

Chapter 4

Goals and Objectives of the Clinton Main Subwatershed

4.1 Designated and Desired Uses of Waterbodies in the Clinton Main Subwatershed

According to the Michigan Department of Environmental Quality, the primary criterion for water quality is whether the waterbody meets designated uses¹. Designated uses are recognized uses of water established by state and federal water quality programs. In Michigan, the goal is to have all waters of the state meet all designated uses, as listed below that apply to the waterbody. It is important to note that not all of the uses listed below may be attainable, but that as ultimate goals, they provide a positive direction toward which the subwatershed can move. These designated and desired uses for the Clinton Main will be managed by the communities and counties through which it traverses according to the above long-term goals.

Clinton Main Subwatershed Designated Uses:

All surface waters of the state of Michigan are designated for and shall be protected for all of the following uses. Those that currently apply to the Clinton Main Subwatershed (according to discussions and understanding of the representative communities) are in **boldface**:

1. Agriculture (N/A)
2. Industrial water supply (N/A)
3. Public water supply at the point of intake (N/A)
4. **Navigation**
5. **Warm water/cold water fishery**
6. **Other indigenous aquatic life and wildlife**
7. **Partial body contact recreation**
8. **Total body contact recreation between May 1st and October 31st**

The Clinton Main is not known to be used as an industrial, public or agricultural water supply at this time; therefore these uses are not addressed further in this plan.

Clinton Main Subwatershed Desired Uses:

The representative permittees of the Clinton Main Subwatershed also developed the following desired uses for the Clinton Main in addition to the designated uses defined above. Note that these uses apply generally to the natural features of the subwatershed, in addition to the waterways themselves:

- Wildlife habitat enhancement
- Preservation/protection of remaining open spaces/natural areas
- Enhance recreational opportunities (boating, trails, canoeing, fishing)
- Flood control (BMP implementation)

The designated uses and desired uses were then assessed for impairments, and potential pollutants and threats were identified based upon the results of the stream inventory and analysis of other available data (Table 4.1). This information is summarized in the table below:

¹ R323.1100 of Part 4, Part 31 of PA 451 of 1994

Table 4.1: Clinton Main Uses, Impairments, and Pollutants / Threats (N/A = currently not applicable; k = known; s = suspected)

Designated or Desired Use	Impaired or Threatened?	Pollutants / Threats
Agriculture	N/A	N/A
Industrial Water Supply	N/A	N/A
Public Water Supply at the Point of Intake	N/A	N/A
Navigation	Impaired in some areas	Hydrology ¹ (k) Debris ² (k) Nutrients (k)
Warm Water/Cold Water Fishery	Impaired in some areas	Sediment (k) Hydrology ¹ (k) Temperature (k) Organic, Industrial & Toxic Compounds (s) Bacteria (k) Salt (s) Low D.O. levels (k) Lack of Aquatic and/or Riparian Habitat (k)
Indigenous Aquatic Life and Wildlife	Impaired in some areas	Sediment (k) Hydrology ¹ (k) Temperature (k) Organic Compounds (s) Bacteria (k) Salt (s) Low D.O. levels (k) Lack of Aquatic and/or Riparian Habitat (k)
Partial Body Contact Recreation	Impaired in some areas	Bacteria (k)
Total Body Contact Recreation (Between May 1 st & October 31 st)	Impaired in some areas	Bacteria (k)
Wildlife Habitat Enhancement	Impaired in some areas	Lack of Aquatic and/or Riparian Habitat (k) Debris ² (k) Loss of natural features (k) Lack of public awareness (k) Limited public awareness (k)
Preservation/Protection of	Impaired in some areas	Loss of natural features (k)

Designated or Desired Use	Impaired or Threatened?	Pollutants / Threats
Remaining Open Spaces/Natural Areas		Lack of public awareness (k)
Enhance Recreational Opportunities (Boating, Trails, Canoeing, Fishing)	Impaired in some areas	Hydrology ¹ (k) Debris ² (k) Bacteria (k) Lack of public awareness (k) Limited public awareness (k)
Flood Control (BMP Implementation)	Impaired in some areas	Sediment (k) Debris ² (k) Hydrology ¹ (k)

¹ Hydrology refers to river flow and includes high flows, low flows and overall flashiness that occur during rain/storm events.

