

The Main 1-2 Rouge River Subwatershed Advisory Group established long-term goals for its watershed management plan. Long-term goals were identified to establish a framework to guide long-term efforts to protect the existing values of the river and restore the impaired uses. Under each goal, short-term objectives were developed to identify the conditions or activities that were expected to be completed within five years, as interim steps in achieving the long-term goals. The long-term goals are listed below, along with highlighted successes. The complete list of short-term objectives can be found at www.rougeriver.com.

Rouge River Watershed Measuring Our Success



Goal: Remove sources of pollution that threaten public health

Recent water quality sampling in the Main 1-2 Subwatershed shows river conditions are improving. Although river conditions are not yet safe for recreational activities such as swimming, they are usually suitable for partial body contact activities such as canoeing and wading.



2,702 outfalls were identified during an inventory of potential point source pollution along the river. Of these outfalls only nine were considered to have suspicious discharges. Water quality samples were collected and evaluated at these nine locations.



Three combined sewer overflow (CSO) retention treatment basins have been constructed in the Main 1-2 Subwatershed to help control a major source of human waste that was being discharged into the river during rain storms. Although these overflows still occur a couple of times per year during very large storms, the overflows are disinfected to remove pollution that makes the river unsafe for body contact recreation like swimming and canoeing.

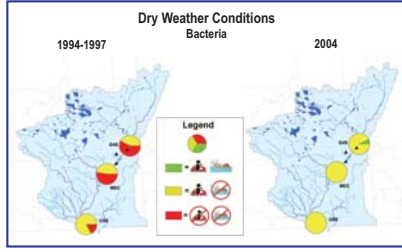


In 2004, five Main 1-2 communities and Oakland County successfully applied for \$2.7 million in Rouge Project Round VI grant funding to address sanitary sewer overflows (SSOs). The communities and projects are:

- **City of Farmington Hills:** Relief of East Lincolnshire SSO
- **Village of Beverly Hills:** Sanitary Sewer Improvements to Reduce SSOs to the Evergreen-Farmington System
- **City of Auburn Hills:** Bloomfield Orchards Subdivision Flow Metering Analysis
- **Oakland County Drain Commissioner:** Farmington to Evergreen SSO Interceptor & Walnut Pump Station #1 with CSO Regulator Adjustments
- **West Bloomfield Township:** Sanitary System Sewer Evaluation Survey Pilot Study
- **City of Troy:** Sanitary Sewer Improvement to Reduce SSOs to Evergreen-Farmington System



Main 1-2 Subwatershed



The **Oakland County Drain Commissioner's (OCDC)** Environmental Unit completed an inventory of all OCDC drains in the Rouge River Watershed. In total, OCDC has inventoried 3,834 storm water outfalls in the Oakland County portion of the Rouge River Watershed. OCDC located and eliminated 47 illicit discharge sources. Since 1999 Oakland County has received and investigated 63 water quality complaints in the Rouge River Watershed. This has led to the elimination of an additional 36 illicit discharge sources.



Goal: Restore/maintain aesthetically appealing conditions

Nearly 300 volunteers have participated annually at Rouge Rescue sites, sponsored by Friends of the Rouge, in the Main 1-2 Subwatershed.



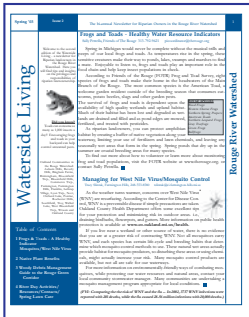
The Cities of **Southfield, Beverly Hills** and **Birmingham** have come together to preserve and enhance their greenway known as the Rouge Green Corridor.



Oakland County has instituted an Environmental Hotline. Since 1999, Oakland County has received and investigated 63 water quality complaints in the Rouge River Watershed, leading to the elimination of 36 illicit discharge sources.



Over 200 Ours to Protect road signs have been installed at tributary crossings in the Main 1-2 Subwatershed.



The Main 1-2 Subwatershed publishes a bi-annual newsletter called "Waterside Living" for 4,000 riparian land owners.

West Bloomfield Township instituted a time-of-sale septic system inspection program; The **City of Troy** has instituted a septic system ordinance; The **City of Southfield** requires homeowners with septic systems to connect to the sanitary sewer or have their systems inspected and certified every three years. From 1999-2004, 490 of 2178 homes with septic systems have connected to the sanitary sewer.



