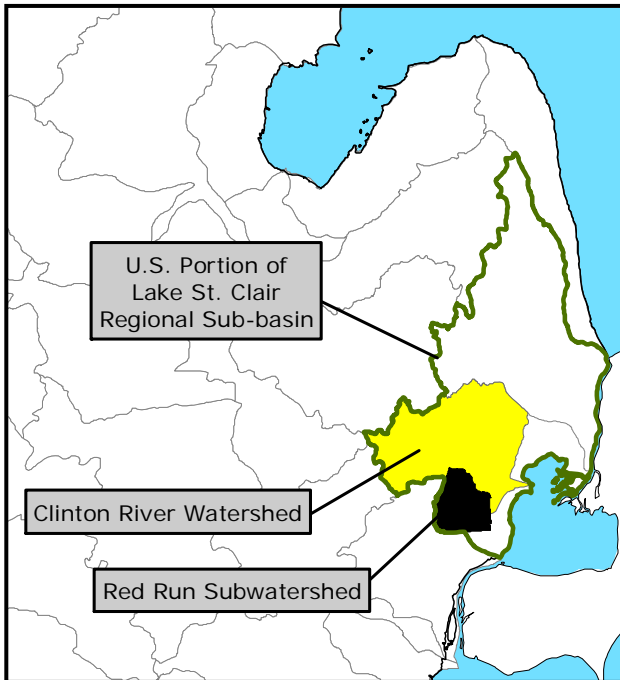




Executive Summary

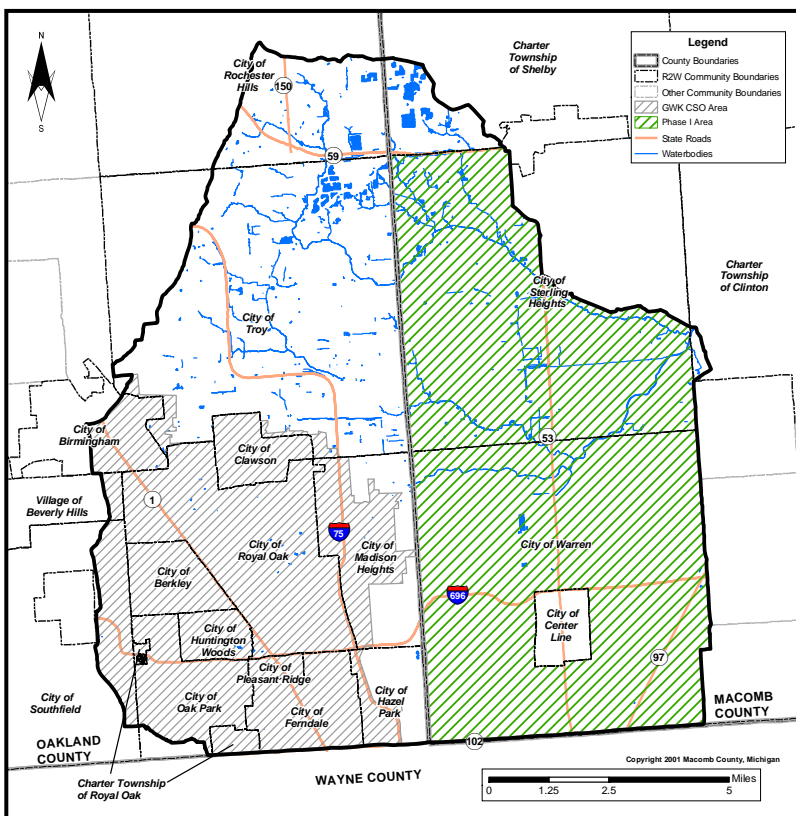


The Clinton River Watershed encompasses approximately 760 square miles in four Southeast Michigan Counties and is home to over 1.4 million people. The headwaters of the Clinton River are in Independence and Springfield Townships of Oakland County, where the river water begins its meandering 80 mile trek, passing through Macomb County, then finally discharging into Lake St. Clair.

The Red Run Subwatershed (R2W), the focus of this watershed management plan (WMP), includes the Red Run upstream of its confluence with the Clinton River and all of its tributaries. The R2W is a 142 square mile Michigan Department of Environmental Quality (MDEQ)-approved basin that also incorporates other waterbodies, such as Plum Brook and Big Beaver Creek, and is home to 550,000 people.

