

Oak Creek Frontal Lake Michigan TWA WQM Plan 2017

Oak Creek (SE05)



Oak Creek, Upstream of Pennsylvania Avenue
Photo by Craig Helker, DNR



**OAK CREEK FRONTAL LAKE
MICHIGAN TWA WQM PLAN 2017**
Oak Creek (SE05)
HUC: 040400020102
Monitored 2015

WISCONSIN
DEPT. OF NATURAL RESOURCES

EGAD # 3200-2017-11
Water Quality Bureau,
Wisconsin DNR

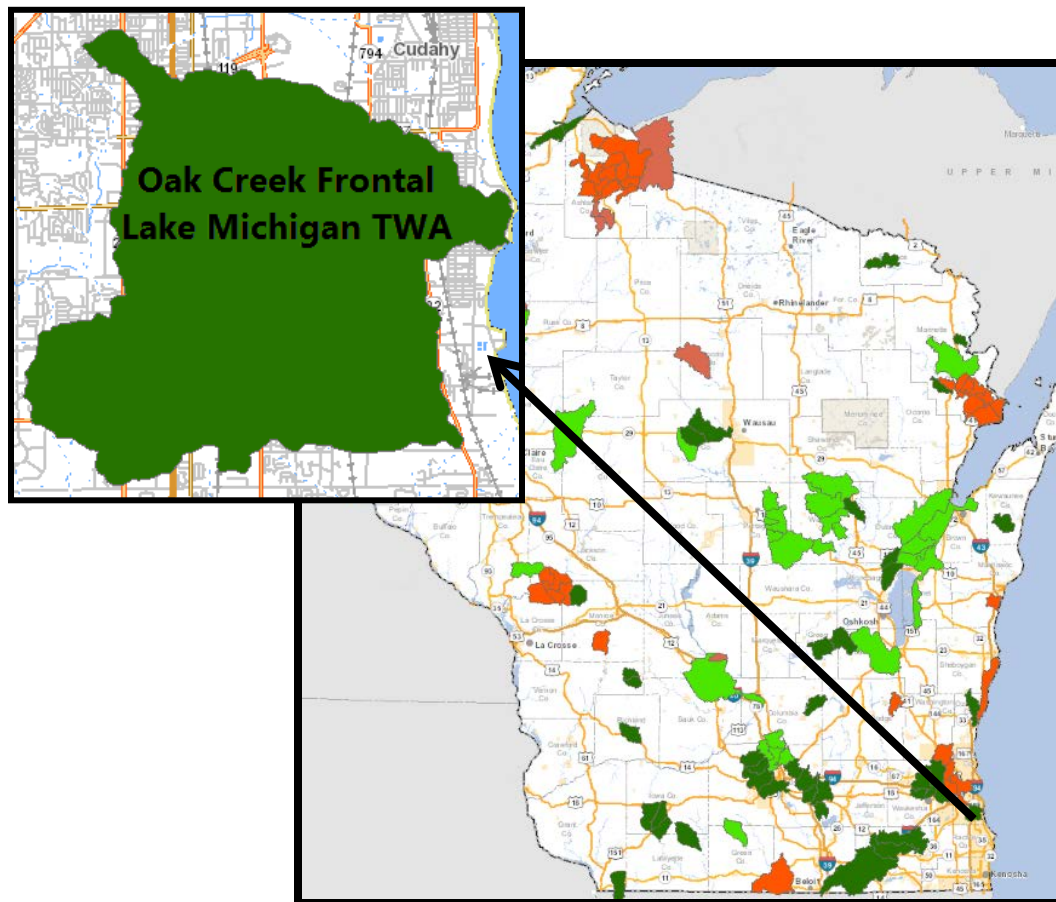
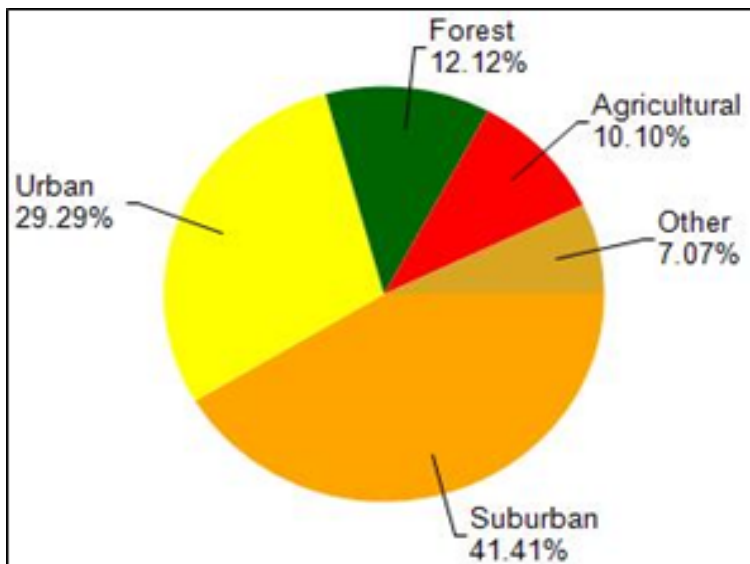