Bloomfield Township sponsors a household hazardous waste disposal day twice annually.

The Healthy Lawns and Gardens Technical Advisory Committee, with participation from lawn care companies and private landscapers, helped support the "Don't Guess...Soil Test!" program and other nutrient reduction initiatives in Oakland County.

Goal: Improve and maintain river ecosystem for fish and wildlife

The cities of **Troy, Farmington Hills, Southfield** and **Birmingham** implemented best management practices at parks, golf courses and other publicly-owned land.



The Main 1-2 Subwatershed has the largest and most diverse population of freshwater mussels in the watershed.



This Great White Egret lives in the newly restored Kingswood Lake at the Cranbrook Educational Community in **Bloomfield Hills**.



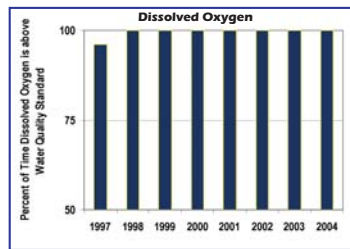
The integrity and recreational uses of Quarten Lake in **Birmingham** were restored by removing accumulated sediment, stabilizing shorelines, constructing fish habitat, installing aquatic plants, and restocking fish.

The **City of Southfield** is overseeing a multi-million dollar effort to restore Carpenter Lake to enhance its use as a public resource by creating habitat, walking trails and fishing access.

The Forest Lake Outlet Watershed (FLOW) group in **Bloomfield Township** is monitoring water quality in the township's lakes.

Dissolved oxygen in the river is important to the survival of fish and other aquatic life. Without sufficient dissolved oxygen, less desirable pollution-tolerant organisms dominate the stream ecosystem. Under extreme oxygen deficit conditions, streams and lakes produce characteristic foul odors from the decomposition of organic materials. Michigan water quality standards require a minimum of 5.0 mg/l of dissolved oxygen to support the warm water fish populations found in the Main Rouge River.

Dissolved oxygen concentrations in the Main 1-2 Subwatershed have improved significantly since 1998, after the implementation of controls to reduce and treat discharges from upstream CSOs. The chart shows the percent of time dissolved oxygen is above the State standard of 5.0 mg/l at Beech Road (JUS5). Since 1998, 100% of the continuously monitored dissolved oxygen at Beech Road has met the State standard.



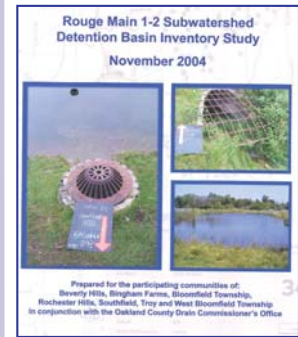
Goal: Minimize the amount of soil erosion and sedimentation

Main 1-2 Subwatershed stream bank stabilization projects: **West Bloomfield Township** and **Farmington Hills** conducted the Pebble Creek Sediment Removal and Stream Improvement Project and the **Oakland County Drain Commissioner's Office** conducted the Edwards Relief Drain Stream Bank Stabilization Project.



Using citizen volunteers, the **City of Troy** stabilized and naturalized approximately 400 feet of stream bank in Firefighters Park.

In 2004, the Main 1-2 communities and the **Oakland County Drain Commissioner's Office** inventoried 90 miles of surface waters to identify eroding stream banks in the subwatershed. In addition, the communities and OCDC inventoried over 370 detention ponds.



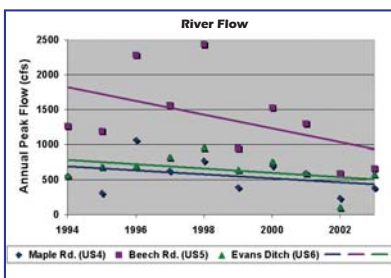
Bloomfield Township received a FEMA grant to stabilize the stream bank in the Franklin Branch of the Rouge River. The township is also constructing a bioswale.



The **City of Birmingham**, Friends of the Rouge and local residents are stabilizing 100 feet of stream bank in Fairway Park. This project will decrease the soil erosion along the stream bank at the north end of the park and strengthen the bank against further erosion along the southern end of the park.

