Chapter Five:
Priority Pollutants and Their Sources and Causes

Relying on insight gained from the various watershed inventories, steering committee members prioritized the pollutants, sources and causes affecting the watershed. Using the nominal group process, members were given three votes to cast for the pollutant thought to be the most detrimental to the watershed. The same process was then performed for the sources and causes of the pollutants, with steering committee members selecting three of each.

Priority Pollutants

As indicated on **Table 17**, nutrients and sediments were ranked the top two pollutants of concern. Pesticides, heavy metals, oils and grease, were also identified as pollutants of concern for the watershed.

Table 17: Priority of Pollutants

Pollutant	Ranking
Organics (nutrients, bacteria)	1
Sediments	2
Pesticides	3
Oils, Grease and Metals	4
Toxic Substances	5

Designated Use Pollutants

The waters of the State of Michigan are required by Part 31 of the Natural Resources and Environmental Protection Act, P.A. 451 as amended, to maintain quality sufficient to meet seven designated uses. The designated uses the watershed's lakes and rivers must support are agriculture, industrial water supply, public water supply, navigation (where applicable), warm and cold water fisheries, wildlife and aquatic habitat, and total or partial body contact.

The following designated uses were determined by the steering committee to be adversely affected by one or more of the pollutants stated above. Organic materials (such as nutrients and bacteria) and sediments are the priority pollutants to control for protecting the coldwater fisheries, total/partial body contact, aquatic life, navigation and public water supply. Heavy metals/oils/grease and pesticides were also identified as threatening the designated uses. **Table 18** shows the relationship between the pollutants and their impact on each designated use.

Table 18: Designated Use Pollutants	
Designated Use	**Pollutant**
Warm and Cold Water Fisheries	Organics (nutrients, bacteria) Sediments Heavy Metals/Oils/Grease
Indigenous Aquatic & Wildlife	Sediment Heavy Metals/Oils/Grease Pesticides
Navigation	Sediment
Public Water Supply	Organics (nutrients, bacteria) Bacteria Heavy Metals/Oils/Grease
Total/Partial Body Contact	Organics (nutrients, bacteria)

Sources of Pollution

The main sources of pollution, as identified by the steering committee and based on the results of the nonpoint pollution inventories, were road/stream crossings, stormwater runoff, and fertilizers. Other sources of pollution include streambanks, agricultural activities, development sites, residential lawns, and contamination sites. These pollution sources were then ranked by the steering committee using the process described previously, with a ranking of one being the highest concern. **Table 19** lists these sources by rank and type of pollutant.

Table 19: Sources of Pollution			
Pollutant	**Rank**	**Source**	**Rank**
Organics (nutrients, bacteria)	1	Fertilizers	1
		Wastewater	2
		Residential Lawns	3
		Agricultural Activities	3
Sediments	2	Road/Stream Crossings	1
		Stormwater runoff	2
		Land Development	3
		Streambanks	4
		Agricultural Activities	4
Pesticides	3	Residential Lawns	1
		Agricultural Operations	2
Oils, Grease and Metals	4	Stormwater runoff	1
Toxic Materials	5	Contamination Sites	1

Causes of Pollution

In order to correct existing nonpoint source pollution and prevent future pollution problems from occurring, sources and causes for each pollutant were identified, and steering committee members were asked to select the causes of pollution they felt were most detrimental to the watershed. Causes of pollution in the Cheboygan River/Lower Black River Watershed are ranked in **Table 20** below, with a ranking of number one indicating the highest priority cause of pollution.

Table 20: Pollutant Causes

Cause of Pollution	Rank	Pollutant Source
Undersized/deteriorating culverts	1	Road/stream crossings
Impervious surfaces (such as parking lots or rooftops)	2	Stormwater runoff
Improper/overuse of fertilizers	3	Residential lawns; agricultural operations
Loss of Greenbelt	4	Land development
Improper/overuse of pesticides	4	Residential lawns; agricultural operations
Uncontrolled livestock access	5	Agricultural operations
Inadequate erosion control	5	Streambanks; road/stream crossings; development sites; access sites; residential lawns; agricultural operations
Improperly sited, designed or maintained septic systems	6	Residential sites
Improper disposal of hazardous household wastes	6	Contamination sites; stormwater runoff
Animal manure	6	Agricultural operations; waterfowl; stormwater runoff
Leaves, grass clippings	7	Residential lawns
Construction activities	8	Development sites
Improper oil disposal		Stormwater runoff