



Rouge River Area of Concern

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BUI History, Removal Criteria, and Current Status



Beach Closings Historical Context

Historically sources of bacterial contamination include:

Discharges from upstream
wastewater facilities,
especially CSOs

Illegal connections to
storm sewers

Urban and rural
stormwater runoff

Failing septic systems



The Rouge River AOC has not met state WQS for full or partial body contact recreation due to elevated *E. coli* and a TMDL was developed for the entire watershed



Beach Closings

State Removal Criteria

In cases where waterbodies within the AOC are on the list of non-attaining waters due to human pathogens, this BUI will be considered restored when human sources of pathogens regulated under the National Pollutant Discharge Elimination System (NPDES) are on schedule to be controlled through implementation of permit requirements.

Beach Closings Current Status



Eutrophication and Undesirable Algae

Historical Context



Monitoring during the 1970s showed that turbidity and total phosphorus were consistently high, indicative of eutrophic conditions



Excessive algal growth in the impoundments of the Middle Rouge River primarily due to high nutrients from CSOs, stormwater runoff and low flow in the river



Communities in the Rouge River watershed have used failing septic systems or had illegal connections to storm sewer systems

Eutrophication and Undesirable Algae

State Removal Criteria

AOC on the non-attainment list and exhibit excessive algal growth from high nutrient loadings

BUI considered restored when no persistent or high levels of nuisance algal growths or nuisance algal blooms occur for 2 consecutive monitoring cycles

Properties that cause AOC BUI impairment are unnatural or natural algal growths which are exacerbated by human activities

Must be persistent and high enough levels to be a nuisance

Eutrophication and Undesirable Algae

Current Status



CSOs and other point sources for nutrients have not been fully controlled



Non-point sources continue to play a role in smaller algal blooms within the AOC



Two large-scale sediment remediation projects will lessen eutrophic conditions in the lower river



Habitat restoration projects within the Middle Rouge will assist with eutrophication in the impoundments



Long-term monitoring data will be needed for further assessment of the BUI



Local criteria?

Restrictions on Dredging

Historical Context



The maintained commercial navigation channel exists only in the lower four miles of the of the Main Branch of the Rouge River.

The known remaining contaminated sediment "hot spots" are found in this lower portion of the river downstream of Michigan Ave are include PCBs, oils, metals, and polycyclic aromatic hydrocarbons (PAHs)



PCBs have caused fish consumption advisories throughout this reach and further upstream

Restrictions on Dredging

State Removal Criteria

The most recent routine dredging in the designated navigational channel does not require use of a confined disposal facility or TSCA-level landfill for dredge spoils due to chemical contamination

Restrictions on Fish Consumption

Historical Context



As a result of the historical chemical contamination in the Rouge River, a fish consumption advisory has been identified as an impaired use in the AOC

