

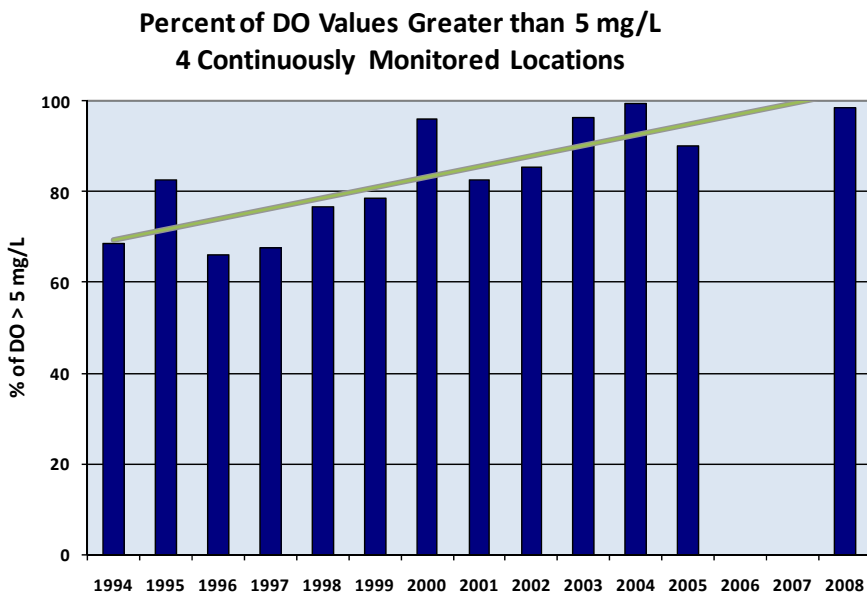
This plan represents a yearlong effort by the Alliance of Rouge Communities (ARC) to update and consolidate seven subwatershed management plans completed in 2001 into one sustainable Rouge River Watershed Management Plan (WMP). It builds on the successes of the past while laying the groundwork for the future.

The overall characteristics and conditions of the Rouge River Watershed demonstrate that much progress has been made in improving water quality over the last decade. Figure E-1 shows improvement in dissolved oxygen in the river due to millions of dollars of restoration efforts across the watershed. Dissolved oxygen is needed to support a healthy waterway and supports fish and aquatic life in the river. Since 1998, the percent of samples with dissolved oxygen concentrations meeting or exceeding the State minimum standard of 5 mg/L has been increasing.

Executive Summary



Figure E-1: DO Concentrations



The Rouge River watershed covers 466 square miles of southeast Michigan and is home to more than 1.3 million people in parts Oakland, Wayne and Washtenaw counties. The watershed's 48 communities comprise a diversity of land uses from the urbanized areas of Detroit, Livonia and Southfield to the developing areas of Troy, Canton Township and Novi, to the rural areas of Salem, Superior and Van Buren townships.

This is due in large part to the control of untreated sewage being discharged to the Rouge River. Pollutant loads from combined sewer overflows have been cut by 90 to 100 percent during most rain events. Other water quality parameters which were once frequently exceeded in the Rouge River prior to these restoration efforts now meet a majority of water quality standards. The ecosystem health also continues to improve, as is often demonstrated by more frequent sightings of sensitive fish and aquatic life species.

Challenges still remain with managing flow variability, including both flow rates and storm water runoff volume, along with bacterial loading in wet weather conditions. This watershed management plan includes a variety of identified projects and management strategies to that will continue to improve Rouge River water quality, aesthetics and recreational opportunities.



Working together, restoring the river

Previous Watershed Management Planning Efforts

In 1998, the Rouge River Watershed was divided into seven subwatersheds, also called storm water management areas (SWMA) shown in figure E-2. The terms “Storm Water Management Area” and “Subwatershed” are used synonymously throughout this watershed management plan. This provided a mechanism for the Rouge River Watershed communities to focus local resources to address local problems and to allow the stakeholders with challenges to work collectively towards cost effective solutions. These subwatershed advisory groups (SWAGs) worked cooperatively to develop individual management plans for each subwatershed. These original management plans, completed in 2001, laid the groundwork for the Rouge River Watershed communities to restore the uses of the Rouge River impaired by flow variability, high bacteria levels and low dissolved oxygen levels.