This WMP was developed by the R2W Subwatershed Advisory Group (SWAG) to: 1) fulfill the National Pollutant Discharge Elimination System (NPDES) Phase II requirements (MDEQ's *General Permit No. MIG619000 for Coverage of Storm Water Discharges for Municipal Separate*

Storm Sewer Systems Subject to Watershed Plan Requirements) for non-Phase I governmental units in the urbanized area; and 2) make all of the entities represented in the subwatershed eligible for various grant funding opportunities to implement actions for watershed improvement.



The contents of this plan, including the goals and objectives and the actions to meet them, were developed cooperatively by SWAG members with consideration of the input from community leaders, residents, environmental and citizen groups, local businesses, schools, and universities. This WMP was also developed to be consistent with other planning efforts affecting the subwatershed, including: the Lake St. Clair Comprehensive Management Plan (U.S. Army Corps of Engineers), the Clinton River Watershed Remedial and Preventative Action Plan (Clinton River Public Advisory Council), and the Water Quality Management Plan for Southeast Michigan (Southeast Michigan Council of Governments).

In the 1830s, the subwatershed was primarily forest land (80 square miles) and swamp / wetland (59 square miles). Since that time, permanent human settlement has transformed this land into developed types such as residential, commercial, and industrial (140 square miles). Today, only 3 square miles of agricultural and natural areas remain.

This past and continuing development has been and will continue to be a major factor that impacts the quality of water in the subwatershed. This is because traditional development practices have dramatically increased impervious surfaces which subsequently increase runoff and pollutant transfer to nearby waterbodies. Other factors which have and continue to impact water quality in the subwatershed include: sewer systems and practices, riparian corridor and waterbody modifications, and point sources such as pollution control facilities.

The health of waterbodies in the subwatershed can be gauged from water quality standards (WQS), defined by the MDEQ, to: 1) protect health and public welfare, 2) enhance and maintain the quality of water, 3) protect the state's natural resources, and 4) meet the requirements of state and federal law. The WQS contain requirements for designated uses that the waters of the state must meet, including:

- Agricultural Water Supply;
- Public Water Supply;
- Other Aquatic Life/Wildlife;
- Industrial Water Supply;
- Navigation;
- Warmwater Fishery;
- Coldwater Fishery (specifically identified water bodies only);
- Total Body Contact (May 1st through October 31st); and
- Partial Body Contact.

Water quality monitoring has been and continues to be conducted by various organizations and agencies. While some historical data exist, the bulk of monitoring began in the 1970s, spurred by the passage of the Clean Water Act and other environmental initiatives. Analysis of this data tells a story of a severely impacted subwatershed that has improved over the past 30 years but still exhibits some problems. Impairments, as listed by the MDEQ in 2006 include: Habitat Modification – Channelization in the Red Run, Gibson Drain, and Spencer Drain and, Pathogens in the Red Run, Bear Creek, and all their tributaries in Warren, Center Line, Madison Heights, Troy, and Clawson. Additionally, all waterbodies in the subwatershed are impaired due to elevated PCB levels.

The subwatershed, as part of the Clinton River Area of Concern, is affected by some beneficial use impairments that indicate other problems, including:

- Degradation of aesthetics;
- Beach closings and other “full body contact” restrictions;
- Degradation of benthos;
- Loss of fish / wildlife habitat;
- Restrictions on dredging activities;
- Eutrophication / undesirable algae populations;
- Degradation of fish / wildlife populations; and
- Restrictions on fish / wildlife consumption.

Detailed analysis of water quality data has led to the identification of four major stressors that impact the subwatershed. These stressors are: sediment, phosphorus, pathogens, and flow variability. They have been treated to detailed analysis in the plan that includes discussion of: impacts, indicators, standards, load estimates and reduction goals, critical areas, monitoring, and improvement ideas. The framework for discussion of

Phase II Permittees

The Phase II Permittees covered by this plan are:

- Center Line, City of;
- Clinton Charter Township;
- Hazel Park, City of;
- Lamphere Public Schools;
- Macomb County;
- Madison Heights, City of;
- Oakland County;
- Rochester Hills, City of;
- Shelby Charter Township; and
- Troy, City of.

