

Chapter 7

Methods to Measure Progress

Measuring the ultimate effectiveness of the Subwatershed Management Plan in meeting the seven goals that have been established will take years if not decades and presents a significant challenge. Each Stormwater Pollution Prevention Initiative (SWPPI) developed by communities under the Voluntary Permit will include a set of actions with implementation schedules and corresponding methods to measure progress. In some cases this will entail reporting on completion of projects and studies, implementation of BMPs, development of ordinances and/or public involvement programs. In other cases water quality standards such as dissolved oxygen, bacteria counts, suspended solids, and phosphorus concentrations will be monitored and evaluated.

To evaluate the long-term progress, the Main 1-2 SWAG, the OCDC, the RPO and the USGS have worked cooperatively to establish a long-term water quality monitoring program at the current USGS gauging stations. This data coupled with the associated flow information will allow the SWAG to evaluate the cumulative affect of the actions taken by each community. The measurement program presented below is intended to be a low-cost means of evaluating incremental progress toward achieving water quality standards on a subwatershed basis. Compliance of each individual permittee will be addressed in their SWPPI.

7.1 **LONG TERM GOAL 1: REMOVE SOURCES OF POLLUTION THAT THREATEN PUBLIC HEALTH**

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

1a. Identify all stream segments that currently exceed water quality bacteria standards for total body contact during dry weather conditions.

Measures: Report Percentage or total number of stream segments that have been surveyed. Percentage or total number of significant sources that have been remediated. Percentage of time *E. coli* measurements from within the Main 1-2 exceed 130 cfa/100ml.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

1b. Conduct investigations to determine location of significant sources of untreated human waste entering the river.

Measures: Percentage of stream segments that have been tested. Percentage or total number of significant sources that have been remediated. Percentage of time *E. coli* measurements from within the Main 1-2 exceed 130 cfa/100ml.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

1c. Identify remedial measures to correct illicit connections or address illegal discharges.

Measures: Annual IDEP report.

Responsible Party: OCDC

Reporting Method: OCDC storm water Permit Annual Report

1d. Evaluate treated CSOs and develop plans to address shortcomings.

Measures: Sample water quality downstream of newly constructed CSO facilities.

Responsible Party: Communities

Reporting Method: Community and OCDC storm water Permit Annual Reports

1e. Develop approaches to address known SSOs.

Measures: Complete evaluation and recommendations. Report on success of procuring funding. Percent complete of implementation schedule. Report on quantity (number and volume) and quality (water quality measures) of SSOs.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC Permit Compliance Requirements

7.2 LONG TERM GOAL 2: RESTORE/MAINTAIN AESTHETICALLY APPEALING CONDITIONS

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

2a. Continue to participate in annual Rouge Rescue/River Day.

Measures: Report on number of people/schools/organizations participating. Quantify amount (lbs., bags, truckloads) of debris collected. streambank stabilized and/or vegetation planted.. Evaluate success of event through a written or telephonic survey. Provide photographic documentation of events.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

2b. Conduct Public Education Programs.

Measures: Number of programs conducted, number of people/schools/organizations participating. Evaluation of effectiveness through surveys. Provide photographic documentation of events.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

2c. Publicize correct disposal practices for household waste.

Measures: Report number of articles, brochures, public service spots. Quantify number of households contacted. Evaluate effectiveness through surveys.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

2d. Encourage better understanding of connection to the river and the need for river stewardship.

Measures: Provide copies of brochures and educational material that are developed. Report on number of citizens contacted and the variety of methods used (television, print media, mailings, public meetings, fairs, etc.). Evaluate effectiveness of programs through surveys.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

2e. Provide a "hotline" to report illegal dumping or disposal practices.

Measures: The OCDC to Report on "hotline" use and follow-up.

Responsible Party: OCDC

Reporting Method: OCDC storm water Permit Annual Report

2g. Educate riparian landowners about their responsibilities.

Measures: Report total number of riparian landowners and percent contacted through various means. Provide documentation of educational material provided. Evaluate effectiveness through surveys.

Total of grassroots stewardship organizations created.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

2h. Evaluate existing programs and propose any needed changes to ordinances and regulations for controlling illegal waste disposal into the river or storm drains.

Measures: Complete evaluation report. Report on percent complete based on implementation schedule. Provide draft and final ordinances and regulations.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

2i. Investigate cost effective methods for the maintenance of storm sewer basins and other related infrastructure.

