CHAPTER 4 - DESIGNATED AND DESIRED USES

4.1 Designated Uses of Michigan Waterways

The primary criterion utilized by the Michigan Department of Environmental Quality (MDEQ) for water quality is whether the waterbody meets designated use standards. **Designated uses** are recognized uses of water established by state and federal water quality programs. All surface waters of the State of Michigan are designated for and shall be protected for all of the following uses:

Table 4.1 Definitions for the designated uses for water

	Designated Use	Definition
1	Agricultural use	A use of water for agricultural purposes, including livestock watering, irrigation, and crop spraying.
2	Industrial water supply	A water source intended for use in commercial or industrial applications or for non-contact food processing.
3	Public water supply sources	A surface raw water source that, after conventional treatment, provides a source of safe water for various uses, including human consumption, food processing, cooking, and as a liquid ingredient in foods and beverages.
4	Navigation	A use of water for navigational purposes, such as boating or shipping.
5	Warmwater fishery	A waterbody that contains fish species which thrive in relatively warm water, including any of the following: Bass, Pike, Walleye and Panfish.
6	Fisheries, other aquatic life, and wildlife use	The use of the surface waters of the state by fish, other aquatic life, and wildlife for any life history stage or activity and the protection of fish for human consumption.
7	Partial body contact recreation	Any activities normally involving direct contact of some part of the body with water, but not normally involving immersion of the head or ingesting water, including fishing, wading, hunting, and dry boating.
8	Total body contact recreation (May 1 through October 31)	Any activities normally involving direct contact with water to the point of complete submergence, particularly immersion of the head, with considerable risk of ingesting water, including swimming.
9	Coldwater fishery (designated streams only)	A waterbody that contains fish species which thrive in cold water, including

The Belle River Watershed Advisory Group (WAG) gathered existing information about the watershed to evaluate all designated uses. The designated uses that are impaired have been identified for all water quality concerns in the watershed (Table 4.1).

Table 4.2 Belle River impaired designated uses

Designated Uses	Impaired?	Cause	Impaired Subwatersheds	Sources/Threats
Agricultural Use	No			
Industrial Water Supply	No			
Public Water Supply at Point of Intake	No			
Navigation	No			
Warmwater Fishery	Yes	Low dissolved oxygen	7, 4, 8, 9 , 10, 11, 12, 13, 14, 15, 16	Soil erosion, low flow, temperature, removal of riparian vegetation
Other Indigenous Aquatic Life and Wildlife	Yes	Direct habitat/flow regime alteration	5, 6, 7	Channelization and drain maintenance
		Mercury in water column	22, 23, 24	Atmospheric deposition, illicit dumping of hazardous waste, industrial runoff
Partial Body Contact Recreation	Yes	*E. coli*	18, 19, 20, 21	Animal waste, failing septic systems, sanitary sewer overflows
Total Body Contact Recreation	Yes	*E. coli*	18, 19, 20, 21	Animal waste, failing septic systems, sanitary sewer overflows
Coldwater Fishery	No			

As discussed in Section 3.2.2 of Chapter 3, over 20 miles of Belle River and North Branch Belle River near Imlay City have significant and continuing nonattainment of dissolved oxygen standards. The low dissolved oxygen levels impact the warmwater fishery by potentially changing the composition of the aquatic community. Dissolved oxygen depletion can cause major shifts in the kinds of aquatic organisms found in water bodies. Species that cannot tolerate low levels of DO – mayfly nymphs, stonefly nymphs, and beetle larvae – will be replaced by limited kinds of pollution-tolerant organisms, such as worms and fly larvae. Nuisance algae and anaerobic organisms may also become abundant in waters with low levels of DO. Potential sources of DO demanding pollutants, such as sediments and nutrients, include point and non-point sources. Non-point source loadings of pollutants appear to play a significant role in the DO standard non-attainment in the Belle River Watershed. In order to decrease the sediment oxygen demand and nutrient loads, the loading of suspended sediments to the rivers must be reduced.