Goal: Minimize flow variability and associated negative impacts

Moderate, stable river flows are generally best for aquatic life and stream habitats. Extreme variations of the river flow rate and volume during storm events can result in severe stream bank erosion, and sediment resuspension, which can significantly degrade game fish habitats. The chart shows that peak river flow rates from May through October are decreasing at all three continuous river flow monitoring stations located along the Rouge River in the Main 1-2 Subwatersheds.



The **City of Southfield** installed a system of vegetated swales in a residential neighborhood to increase storm water detention.



Lathrup Village partnered with the Southeastern Oakland County Water Authority (SOCWA) to install a rain garden in its city hall parking lot.



The **City of Troy** installed a rain garden in Beach Road Park in partnership with SOCWA. SOCWA also worked with the cities of **Farmington Hills, Birmingham** and **Southfield** to install rain gardens on municipal property and school yards.

Goal: Maximize community assets related to the river

In order to preserve green space and natural resources, the **City of Southfield** acquired a 16-acre parcel in the Valley Woods Nature Preserve from a resident. The acquisition ensures that the property will remain in a natural state and never be developed.



The **City of Troy** installed informational signage near the river to inform citizens about best management practices. This sign was installed at the Firefighters Park stream bank stabilization project.

Since 2002, the cities of **Beverly Hills, Birmingham** and **Southfield**, **Oakland County Planning and Economic Development**, **Oakland Land Conservancy**, **SOCWA** and **Oakland Audubon Society** have worked together to focus attention on the Rouge Green Corridor, a 12-mile vegetated corridor between northern Birmingham and southern Southfield. Citizen volunteers have played a substantial role by planting native buffers, pulling invasive species, conducting public surveys and hosting nature study workshops. The Corridor has over nine public parks and preserves providing opportunities for quiet enjoyment of nature to thousands of residents in Oakland County. The extensive woodlands as well as the prairie meadows are habitat for over 100 species of birds, 19 species of butterflies, eight species of frogs and toads and at least 17 species of mammals. Activities have included invasive plant removal, visioning workshops, biodiversity surveys, bird walks and nature study workshops.



Students at Birney Middle School in **Southfield** created native plant gardens on the school campus.



Goal: Preserve and enhance the quality of the Great Lakes

SOCWA in conjunction with Main 1-2 communities conducts workshops and distributes materials on healthy lawn and garden practices, household hazardous waste disposal, and composting. The Main 1-2 communities also participate in the Southeast Michigan Partners for Clean Water which has produced materials on "Seven Simple Steps to Clean Water," which discuss proper fertilizer use, car washing techniques, pet waste disposal and other river-friendly behaviors.



The Rouge Education Project, sponsored by Friends of the Rouge, coordinates water quality monitoring, investigation and problem-solving in the Main 1-2 Subwatershed with participation by 53 teachers and 1,756 students.

The Assembly of Rouge Communities (ARC) was founded in 2003 to enable Rouge River Watershed communities to lead watershed management activities into the future. In 2005, thanks to efforts spearheaded by the ARC and supported by other watershed entities, government officials and environmental organizations, legislation was signed by Michigan's governor to institutionalize watershed alliances such as the ARC. The ARC has drafted bylaws under the new legislation which are being reviewed by watershed communities. In addition, the ARC conducts river health



monitoring activities and has sponsored workshops on detention pond maintenance, public education tools and techniques, and practices to manage storm water from development projects.



The **City of Auburn Hills** disconnected footing drains from sanitary sewer leads in 530 homes to eliminate basement flooding and reduce the flows in the sanitary sewer system.

Rouge River Subwatershed

The Main 1-2 Rouge River Subwatershed covers approximately 103 square miles or 65,782 acres in Oakland County. This subwatershed has low to medium residential density with medium to heavy commercial use along its major transportation corridors (Woodward Avenue, M-10 and I-696). The Main 1-2 Rouge River Subwatershed also has many parks and nature centers including: Valley Woods Nature Trail in Southfield; Douglas Evans Nature Preserve in Beverly Hills; the E.L. Johnson Nature Center in Bloomfield Township; the Cranbrook Gardens in Bloomfield Hills; Firefighters Park and Lloyd A. Stage Outdoor Education Center in Troy; West Bloomfield Woods Nature Preserve, and Booth Park in Birmingham.