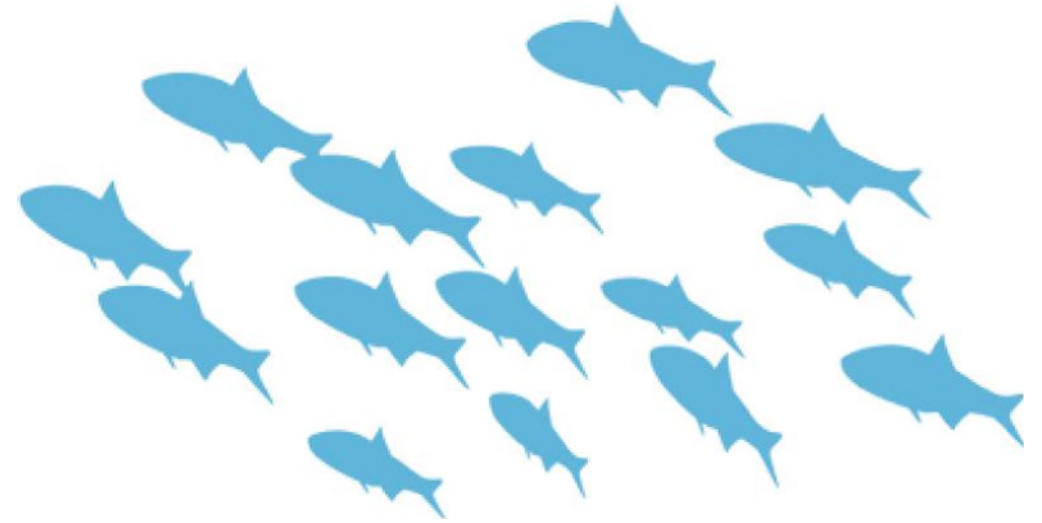


MDHHS provides Eat Safe Fish guidance for the river

Restrictions on Fish Consumption

State Removal Criteria

The beneficial use will be considered restored when the fish consumption advisories in the AOC are the same or less restrictive than the associated Great Lake or appropriate control site



Restrictions on Dredging and Fish Consumption

Current Status

Recent sampling has shown concentrations of various chemicals in the river's sediments, specifically in the lower river, downstream of the Turning Basin

The sediment remediation project in the Lower Rouge River Old Channel (LRROC) has been ongoing and challenging

A draft Remedial Investigation and Feasibility Study for the LRRMC is ongoing

A partnership between federal, state, and local stakeholders has resulted in thorough sediment sampling in the Lower Rouge River Main Channel (LRRMC)

Current LRRMC Estimates*

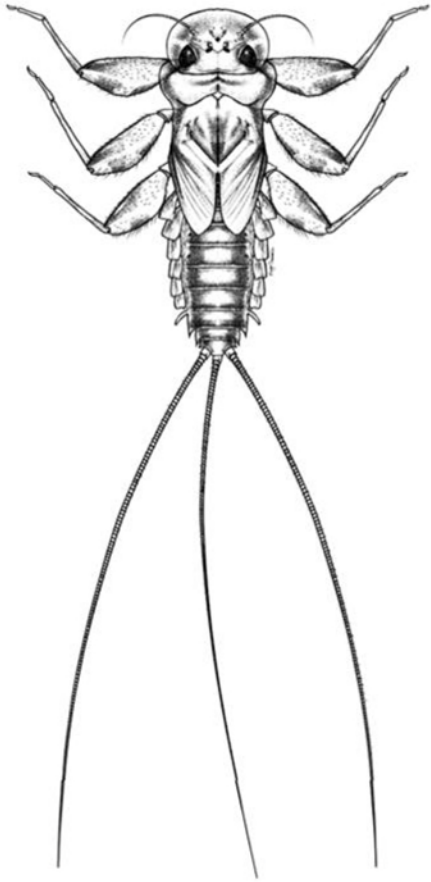
- 486,386 cubic yards of contaminated sediment
- GLLA cost - \$118,000,000
- NFP cost - \$57,000,000
- Orphan site cost - \$7,000,000
- Total Cost - \$182,000,000

*Volume and costs will be better defined by completed RI/FS



Degradation of Benthos

Historical Context



Benthic impairments due to historical PCB contamination from a variety of sources from within the AOC included:

- Erratic stream flows
- Storm water discharges
- CSOs and SSOs
- Siltation from upland and stream-bank erosion
- Illegal spills and discharges
- Municipal and industrial discharges
- Contaminated sediments
- Loss of habitat
- Temperature and DO fluctuations

Degradation of Benthos

State Removal Criteria

An assessment of benthic community that yields a score for the benthic metrics which meets the standards for aquatic life in any 2 successive monitoring cycles

OR

In cases where the benthic degradation is caused by contaminated sediments remedial actions for known contaminated sediment sites are completed (Superfund, GLLA, etc.)