Measures: Complete evaluation report. Report on percent complete of implementation schedule.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Report

7.3 LONG TERM GOAL 3: IMPROVE AND MAINTAIN RIVER ECOSYSTEM FOR FISH AND WILDLIFE

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

3a. Identify functioning wetlands and other important fisheries and wildlife habitat within or adjacent to the river and its tributaries.

Measures: Complete identification and mapping of habitat areas. Prioritize sites and develop an implementation plan. Report on percent complete of plan or on acres preserved/restored.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3b. Encourage protection of existing high value wildlife habitat found on private land.

Measures: Number of acres in habitat conservation easements. Quantify contacts with landowners. Provide copies of educational material developed and provided to landowners. Evaluate effectiveness through surveys.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3c. Identify opportunities that will preserve headwater areas, high value fisheries, and wildlife habitat areas found within the river or on publicly owned land.

Measures: Complete analysis of "opportunities" and prioritize them. Report on successful habitat creation/restoration projects (number, acres, etc.).

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3d. Improve or create fisheries habitat:

Measures: Report on fish population and species diversity using GLEAS protocols. Where possible provide historical data (before and after data). Quantify streambed and streambank alterations. Provide photographic documentation.

Responsible Party: MDNR, Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3e. Identify opportunities to create habitat in conjunction with other public or private water management projects.

Measures: Complete analysis of "opportunities" and prioritize them. Report on successful habitat creation/restoration projects (number, acres, etc.).

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3f. Determine the feasibility and cost of restoring habitat critical to the survival of important species.

Measures: Complete analysis and develop implementation strategy. Report percent complete according to plan schedule. Report areas restored. Report cooperative efforts with partner organizations and agencies.

Responsible Party: MDNR, Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3g. Evaluate the potential for improving stream temperatures and related water quality parameters through stream side vegetation enhancements or other actions to benefit populations of preferred wildlife/fisheries species.

Measures: Complete evaluation report with monitoring and implementation plan. Report percent complete of plan. Report monitoring results. Report pilot study results

Responsible Party: MDNR, Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports.

3h. Identify areas where dissolved oxygen, or the quantity of pollutants do not meet state water quality standards intended to protect fish and aquatic organisms.

Measures: MDEQ Water Quality Standards. Summarize existing data and report. Provide new monitoring results with historical baseline for comparison.

Responsible Party: OCDC and RPO

Reporting Method: OCDC storm water Permit Annual Reports

3i. Determine what actions need to be initiated to meet water quality standards.

Measures: Complete analysis and develop cost estimates and schedules. Revise Water management Plan and SWPPI as appropriate.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

3j. Develop and encourage the implementation of best management practices for park lands, golf courses and other publicly owned lands adjacent to the river to assure that maintenance practices adequately protect water quality.

Measures: Produce and disseminate BMP Manual. Provide training and demonstration projects. Report on number of SOPs analyzed and revised based on BMPs. Quantify where possible the effects of BMP implementation (reduction in fertilizer and pesticide use, reduction in impervious surfaces, infrastructure repair/retrofit).

Responsible Party: Communities, OCDC and RPO

Reporting Method: Community and OCDC storm water Permit Annual Reports

7.4 LONG TERM GOAL 4: MINIMIZE THE AMOUNT OF SOIL EROSION AND SEDIMENTATION

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

4a. Provide training of local soil erosion control administrators in best construction practices and erosion prevention techniques.

Measures: Report on number of training sessions conducted and number of participants.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

4b. Provide training and participation by stakeholders, homeowners and developers.

Measures: Report on number of training sessions conducted and number of participants.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

4c. Where feasible incorporate best management practice design features.

Measures: Report uses statistics of BMPs.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

4d. Produce and distribute information and guidance to developers and public agencies on proper methods to reduce erosion during construction.

Measures: Examples of materials developed. Report on number of documents distributed. Evaluate effectiveness through surveys, enforcement programs. Provide photographic documentation. Report turbidity upstream and downstream of selected projects.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

4e. Evaluate existing standards for flood management and storm water detention facilities.

Measurements: Complete evaluation and provide report.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 4f. Review current practices for removal and disposal of in stream debris and sediment.

Measurements: Complete evaluation and provide report.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 4g. Continue and improve existing debris and sediment removal.