² Debris refers to excessive log jams and trash present in the river.

4.2 Pollutants/Threats, Sources and Causes

Based on the inventory of the critical areas throughout the Clinton Main Subwatershed, a better understanding of the pollutants and threats to water quality in the subwatershed and their sources and causes has been developed. The information listed in the table below summarizes the thirteen (13) pollutants/threats, as determined by the affected permittees that currently have the greatest effect on the subwatershed. The next step was to prioritize them in order to determine which should be addressed first in the subwatershed management plan. Prioritizing the pollutants and threats allows for the greatest pollutant reduction while treating the fewest sources. A clear understanding of the sources and causes of storm water pollution and critical subbasins are also necessary to select the best management practices, or BMPs, that will achieve efficient and effective solutions. Table 4.2 details the nine (9) pollutants and four (4) threatening conditions along with accompanying sources and causes within the subwatershed.

Table 4.2: Pollutants/Threats, Sources and Causes

Pollutants/Threats	Sources	Causes/Obstacles	Critical Subbasins
1. Hydrology ¹ (k)	1. Storm water runoff	1. Lack of BMPs 2. Removal of vegetation throughout watershed 3. Increased impervious surfaces 4. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 - 15
	2. Decreased groundwater recharge	1. Lack of BMPs 2. Removal of vegetation throughout watershed 3. Increased impervious surfaces 4. Improper or poor BMP maintenance	All
	3. Lake level management practices	1. Legally established lake levels 2. Lack of subwatershed representation by residents outside lake owner associations 3. Lack of awareness by lake owners in understanding downstream impacts	Basin 1 & 2 Basin 16

Pollutants/Threats	Sources	Causes/Obstacles	Critical Subbasins
2. Sediment (k)	1. Storm water runoff	<ol style="list-style-type: none"> 1. Soil erosion 2. Road & impervious surface maintenance practices 3. Removal of vegetation throughout watershed 4. Lack of BMPs 5. Improper or poor BMP maintenance 6. Inadequate enforcement 7. River flashiness 	Basin 3 - 5 Basin 11 -15
	2. Stream bank erosion	<ol style="list-style-type: none"> 1. Soil erosion 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance 5. River flashiness 	Basin 4-8 Basin 10 & 11
	3. Construction site runoff	<ol style="list-style-type: none"> 1. Soil erosion 2. Road & impervious surface maintenance practices 3. Removal of vegetation throughout watershed 4. Lack of BMPs 5. Improper or poor BMP maintenance 6. Inadequate enforcement 	All
	4. Road-stream crossings	<ol style="list-style-type: none"> 1. Soil erosion 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance 5. River flashiness 	Basin 3 & 4 Basin 14 & 15
3. Nutrients (k)	1. Fertilizer Use	<ol style="list-style-type: none"> 1. Fertilizer application practices 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance 5. Grounds maintenance practices 	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	2. Illicit discharges	<ol style="list-style-type: none"> 1. Illegal dumping 2. Historic cross connections 3. Sanitary sewer overflows (SSOs) 4. Inadequate enforcement 	All
	3. Storm water runoff	<ol style="list-style-type: none"> 1. Fertilizer application practices 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance 5. Grounds maintenance practices 	Basin 3 - 5 Basin 11 -15
	4. Waterfowl & pet waste	<ol style="list-style-type: none"> 1. Residential feeding of waterfowl 2. Pet waste management practices 	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	5. Failing septic systems (OSDS)	<ol style="list-style-type: none"> 1. Lack of inspections 2. Lack of maintenance 3. Improper siting for new OSDS 	Basin 1 Bain 5 Basin 1 2-15
4. Bacteria (k)	1. Illicit discharges	<ol style="list-style-type: none"> 1. Illegal dumping 2. Historic cross connections 3. Sanitary sewer overflows (SSOs) 4. Inadequate enforcement 	All
	2. Failing septic systems	<ol style="list-style-type: none"> 1. Lack of inspections 2. Lack of maintenance 3. Improper siting for new OSDS 	Basin 1 Bain 5 Basin 1 2-15