The impaired Other Indigenous Aquatic Life and Wildlife designated use is a result of flow and habitat changes attributable to drainage practices, low summertime base flows, and high temperatures. As discussed in Section 2.3 of Chapter 2, there have been significant impacts to rivers and streams, including

channelization and dredging. These impacts degrade and homogenize aquatic habitat, thereby negatively impacting aquatic organisms. Additionally, the low base flows and high temperatures negatively impact aquatic communities by providing inadequate conditions for many aquatic species to survive. As these impacts are not the result of a direct pollutant, a TMDL will not be developed for these impaired subwatersheds.

As determined in the 2014 Integrated Report, subwatersheds 18, 19, 20, and 21 are not meeting the designated uses of Total and Partial Body Contact Recreation because of high *E. coli* concentrations. Section 2.1.8 indicates that *E. coli* concentrations exceeded the water quality standard for full body contact (300cfu/100mL). These pathogens may be entering the waterway from sources of fecal contamination to surface waters including wastewater treatment plants, failing septic systems, domestic and wild animal waste, waterfowl, and storm runoff.

The Belle River in not supporting the Designated Use of Other Indigenous Aquatic Life and Wildlife and Fish consumption as a result of mercury in the water column in subwatersheds 22, 23, and 24. A TMDL was scheduled to be developed in 2014 to address mercury pollution. This plan does not address the mercury TMDL, as most mercury is entering the watershed via atmospheric deposition from industrial sources.

Additionally, part of the North Branch of the Belle River in subwatersheds 5, 6, and 7 has been found to be not supporting the designated use for Other Indigenous Aquatic Life and Wildlife due to direct habitat alterations and other flow regime alterations. This issue is addressed throughout the WMP, but the MDEQ will not be developing a TMDL because this impairment is not the result of a direct pollutant, thus an allowable pollutant level cannot be established.

4.2 Desired Uses of the Belle River Watershed

In addition to water quality concerns, desired uses within the watershed have also been identified (Table 4.2). A **desired use** is simply how local stakeholders might want to use the watershed or how they might want it to look (DEQ, 2000a). Desired uses are important because they help encourage community support for overall project activities and are also important in helping to foster community support in the development and implementation of a successful WMP. The Belle River WAG, along with public input from two public meetings held in early 2014 and a public opinion survey, developed the desired uses.

Table 4.3 Summary of desired uses for the Belle River Watershed

DESIRED USES FOR THE BELLE RIVER	
I. Manage Large Woody Material in Priority Areas a) Prioritize management efforts b) Develop financial structure to sustain an inspection and maintenance program in priority areas c) Obtain financial commitments from local municipalities d) Educate landowners about the benefits of woody material	**II.** Support the River as a Recreational Asset a) Support St. Clair County's proposed Blueway Paddling Route (King Road to St. Clair River) b) Increase public access to the river c) Manage large woody material and clean dumping sites along Blueway Paddling Route d) Protect healthy aquatic habitat e) Protect healthy riparian buffers f) Ensure *E.coli* water quality standards are met
III. Protect Properties from Flooding a) Protect the floodplain from fill or encroachment b) Update FEMA maps, if necessary c) Mitigate drainage practices upstream d) Restore wetlands e) Mitigate and/or prevent flashy flows – too high during storms and too low during dry weather	**IV.** Improve Watershed Knowledge a) Increase floodplain awareness b) Educate landowners about the benefits of woody material c) Target riparian land owners with education and participation materials

4.3 St. Clair River Remedial Action Plan

To the extent actions within the Belle River WMP address watershed specific designated uses, many overarching goals of the St. Clair River Remedial Action Plan (RAP) can also be addressed. During the implementation of the Belle River WMP, adjacent resources such as the St. Clair River should be considered due to the economic, recreation, and ecological linkages. Recognizing that all tributaries in the Belle River Watershed ultimately discharge to the St. Clair River, reduction of both point and nonpoint sources of pollution from these areas, as well as protection of unique natural features, will all provide a reduction in the amount of pollutants that may be contributing to the impaired beneficial uses of the St. Clair River.