Craig Helker, Stream Biologist

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Oak Creek Frontal Lake Michigan TWA Project Location and Land Use

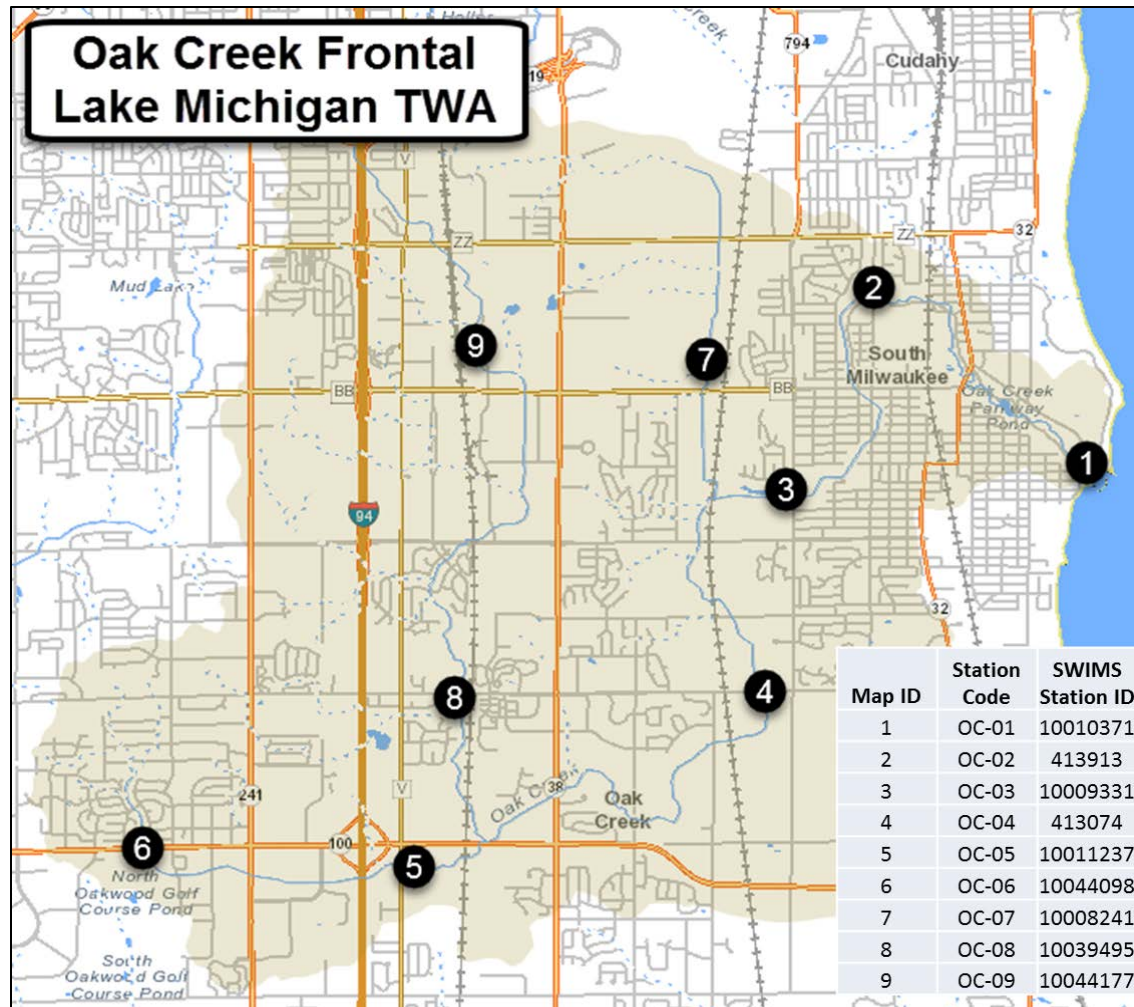
The Oak Creek watershed is 26.19 mi². This watershed has 48.46 stream miles, 28.09 lake acres and 440.81 wetland acres.



Purpose

The Oak Creek – Frontal Lake Michigan Watershed was monitored to provide information for the Restoration Plan for the Oak Creek Watershed.

Fish assemblage, macroinvertebrates, chemistry, and habitat were monitored at nine sites and phosphorus at the pour point of the watershed.



Overall Watershed Condition

Overall, the water quality of Oak Creek and tributaries ranges from good to poor.

Across the watershed, stream habitat is a limiting factor.

Stream channelization, along with associated sedimentation from runoff and bank erosion impairs fish & macroinvertebrate populations.