Pollutants/Threats	Sources	Causes/Obstacles	Critical Subbasins
		4. Inadequate enforcement	
	3. Waterfowl & pet waste	1. Residential feeding of waterfowl 2. Pet waste management practices	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	4. Storm water runoff	1. Removal of vegetation throughout watershed 2. Lack of BMPs 3. Improper or poor BMP maintenance 4. Economic convenience 5. Waste water treatment plant	Basin 3 - 5 Basin 11 -15
5. Temperatures (k)	1. Storm water runoff	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lake level management practices 4. Lack of BMPs 5. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 -15
	2. Low flow conditions	1. Legally established lake levels 2. Lake level management practices	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	3. Reduced vegetation canopy in watershed	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance	All
	4. Decreased groundwater recharge	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lake level management practices 4. Lack of BMPs 5. Improper or poor BMP maintenance	All
	5. Impoundment structures	1. Improper or poor BMP maintenance 2. Types of outlet structures in impoundments/BMPs	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
6. Salt (k)	1. All impervious surface runoff	1. Salt storage practices 2. Equipment maintenance practices 3. Salt application practices 4. Increased impervious surfaces	All
7. Organic, Industrial & Toxic Compounds (s)	1. Sediments/Pesticides	1. Past contamination 2. Disposal practices 3. Grounds maintenance 4. Lack of BMPs 5. Improper or poor BMP maintenance	All
	2. Storm water runoff	1. Lack of BMPs 2. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 -15
	3. Household hazardous waste	1. Disposal practices 2. Lack of awareness	All
8. Low D.O. Levels (k)	1. Low flow conditions	1. Legally established lake levels 2. Lake level management practices 3. Increased impervious surfaces 4. Removal of vegetation throughout watershed 5. Soil erosion	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16

Pollutants/Threats	Sources	Causes/Obstacles	Critical Subbasins
		6. Grounds maintenance 7. Lack of awareness 8. Fertilizer application practices	
	2. Higher temps	1. Legally established lake levels 2. Lake level management practices 3. Increased impervious surfaces 4. Removal of vegetation throughout watershed	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	3. Storm water runoff	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 -15
	4. Construction site runoff	1. Soil erosion 2. Road & impervious surface maintenance practices 3. Removal of vegetation throughout watershed 4. Lack of BMPs 5. Improper or poor BMP maintenance 6. Inadequate enforcement	All
	5. Aquatic plant overpopulation	1. Fertilizer application practices	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
9. Lack of Aquatic and/or Riparian Habitat (k)	1. Low flow conditions	1. Legally established lake levels 2. Lake level management practices	Basin 1 & 2 Basin 5 - 8 Basin 10 & 11 Basin 16
	2. Storm water runoff	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 -15
	3. Construction site runoff	1. Soil erosion 2. Road & impervious surface maintenance practices 3. Removal of vegetation throughout watershed 4. Lack of BMPs 5. Improper or poor BMP maintenance 6. Inadequate enforcement	All
10. Debris² (k)	1. Trash	1. Illegal dumping 2. Increased impervious surfaces 3. Lack of awareness	All
	2. Storm water runoff	1. Increased impervious surfaces 2. Removal of vegetation throughout watershed 3. Lack of BMPs 4. Improper or poor BMP maintenance	Basin 3 - 5 Basin 11 -15
	3. Log jams	1. Increased impervious surfaces 2. River flashiness 3. Lack of awareness 4. Lack of woody debris management practices	Basin 4-8 Basin 10 & 11

Pollutants/Threats	Sources	Causes/Obstacles	Critical Subbasins
11. Loss of Natural Features (k)	1. Loss of natural features in new development	1. Inadequate local ordinance or enforcement	All
	2. Lack of natural features ordinance	1. Inadequate local ordinance or enforcement	All
	3. Invasive Species	1. Lack of stewardship 2. Inadequate management 3. Natural system interruption	All
12. Lack of Public Awareness (k)	1. Lack of public education	1. Economical constraints	All
13. Limited Public Access (k)	1. Lack of publicly-owned riparian land	1. Economical constraints 2. Lack of long-term planning to obtain easements/property	All
	2. Lack of conservation easements	1. Economical constraints 2. Lack of long-term planning to obtain easements/property	All
	3. Lack of public education	1. Economical constraints 2. Lack of long-term planning to obtain easements/property	All

With a better understanding of both the pollutants and threats that are currently affecting the Clinton Main Subwatershed and their corresponding sources and causes, the goals and the objectives of the subwatershed management plan have been determined and are outlined in the next section.