As part of the subwatershed management planning process, long term goals and short term objectives were established in the Main 1-2 Rouge River Subwatershed Management Plan. The long term goals of the Main 1-2 Rouge River Subwatershed Management Plan are:

- Remove sources of pollution that threaten public health.
- Restore/maintain aesthetically appealing conditions that threaten public health.
- Improve and maintain river ecosystem for fish and wildlife.
- Minimize the amount of soil erosion and sedimentation.
- Minimize flow variability and associated negative impacts.
- Maximize community assets related to the river.
- Preserve and enhance the quality of the Great Lakes.

The subwatershed management planning process and subwatershed projects that fulfilled Subwatershed Advisory Group goals couldn't have been completed without partnerships between the communities, the counties, non-profit organizations, stewardship groups, citizens and local schools, colleges and universities.



The Dirt Doctors, sponsored by the Oakland County Drain Commissioner's Office, teach school groups about soil erosion and sedimentation throughout the watershed.



E.L. Johnson Nature Center in Bloomfield Township is one of many Main 1-2 Subwatershed sites that sponsor Rouge Rescue activities every June.



Fifth graders learn about the restoration of Kingswood Lake at the Rouge River Water Festival at Cranbrook Institute of Science in Bloomfield Hills.



A child fishes at a pond in Firefighters Park in the City of Troy.



In Southeast Oakland County, 20 retail establishments participated in the earth-friendly fertilizer sticker program sponsored by SOCWA, the Southeastern Oakland County Water Authority.



Construction of the Walnut Lake Pump Station in West Bloomfield Township.



Turtles sun themselves at Holy Sepulchre Cemetery in the City of Southfield.



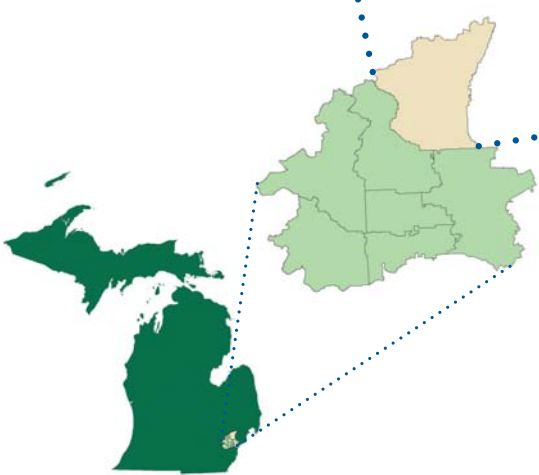
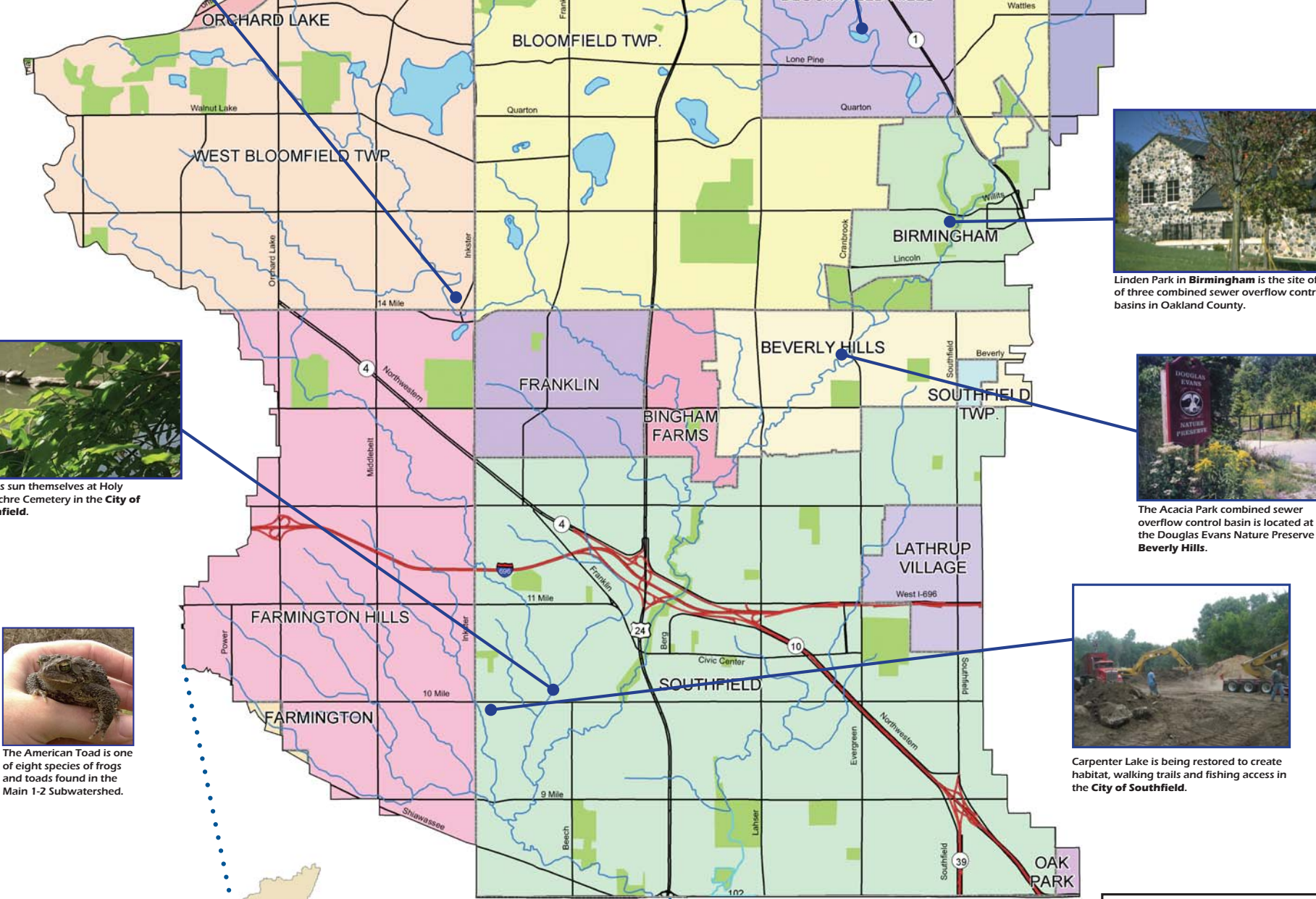
Linden Park in Birmingham is the site of one of three combined sewer overflow control basins in Oakland County.