Measures: Complete review and issue report. Develop implementation plan. Quantify amount of material removed, number of facilities/areas treated.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 4h. Identify areas with highly eroded banks, evaluate alternatives.

Measures: Complete assessment and prioritize sites. Report percent or total number stabilized based on implementation plan.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7.5 **LONG TERM GOAL 5: MINIMIZE FLOW VARIABILITY AND ASSOCIATED NEGATIVE IMPACTS**

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

- 5a. Continue to require on-site detention of storm water and snow melt for new developments.

Measures: Estimate the amount of runoff eliminated due to the requirement.

Responsible Party: Communities

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 5b. Encourage innovative site design for new developments to reduce impermeable surfaces.

Measures: Keep existing requirements and educate developers about BMPs. Report number of innovative design elements used.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 5c. Maximize the opportunity for reduced storm water runoff at older commercial and industrial sites undergoing substantial modifications.

Measures: Strengthen permit review process through educating staff and permittees. Quantify reductions (%) in runoff resulting from design modifications.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

- 5d. Encourage development of new or enhance off-channel regional storm water detention facilities or wetlands that serve developed areas.

Measures: Report planned and completed detention facilities. Report engineered wetlands. Provide education materials for staff and permittees.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

5e. Protect wetlands and other natural features that serve to store water during storm events.

5f. Encourage on-site detention of storm water for residential homes.

Measures: Report on number of homes using on-site detention.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7.6 LONG TERM GOAL 6: MAXIMIZE COMMUNITY ASSETS RELATED TO THE RIVER

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

6a. Provide information on access to public riverfront lands and available uses.

Measures: Distribute maps and educational materials, quantify number of households reached through mailings, print media, television public service spots and public meetings. Evaluate success through surveys.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

6b. Invest in improvements in publicly owned lands, parks and greenways adjacent to the river to encourage recreational uses.

Measurements: Report total dollars spent, volunteer hours and recreational usage statistics.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

6c. Encourage private riparian land owners to manage their waterfront as an asset to enhance property values.

Measurements: Provide educational information, quantify contact information.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

6d. Identify areas where public acquisition of lands or the use of conservation easements will provide public and/or environmental benefits.

Measurements: Complete evaluation and develop implementation plan. Report percent complete on plan or acres conserved/partnerships developed.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

6e. Identify areas where improvements in water quality allow for enhanced management of fish and wildlife communities and recreational values.

Measurements: Complete evaluation and prioritize sites. Report percent complete or project completion. Where possible provide historical data and utilize GLEAS protocols.

Responsible Party: MDNR, Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7.7 LONG TERM GOAL 7: PRESERVE AND ENHANCE THE QUALITY OF THE GREAT LAKES

The short term actions (through 2005) identified under this goal along with methods to measure progress are, as follows:

7a. Produce and distribute educational and information materials for homeowners on the proper disposal of hazardous waste, minimization of lawn and garden chemicals and problems associated with residential car washing.

Measurements: Quantify amount of information distributed and households contacted. Provide examples of material developed. Evaluate success through surveys.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7b. Support the Rouge Education Project conducted by the Friends of the Rouge in local schools.

Measurements: Report number of schools and, total number of students involved. Report fundraising efforts and volunteer hours. Report monitoring results.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7c. Produce and distribute education and information materials on pollution prevention activities for businesses that will reduce the risk of accidental discharge of chemicals to the river.

Measurements: Report number of businesses contacted. Evaluate success through surveys.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7d. Address discharges from CSOs and SSOs.

Measurements: Report the number of occurrences.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports, Compliance Reports

7e. Advertise "hotline" for reporting discharges of toxic pollutants.

Measurements: Quantify advertising efforts (print, TV, mailings, public meetings). Report on use of hotline and follow-up activities.

Responsible Party: OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7f. Enhance soil erosion and sediment control programs.

Measurements: Report on bank stabilization efforts (feet/miles stabilized). Report on enforcement actions taken.

Responsible Party: Communities and OCDC

Reporting Method: Community and OCDC storm water Permit Annual Reports

7g. Minimize the amount of pollutants that enter into streams.

Measures: Rather than absorb the expense of widespread chemical monitoring, an alternative based on biological monitoring is proposed.

Responsible Party: MDNR

Reporting Method: Annual Reports, MDNR Results.