4.3 Goals and Objectives

Based upon the identification of designated and desired uses, the pollutant/threat assessment, stream inventory results, and community planning analyses, the representative communities of the Clinton Main established seven (7) goals and associated objectives for the long-term protection of the Clinton Main as a unique natural, recreational, and cultural resource for the communities through which it flows.

The goals are generally defined as long-term goals, in that it will take a number of years to achieve many of them. Progress in achieving these goals will be defined by monitoring the physical and biological conditions of the river. The objectives are defined as steps or activities that are recommended for addressing and ultimately achieving the long-term goals. Some of these objectives are already in progress while others need to be implemented.

The designated and desired uses combined with the pollutants, sources and causes for the Clinton Main Subwatershed; provide the basis from which to build long-term goals and objectives for the subwatershed. In the list of goals and objectives below, it is important to realize that the representative permittees are striving not only for the restoration of impairments in the subwatershed, but also for the protection of high quality waters and existing natural features as described in Chapter 3. In addition to defining long-term goals for the restoration and protection of these natural systems through improving ecological parameters, the representative permittees have also incorporated into its goals administrative parameters that will define the long-term institutional framework and sustain the planned restoration and protection efforts over time.

Long-term goals, for the purposes of this plan, are defined as a future condition of the subwatershed water resources toward which the permittees will work. Water resources are defined to include streams, creeks, county drains, the Clinton River, impoundments and lakes located throughout the Clinton Main Subwatershed. Long-term goals are roughly defined as goals that are not expected to be met within the first five years of plan implementation, but are to be met at some time beyond the first five years of implementation. Progress in achieving the goals will be defined by monitoring the physical and biological conditions of the river. These long-term goals have been developed on a subwatershed-wide basis. This means that the goals have been established to identify the direction toward which the subwatershed will collectively strive to improve or protect the condition of the river. As a result, no single community or agency is responsible for achieving all of the goals or any one of the goals on its own. However, the goals represent the desired end product of many individual actions, which will collectively and synergistically protect and improve the water quality, water quantity and biology of the river. The subwatershed communities and agencies will strive together to meet these long-term goals to the maximum extent practicable, by implementing a variety of BMPs over time, as applicable to the individual communities and agencies, relative to their specific priorities, their individual jurisdictions, their authority and their resources.

Objectives, for the purpose of this plan, are defined as short-term measurable objectives and include a general list of activities that are recommended for addressing and ultimately reaching each long-term goal. It should be noted that, given the diversity of the communities and agencies within this subwatershed, there are some objectives that have already been undertaken in some areas, some objectives that need to be implemented in other areas, and some objectives that only apply to certain governmental jurisdictions that have authority over a specific action. Thus, not all objectives apply to all communities and agencies across the subwatershed. Rather, the short-term objectives describe which types of actions are most appropriate to collectively meet the specific long-term goal. The short-term objectives represent incremental steps toward which the long-term goal will be attained.

Due to the complex ecological nature of the response of the river to stormwater management, it is difficult to predict when these goals will be met in the future. Some of the administrative long-term goals might realistically be met in the next few years, whereas some of the ecological goals will require more study and improvements, and may take ten to twenty years to achieve, or more. Rather than attempting to predict when these goals will be achieved, the representative communities will continuously strive to meet these goals by implementing various actions, including structural and non-structural best management practices (BMPs) that are recommended for addressing the various goals. These actions are further outlined in the next chapter.

Listed below are the collective long-term goals and objectives as agreed upon by the subwatershed representatives. These goals are followed by a table that describes the correlation between these goals and the designated uses.

Long-Term Goals and Short-Term Measurable Objectives for the Clinton Main Subwatershed:

Goal 1: Reduce sources of pollution.

Objectives: 1.A. Develop/enhance ordinances, guidelines and/or standards as appropriate, to reduce pollutant loading.

1.B. Develop educational stewardship programs promoting source control to the public.

1.C. Encourage establishment and implementation of innovative BMP programs for effective reduction of pollutants.

Goal 2: Increase public understanding of their role in protecting and enhancing watershed resources.

Objectives: 2.A. Develop and/or promote existing and future public education and outreach programs.