Degradation of Benthos Current Status



Pre-assessment work of the benthic community has been completed



Habitat projects have been completed or are in-progress



The LRROC and LRRMC contaminated sediment sites are primarily confined to the navigation channel but are still significant to the ecosystem as a whole

Degradation of Fish and Wildlife Habitats and Loss of Fish and Wildlife Populations (DFWHLFWP)

Historical Context



Rapid urban expansion has led to degradation of fish and wildlife habitat and populations



Wetlands and other wildlife habitat almost eliminated from the downstream portion of the basin



Geology of the area and the increasing amounts of impervious surfaces has resulted in a variable stream flow and unnatural drainage



Low flows during dry periods and high flows that scour stream channels and banks during rainstorms



Seawalls, dredging, and draining reduced or eliminated hydrologic connections between wetlands and their source of water



Dams and lake level controls upstream have altered natural flows impacting the fish population in the river

DFWHLFWP

State Removal Criteria....but, not really

- The relevant resource management agencies determine a “healthy fish population” exists within the AOC at selected sites (to be determined cooperatively by the RRAC, EGLE, and MDNR)
- Degradation of Benthos BUI is removed
- No waterbodies within the AOC are included on the list of non-attaining waters due to low dissolved oxygen on the most recent CWA Integrated Report – reasonable?

DFWHLFWP Current Status



Multiple habitat restoration projects have been completed; others such as the Concrete Channel and Fordson Island are more long-term



Potential need for post monitoring



Formal assessment of the BUI by RRAC and EGLE technical committee

DFWHLFWP

- If we build it, will they come? Can they sustain?



Degradation of Aesthetics Historical Context

Impaired use due to widespread erosion, in-stream sedimentation, contaminated sediments, localized algal blooms, habitat degradation, and litter throughout the watershed

Studies conducted in the Rouge River during the 1970s documented poor water quality due in part to high turbidity, high suspended solids, and total phosphorus loadings

Degradation of Aesthetics

State Removal Criteria



Monitoring data for two successive monitoring cycles indicate that water bodies in the AOC do not have any of the following physical properties in unnatural quantities which interfere with any designated use:

Turbidity

Foams

Color

Settleable solids

Oil films

Suspended solids

Floating solids

Deposits



These eight properties impair aesthetic values if they are unnatural, persistent, and are exacerbated by human activities

Degradation of Aesthetics

Current Status

Improvement of water quality with the implementation of the state NPDES regulatory program to address stormwater runoff from municipal separate storm sewer systems, industrial sites, and construction sites

Improvements include reduction of in-stream sedimentation and fewer localized algal blooms

Local stakeholders have made significant progress in addressing litter and illegal dumping into the river

Statewide assessment completed in 2011 and identified lower four miles as not meeting criteria

Completion of contaminated sediment projects and implementation of CSO controls will address this BUI

Fish Tumors or Other Deformities Historical Context



In 1995, the MDNR, Fisheries Division, documented the presence of fish tumors and other anomalies in fish throughout the Rouge River



Fish tumors occur due to natural causes, such as viruses or hereditary weaknesses



Contaminants in the Rouge River were believed to cause fish tumors or other deformities in more than one percent of the total fish community

Fish Tumors or Other Deformities

State Removal Criteria

The BUI will be considered restored when no reports of fish tumors or deformities due to chemical contaminants which have been verified through observation and analysis by the MDNR or EGLE for a period of five years

Or

in cases where any tumors have been reported, a comparison study of resident benthic fish, or of fish species which have historically been associated with this BUI, in the AOC and a non-impacted control site indicates that there is no statistically significant difference (with a 95% confidence interval) in the incidence of liver tumors or deformities

Fish Tumors or Other Deformities

Current Status



In 2024, EGLE will be funded the collection of Brown bullhead livers from the Rouge River that were extracted, preserved and analyzed for neoplastic (cancerous) tumors. This will be baseline data prior to the remediation of the contaminated sediment sites



Brown bullhead will be collected again after remediation to compare samples



Further management actions or monitoring may be required to fully assess the BUI

Open discussion for questions or comments

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