In 1987, under the Canada-United States Great Lakes Water Quality Agreement, the International Joint Commission (IJC) identified forty-three specific locations in the Great Lakes where action was needed to control and cleanup significant historical pollution problems. The St. Clair River is one of these areas, known as an Area of Concern (AOC) (Figure 4.1).

As a result of the AOC designation, an international public advisory council for the St. Clair River was required to develop and oversee the RAP which identifies actions needed to clean up the St. Clair River and eventually delist it as an AOC. The council officially formed as the St. Clair River Bi-National Public

Advisory Council (BPAC) and includes representatives from various economic sectors, legislators, first nations, government, businesses, industry, agriculture and the public on both sides of the river. BPAC has worked diligently to develop systematic and comprehensive restoration targets for the St. Clair River AOC by first completing the RAP in 1992, with amendments and changes made in 1995, 1997 and 2005.

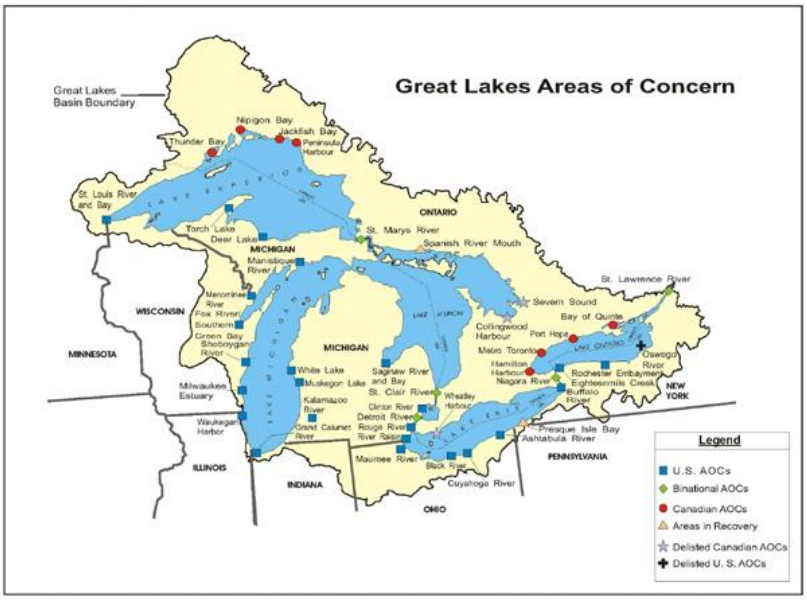

Figure 4.1 The Belle River is a direct tributary to the St. Clair River

Each Great Lake and their connecting rivers have fourteen protected Beneficial Uses by the U.S. and Canadian governments. The St. Clair River AOC had ten Beneficial Use Impairments (BUI), but through almost three decades of collaborative efforts conditions in the St. Clair River are improving. Today only two BUIs remains with three anticipating removal in 2015 and 2016. The goal is to have the St. Clair River delisted as an Area of Concern by 2019.

St. Clair River Beneficial Use Impairments:

1. Restrictions on fish and wildlife consumption
2. Bird or animal deformities or reproduction problems
3. Restrictions on drinking water consumption, or taste and odor – 2015 pending removal
4. Beach closings – 2016 anticipated removal
5. Loss of fish and wildlife habitat – 2016 anticipated removal
6. Degradation of benthos – Removed 2014
7. Degradation of aesthetics – Removed 2012
8. Added costs to agriculture or industry – Removed 2012
9. Tainting of fish and wildlife flavor – Removed 2011
10. Restriction on dredging activities – Removed 2010

Figure 4.2 A recently completed fish and wildlife habitat shoreline restoration project in Cottrellville Township for the St. Clair River Area of Concern