2.B. Promote and encourage participation in educational opportunities for land-use decision makers.

2.C. Collaborate with the Clinton River Watershed Council, the Clinton River Public Advisory Council, SEMCOG, and other regional groups on watershed-wide activities.

Goal 3: Protect and restore Clinton River fisheries.

Objectives: 3.A. Develop and implement a fisheries restoration/enhancement plan.

3.B. Collaborate with and support efforts by regional groups, such as Trout Unlimited (TU) and Michigan Department of Natural Resources (MDNR).

Goal 4: Improve recreational opportunities and access (boating, fishing, trails, canoeing, etc.)

Objectives: 4.A. Develop & implement an opportunities and enhancement plan for passive and active recreation.

Goal 5: Reduce flow variability.

Objectives: 5.A. Address the impact of lake level control structures.

5.B. Develop/enhance ordinances, guidelines and/or standards as appropriate, to reduce storm water peak flows.

5.C. Establish and implement BMPs for effective storm water peak flow reduction from new developments and redevelopments.

5.D. Protect natural areas, such as wetlands and floodplains that naturally function to manage peak flows into the river.

Goal 6: Enhance and protect waterfront areas.

- Objectives:
- 6.A. Develop a riparian corridor management plan.
 - 6.B. Protect and/or establish naturally vegetated buffers for water quality and habitat.
 - 6.C. Promote and encourage participation in educational opportunities for land-use decision makers.
 - 6.D. Improve and protect the aesthetics of the river (odor, trash, color, turbidity, foams, suspended solids, severe log jams, etc.).

Goal 7: Protect and mitigate loss of natural features and open spaces in the watershed.

- Objectives:
- 7.A. Conduct a natural features assessment to determine opportunities for protection/restoration of natural features.
 - 7.B. Develop/enhance ordinances, guidelines and/or standards as appropriate, for managing natural features.
 - 7.C. Participate in local and regional efforts to promote green infrastructure (tree rows, trails, natural beauty roads, utility corridors, waterways, riparian corridors, etc.).

It is the assumption of the representative communities and agencies that if the communities and agencies take action toward the seven goals listed above, that the designated uses appropriate for local creeks and the river, will be under restoration and improved considerably. Taking actions and measuring the progress toward reaching these goals will be characterized by an iterative approach. As described in Appendix C Monitoring and Evaluation for Targets and Load Reductions, the goals and actions will be compared to results of qualitative and quantitative volunteer monitoring, and on a subwatershed and watershed level, to determine reasonable and steady progress toward these goals, related water quality standards, and designated/desired uses over the long-term.

The goals of the subwatershed correlate to the designated and desired uses of the Clinton Main (Table 4.3).

Table 4.3. Correlation of Goals and Designated / Desired Uses of the Clinton Main.

Goals	Designated / Desired Uses											
	A	IW	PW	NV	FI	WL	PR	TR	HE	OS	RE	FC
Reduce sources of pollution.	N/A	N/A	N/A	X	X	X	X	X	X		X	X
Increase public understanding of their role in protecting and enhancing watershed resources.	N/A	N/A	N/A	X	X	X	X	X	X	X	X	X
Protect and restore Clinton River fisheries.	N/A	N/A	N/A		X	X					X	
Improve recreational opportunities and access (boating, fishing, trails, canoeing, etc.).	N/A	N/A	N/A	X	X	X	X	X	X	X	X	
Reduce flow variability.	N/A	N/A	N/A	X	X	X			X		X	X
Enhance and protect waterfront areas.	N/A	N/A	N/A	X	X	X			X	X	X	X
Protect and mitigate loss of natural features and open spaces in the watershed.	N/A	N/A	N/A	X	X	X			X	X	X	X

N/A = Currently Not Applicable

A = Agriculture

IW = Industrial water supply

PW = Public water supply at the point of intake

NV = Navigation

FI = Warmwater / Coldwater fishery

WL = Other indigenous aquatic life and wildlife

PR = Partial body contact recreation

TR = Total body contact recreation (between May 1st & October 31st)

HE = Wildlife habitat enhancement

OS = Preservation/protection of remaining open spaces

RE = Enhance recreational opportunities (boating, trails, canoeing)

FC = Flood Control (BMP implementation)