Study Results – Water Chemistry

- Total phosphorus concentrations ranged from 0.03mg/l at OC-06 to 0.172 mg/L at OC-05.
- Dissolved oxygen was taken once at each of the monitoring stations during 2015 and ranged from 4.1mg/L (OC-09) to 13.0mg/L (OC-04) (Table 5)

Station Code	Total Phosphorus (TP) (mg/L)	Dissolved Oxygen (DO) (mg/L)
OC-01	0.051	7.29
	0.065	
	0.123	
	0.089	
	0.042	
OC-02	0.106	5.9
OC-03	0.097	6.0
OC-04	0.006	13.0
OC-05	0.172	8.0
OC-06	0.03	5.71
OC-07	1.150	4.6
OC-08	0.089	12.21
OC-09	0.0160	4.1

Study Results – Natural Community

In the study the thermal composition of species (cold, warm, or transitional) indicated the sampled stream sites resemble cool-warm systems, with the exception of Mitchell Field Drainage Ditch.

Fish species in this drainage ditch indicated a cool-warm community but historical manipulations may have changed this to a warmer community from a previously cool-cold community.



Oak Creek

Study Results – Macroinvertebrates and Habitat

- The Hilsenhoff Biotic Index ranged Poor with a score 7.98 (OC-09) to Good with a score of 5.304 (SC-01).
- The Macroinvertebrate IBI (MIBI) score ranged from 1.358 to 5.26. The MIBI scores in this watershed suggest challenging conditions resulting from watershed inputs and overall degraded channel conditions.





Management Actions

Management Priorities

- Identify areas where stream habitat should be restored.
- Identify sources of phosphorus and chlorides into the watershed.
- Identify partners and stakeholders to work with to reduce erosion and phosphorus inputs

Restoration Goals

- Expand and improve existing wetlands.
- Improve fish and aquatic life habitat.
- Expand aquatic life passages.

Recommendations

Management Priorities

- Identify areas throughout the watershed where stream habitat can be restored and connectivity improved. Seek funds and programs to support these efforts.
- Identify the primary sources of phosphorus and chlorides in the watershed and pursue local runoff management and river/stream grants to reduce phosphorous and chloride inputs into local water resources.
- Identify potential partners and stakeholders to participate in an overall awareness and behavioral change program in the watershed that could result in reduced erosion and phosphorus inputs.

Restoration Goals

- Work with partners and through grant programs to reduce overall nutrient loads to the watershed to protect existing conditions and reduce impacts to impaired or nearly impaired waters.
- Expand aquatic life passage within the watershed.
- Improve fish and aquatic life habitat.
- Expand and improve existing wetlands.

Recommendations

Monitoring and Assessment Recommendations

- Continue to support continued Citizen Based Monitoring volunteer efforts to track TP and Chlorides in Oak Creek and tributaries.
- Monitor DO conditions on Mitchell Field Drainage Ditch.
- Water quality biologists should continue to monitor Oak Creek and tributaries to document existing conditions as well as track potential improvements from BMP installations.

Management Recommendations for DNR

- Provide input and support for the on-going development of the “Restoration Plan for the Oak Creek Watershed”, currently being drafted by the Southeastern Wisconsin Regional Planning Commission with support from the surrounding communities and the Fund For Lake Michigan. Support Plan findings and recommended projects as appropriate, including partnering on and promoting grant eligible projects.
- Federal, state, local governments, and the agricultural community should continue working to improve water quality by decreasing sedimentation, nutrient loads, chloride addition, and stormwater runoff to Oak Creek and tributaries.
- Recruit Citizen-Based Stream Monitors to assist with on-going Watershed monitoring

Recommendations Continued

- Minimize runoff from agricultural areas in the watershed. Goals should include reducing soil erosion, runoff, and meeting nutrient management requirements. Stream bank buffers should be encouraged, as well as relaxing the slope of existing entrenched stream banks.
- Map Invasive Species.
- Continue to expand fishing opportunities within the Watershed, as well as work to remove fish passage impediments, including drop structures, channel blocking woody debris, and beaver dams where documented and appropriate.
- The Department should encourage all communities to continue construction site erosion and stormwater management ordinance enforcement to minimize polluted runoff in developed areas.
- Review wastewater and stormwater discharges in the watershed for compliance.

Management Recommendations for External Partners

- The watershed communities should continue effective implementation of their stormwater programs.
- Continue information and education programs within the municipalities bordering Oak Creek and tributaries.
- Facilitate and provide incentives for increased management by private landowners, organizations, businesses, municipalities and agencies to monitor and control the invasion of non-native species in the watershed.
- Restore and manage wetlands, woodlands, and shorelands in the watershed.
- DNR and community partners should continue to promote stream bank buffers along Oak Creek and tributaries, including lowering stream banks to increase hydraulic connectivity to wetlands.
- DNR and community partners should continue to work on and promote habitat improvement projects on Oak Creek and tributaries, including pursuing the removal of concrete channels, where appropriate. Additionally, where land and partners are available, pursue re-meandering straightened sections of Oak Creek and tributaries.

For more information:

Contact:

- Email: [Craig Helker, WQ Biologist Southern District](#)
- Link to the [TWA WQM Plans website](#)
- Link to [Draft Report](#)