Figure E-2: Rouge River Watershed

Accomplishments to Date

The Rouge River Watershed stakeholders have addressed many of the challenges since 2001 to improve the river’s water quality. A few of the significant accomplishments include the following:

- ◆ The establishment of the ARC, a voluntary public watershed entity which provides an institutional mechanism to encourage watershed-wide cooperation and mutual support to meet water quality permit requirements and to restore beneficial uses of the river to area residents.
- ◆ The restoration of Carpenter Lake in Southfield, Quarton Lake in Birmingham and Kingswood Lake at Cranbrook Educational Community in Bloomfield Hills.
- ◆ The restoration of an oxbow at The Henry Ford in Dearborn.
- ◆ The ongoing efforts of partnerships like: 1)The Rouge Green Corridor, comprised of the cities of Southfield, Birmingham and Beverly Hills that are working with other partners to preserve the riparian corridor that connects those communities and 2)The Rouge Gateway Partnership leading the effort for environmentally responsible redevelopment within the lower eight miles of the Rouge River’s Main Branch.



Rouge Green Corridor

- ◆ The lifting of the state’s fish consumption advisory covering the general population for carp, channel catfish and largemouth bass from Newburgh Lake.
- ◆ The Lower Rouge Recreational Trail in Canton opened in 2008 and provides much needed improved access to recreational opportunities along the first 2.3 miles of a four-mile stretch of the Lower Rouge River.
- ◆ Wayne County continues to expand “grow zones,” the areas where turf grass has been removed and planted with native plants within the riparian corridors it manages.



31 inch pike caught at Newburgh Lake

Photo credit: Michael Precious

The 2009 Rouge River Watershed Management Plan Update

The overall purpose of this watershed management plan is to build on past successes and to continue to implement a cost-effective approach to improving water quality in the Rouge River as well as meet the requirements of the NPDES Phase II permit that each ARC community must comply with.

The 2009 Rouge River Watershed Management Plan identifies four primary pollutants affecting the Rouge River: pathogens, flow rate and volume, sediment, and nutrients. This watershed management plan is driven by six goals, each of which has associated objectives that will focus efforts on addressing these pollutants, the sources and their respective causes. They are outlined as follows:

- 1) Reduce sources of pollution that threaten public health.
- 2) Reduce runoff impacts through sustainable storm water management strategies and programs.
- 3) Inform and educate the public to become watershed stewards.
- 4) Protect, restore and/or enhance natural features to maintain/improve river and watershed ecosystems;
- 5) Maximize community assets related to the watershed.
- 6) Support regional partnerships for the implementation of the watershed management plan.



Carpenter Lake in Southfield

Protecting public health through controlling the discharges of raw sewage remains a key priority in the effort to restore the Rouge River. CSO and SSO control projects are ongoing as well as programs to eliminate illicit discharges such as cross-connections between sanitary leads and storm sewers and failing septic systems.

This plan has increased the focus on managing storm water flow and volume. The impacts to the Rouge River Watershed due to increased impervious surfaces, such as rooftops, parking lots and roadways, has caused an increase in the total volume of storm water runoff, the frequency of runoff reaching the streams, the peak flow rate of runoff and the quality of runoff. While, historically, storm water ordinances addressed storm water flow rates and runoff, this watershed plan has refined that focus to additionally emphasize the reduction of storm water volume using various “green infrastructure” techniques. Setting a long-term target of reducing storm water volume by approximately 300 million cubic feet across the watershed will significantly reduce the amount of storm water runoff entering the river system.

The Rouge River watershed action plan includes a variety of identified projects and management strategies which will result in improvement of the Rouge River.