The Acacia Park combined sewer overflow control basin is located at the Douglas Evans Nature Preserve in Beverly Hills.



Carpenter Lake is being restored to create habitat, walking trails and fishing access in the City of Southfield.



Demographics
 Size: 103 square miles
 Population (2000): 226,900
 Miles of stream: 115 miles
 Jurisdictions: Oakland County and 18 communities

| Land Use Category | Percentage of Total Drainage Area |
|----------------------------|-----------------------------------|
| Forest/rural open | 5.8% |
| Urban open | 5.4% |
| Agricultural | 0.2% |
| Medium density residential | 63.4% |
| High density residential | 5.2% |
| Commercial | 11.5% |
| Industrial | 1.5% |
| Highways | 2.0% |
| Water/wetlands | 4.9% |

| Legend | Communities |
|---------------------------|----------------------|
| Rouge River & Tributaries | AUBURN HILLS |
| Lake | BEVERLY HILLS |
| Highway | BINGHAM FARMS |
| County Road | FRANKLIN |
| Recreation Area | LATHRUP VILLAGE |
| | OAK PARK |
| | BLOOMFIELD HILLS |
| | BLOOMFIELD TWP. |
| | FARMINGTON |
| | FRANKLIN HILLS |
| | PONTIAC |
| | ROCHESTER HILLS |
| | SOUTHFIELD |
| | SOUTHFIELD TWP. |
| | TROY |
| | WEST BLOOMFIELD TWP. |

Some photos provided by: Joe Rathbun, Friends of the Rouge; Southeastern Oakland County Water Authority; Environmental Consulting & Technology, Inc.; Rouge River National Wet Weather Demonstration Project; City of Troy; Hubbell, Roth & Clark; Oakland County Drain Commissioner's Office; Bloomfield Township, and the City of Auburn Hills.