Nested Jurisdictions

Nested jurisdictions in the subwatershed are associated with county-level government (except where indicated in parentheses) and include:

- Center Line Public Schools;
- Fitzgerald Public Schools;
- Troy School District;
- Van Dyke Public Schools;
- Warren Consolidated Schools;
- Warren Woods Public Schools;
- Avondale Schools;
- US Army – Detroit Arsenal (City of Warren); and
- Hazel Park Schools (City of Hazel Park).

these stressors makes the implementation of actions to improve their conditions potentially eligible for grant funding.

In addition to addressing the problems causing the waterbody impairments and beneficial use impairments, this WMP also seeks to address issues of public stakeholders. Various meetings were held during the planning process to allow the stakeholders to express their issues and concerns as well as their goals and visions for the subwatershed.

Consideration of the public input and the measurable water quality impairments led to the goals and objectives of the WMP, as well as the main principle:

“To improve and protect ecological, hydrological, and cultural resources of the Red Run Subwatershed.”

Specifically, the goals of the WMP are:

- I. To protect, restore, and enhance water quality of the subwatershed;
- II. To educate the public in how to protect, restore, and enhance water quality;
- III. To promote and enhance recreational opportunities in the subwatershed;
- IV. To appropriately manage suitable habitat for aquatic life, wildlife, and fisheries in the subwatershed;
- V. To reduce runoff impacts through sustainable stormwater management;
- VI. To seek out opportunities to sustain implementation of the plan; and
- VII. To promote opportunities to preserve, protect, restore, and enhance natural features.

Meeting the goals and objectives of the plan in an economically responsible way requires the implementation of numerous actions over many years. As presented in the plan, there are many actions that address the goals and objectives of the WMP and even more resources that provide assistance relative to these actions.

The planned actions have been grouped into the following eight categories:

- Watershed Planning, Institutionalization, and Implementation - includes funding, plan revision, and reporting actions;
- Public Education and Participation - includes community education, employee training, demonstration projects, signage, and meetings;
- Ordinances, Zoning, and Development Standards - includes stormwater standards, managing development, preserving natural features, and pollution prevention ordinances;
- Good Housekeeping and Pollution Prevention - includes sewer operations and maintenance, waste management, municipal property practices, and spill preventions and response;
- Stormwater Best Management Practices: Non-Construction Related Soil Erosion and Sedimentation Control - includes soil and streambank repair, use exclusion, and structural controls;
- Stormwater Best Management Practices: Other Pollutant Load Reducing Controls - includes impervious surface mitigation,

infiltration, filtration, vegetative buffers and conveyance, and retention / detention; and

- Natural Features and Resources Management - includes identification, protection, and restoration of natural features
- Recreation Promotion and Enhancement - includes program coordination and opportunity enhancement (parks, boat launches, trails, fishing spots).

The actions in these categories have specific details, including: the lead agency, the schedule, cost estimates, technical and financial assistance, the authority related to the action, any clarifying comments, permit requirement commitments (where appropriate), and applicability to the major stressors affecting the subwatershed.

As with any plan that is part of an adaptive management scheme, this WMP contains procedures for its evaluation and revision. Evaluation measures fall into six levels:

1. Compliance with Activity-Based Permit Requirements;
2. Changes in Knowledge/Awareness;
3. Behavioral Change / BMP Implementation;
4. Load Reductions;
5. Changes in Discharge Quality; and
6. Changes in Receiving Water Quality.

The evaluation measures in the six categories are also classified as: 1) a measure of activity completions (including milestones), 2) a measure of usage, or 3) a measure of change.

The data to drive the evaluations will come from various existing and additional volunteer programs. The assessment of the various measures (including checking achievement of goals and objectives) will drive the modifications and revisions to the WMP.

The implementation of the WMP (actions, evaluation, and revision) will be through the SWAG and its individual members. The SWAG will continue its current voluntary structure but will consider alternate organizational structures and funding mechanisms and will initiate them as appropriate for the most effective implementation.

Watershed planning is meant to be an iterative process that provides for continuous input and revision of procedures, processes, and products. It is a tool in a comprehensive and systematic approach to balancing land uses and human activities to meet mutually agreed upon social, economic, and environmental goals and objectives in a watershed.

This WMP is a living document and is meant to be used, revised, and altered to fit the changing needs of the subwatershed as new information becomes available and new priorities arise.

