	Pontiac	Springfield Twp.	Waterford Twp.	White Lake Twp.
1. Implement waterfowl and pet waste management programs.	C	L	C	C	C	N/A	C	C	C	C	L
2. Support County inspections and/or enforcement of Health Department regulations regarding on-site sewerage disposal systems.	N/A	C	N/A	C	N/A	C	C	S	C	C	C
3. Promote and participate in existing annual watershed education and outreach events, such as River Day and the Clinton Clean-Up.	C	C	C	C	C	C	C	C	C	C	C
4. Promote and participate in the watershed education and outreach activities of local organizations as outlined in community Public Education Plans.	C	C	C	C	C	C	C	C	C	C	C
5. Promote and participate in the Clinton River Watershed Council's stormwater education program, as outlined in community Public Education Plans.	N/A	C	C	C	C	C	C	C	C	C	N/A
6. Promote, encourage, and participate in educational opportunities for land use decision-makers offered by the organizations listed in Action 4.	C	C	C	C	C	C	C	C	C	C	S
7. Develop comprehensive sanitary sewer infrastructure plans and/or maintenance programs.	C	W	C	C	N/A	C	W	C	N/A	C	C
8. Establish maintenance programs for stormwater management facilities.	C	L	S	C	N/A	C	C	C	C	C	S
9. Establish detention basin retrofit and enhancement programs in re-development projects.	N/A	W	N/A	C	N/A	N/A	C	S	C	C	S
10. Identify and eliminate illicit discharges.	C	C	C	C	C	C	C	C	C	C	C
11. Develop and implement a long-term monitoring strategy.	N/A	W	C	C	C	C	C	C	C	C	L

Actions	Auburn Hills	Brandon Twp.	Clarkston	Independence Twp.	Lake Angelus	Oakland County	Orion Twp.	Pontiac	Springfield Twp.	Waterford Twp.	White Lake Twp.
12. Implement lawn care education programs for residents and businesses.	C	C	C	C	C	N/A	C	C	C	C	C
13. Encourage golf course management programs that protect water quality.	N/A	N/A	N/A	W	N/A	C	N/A	S	C	W	S
14. Research and evaluate effectiveness of fertilizer ordinance.	N/A	W	W	L	C	W	W	W	C	W	L
15. Review land use planning and management practices to promote Low Impact Development (LID).	N/A	C	N/A	C	N/A	S	C	W	C	C	L
16. Minimize directly connected impervious surfaces from new development through the implementation of Low Impact Development Plans.	N/A	S	N/A	C	N/A	W	C	W	C	S	L
17. Develop and implement native vegetation guidelines.	N/A	W	S	S	S	W	W	W	C	W	S
18. Establish and/or support street sweeping programs.	C	N/A	C	N/A	N/A	C	N/A	C	N/A	N/A	N/A
19. Educate municipal staff and/or contractors on "good housekeeping" practices, including proper fleet and service yard maintenance and landscaping activities.	C	C	S	S	C	C	S	C	S	S	S
20. Implement soil erosion and sedimentation control (SESC) ordinances or standards.	N/A	L	N/A	S	N/A	C	C	C	S	N/A	C
21. Implement soil erosion and sedimentation control education programs.	N/A	C	C	S	C	C	C	C	C	C	S
22. Improve soil erosion inspection and enforcement practices.	N/A	C	C	C	C	C	C	C	C	C	L
23. Improve maintenance of unpaved roads, particularly at road-stream crossings.	N/A	C	N/A	C	C	C	C	C	C	C	C

Actions	Auburn Hills	Brandon Twp.	Clarkston	Independence Twp.	Lake Angelus	Oakland County	Orion Twp.	Pontiac	Springfield Twp.	Waterford Twp.	White Lake Twp.
24. Develop or modify private road ordinances or standards to incorporate impervious surface minimization techniques.	N/A	C	N/A	S	W	N/A	C	W	C	C	S
25. Cooperate with the County and other Clinton watershed groups and agencies on stream bank stabilization projects.	N/A	L	S	C	N/A	W	W	C	N/A	W	S
26. Create and adopt local Impervious Surface Minimization/Mitigation provisions.	C	C	L	C	N/A	W	C	W	C	C	L
27. Create and adopt local regulations requiring a buffer along riparian corridors.	C	W	L	C	L	W	C	W	C	C	C
28. Develop and implement stormwater management document(s), including stormwater management ordinances or standards, and/or maintenance programs.	C	C	S	C	L	C	C	S	C	C	S
29. Inventory natural features (e.g. wetlands, floodplains, steep slopes, woodlands, unique ecosystems, etc.) and develop Natural Areas Resource Protection Plans.	N/A	L	L	C	C	S	C	W	C	W	S
30. Update community Master Plans to enhance natural feature preservation and create a basis for environmental protection ordinances.	N/A	C	S	C	W	N/A	C	W	C	C	S
31. Develop water resource and natural feature protection standards, ordinances, and/or programs.	C	C	C	C	C	W	C	W	C	C	S
32. Cooperate with the County, other Clinton River watershed groups, or agencies to identify, prioritize, and implement projects to construct, restore, and enhance wetlands.	N/A	W	W	W	N/A	W	W	W	W	W	L
33. Cooperate with the County, other Clinton River watershed groups, and agencies to identify, prioritize, and implement projects to restore and enhance instream habitat.	N/A	W	W	W	N/A	W	W	W	W	W	W

Actions	Auburn Hills	Brandon Twp.	Clarkston	Independence Twp.	Lake Angelus	Oakland County	Orion Twp.	Pontiac	Springfield Twp.	Waterford Twp.	White Lake Twp.
34. Develop water resource recreational plans or update current Recreation Master Plans with emphasis on appropriate water-based recreational opportunities.	N/A	N/A	N/A	C	C	W	L	C	N/A	L	S
35. Update current Recreation Master Plans to include individual park plans that outline goals and strategies for protecting and managing key natural areas.	N/A	L	N/A	C	N/A	N/A	L	W	S	L	S

C = Currently planning/implementing
 S = Will implement in the short-term (5 years or less)
 L = Will implement in the long-term (More than 5 years)
 W = On Wish List – Want to consider or do in the future
 N/A = Not applicable to that community