Examples of these initiatives include the following:

- ◆ **Addressing Storm Water Volumes and Flow:** Excessive peak flows in the river and storm water runoff volume are substantial problems in the Rouge River and most other urban rivers. They generate large pollutant loads from all land uses through the erosive forces of high velocity overland flow. This excessive water exacerbates the pollutant delivery causing stream banks to collapse, taking with them trees, sediment and backyards. This excess volume of water causes significant changes in the hydrology of the streams which further effects natural features and biological conditions. Excessive flows create more silt which washes over and covers habitat for a variety of bugs, fish and wildlife. (Rouge 2008)
- ◆ **ARC Illicit Discharge Elimination (IDEP)/Total Maximum Daily Load (TMDL) Plan:** This plan will focus efforts on addressing remaining sources of raw sewage in the river through a cooperative mechanism to sample, identify and search out the illicit connections entering the river system. The extensive monitoring database will allow the ARC Technical Committee to prioritize elimination of identified illicit discharges while also meeting state NPDES Phase II requirements.
- ◆ **ARC Public Education Plan (PEP):** The ARC PEP will focus annual efforts towards educating the public and training local representatives about watershed management and improving water quality. The plan will be prepared by the ARC Public Involvement and Education Committee and is designed to also meet the requirements of the NPDES Phase II permit. Public education and involvement activities are meant to teach people about the watershed, promote partnerships focused on restoring the resource, or highlight practices that improve the waterway.
- ◆ **Green Infrastructure Campaign:** This will be a coordinated effort within the ARC to not only implement green infrastructure techniques on local community properties, but to also serve as a demonstration to private property owners about the simplicity with which these techniques may be constructed. Communities and counties are requested to consider application of these techniques, such as rain gardens, bioswales or other grow zones on their properties and submit a request to the ARC PIE for funding consideration. This campaign demonstrates the commitment for working towards reducing storm water volume in the river and its tributaries.
- ◆ **Institutional Relationships:** The ARC will continue to provide an institutional mechanism to encourage watershed-wide cooperation and mutual support to meet water quality permit requirements and to restore beneficial uses of the river to area residents. Other institutional partners include non-profit organizations, educational institutions and others who are working together to reduce the individual costs of restoring the Rouge River. The ARC Technical and Public Involvement and Education Committees are comprised of a variety of stakeholders, such as government, non-profit organizations, stewardship groups, educational institutions, consultants, and others focused on a specific initiative to address storm water pollution.
- ◆ **Municipal Good Housekeeping Practices and Programs:** While the ARC continues to strive for cost-effective, collaborative activities and opportunities, local units of government also continue to practice good-housekeeping on their respective properties. As mentioned, green infrastructure is an excellent form



Bioswale in Bloomfield Township



Rain garden at Dearborn DPW yard

of good-housekeeping by reducing storm water runoff. There are other day-to-day actions that should also be considered. Activities include: management of composting/recycling facilities, public works yards, or wastewater treatment plants; construction project management; street repair and maintenance; street sweeping; storm sewer maintenance; park and landscape maintenance; and employee training.

Measuring Success across the Watershed

A well-planned evaluation process will provide measures of the effectiveness of implementation of this Watershed Management Plan and achieving its goals. The evaluation of this Watershed Management Plan will be accomplished through a five-year monitoring plan recently updated in 2008 to be consistent with the activities outlined in this plan. The goals established to protect and restore water uses of the river are ambitious and may take several decades to accomplish. However, significant progress has been made over the past 10-15 years and will continue to be made as actions are implemented.

A large component of the ARC's long-term monitoring plan includes a partnership with Friends of the Rouge (FOTR). The FOTR benthic monitoring program is a cost effective way to monitor improvements in water quality by monitoring the diversity of aquatic life in the river and its tributaries. Additionally, effectiveness will be gauged by flow and water quality monitoring. Finally, a large component of monitoring will include tracking land cover changes from impervious or turf to green infrastructure, such as tree canopy and native vegetation.

Watershed Management Plan Sustainability

The success of the Rouge River WMP depends upon consistent involvement and support from local, county and state governments, non-profit organizations, educational institutions, local businesses and citizens. While each community has unique situations that require case-by-case consideration and implementation, many of the recommendations in the WMP require coordination among all the communities of the watershed to be cost-effective at reducing pollutant loads. Water quality improvements in the Rouge River will continue with collaboration by all the watershed stakeholders.

Continued involvement by the ARC and the ARC Technical Committee, ARC SWAGs, ARC Public Involvement and Education (PIE) Committee and all interested stakeholders will provide oversight of plan implementation, coordination, evaluation, and revision.



2008 FOTR Winter Stonefly Search



ARC meeting

