St. Clair River Tributaries

Watershed Report Card 2013

This report card summarizes surface water quality and forest condition in the St. Clair River Tributaries within the St. Clair Region Conservation Authority jurisdiction from 2001 to 2010. The summary is intended to provide citizens, community groups, municipalities, industries and agencies with information so they can take actions to protect or enhance the environmental features of the watershed. The ongoing monitoring will be reported on a five-year cycle which will help local people manage their local environment. This card uses the 2011 guidelines and updated grading system for Conservation Authority Watershed Report Cards. These new province-wide standards have a more stringent grading system and result in generally lower grades in the intensely developed regions of southwestern Ontario.

This report card is part of a larger report entitled the St. Clair Region Conservation Authority Watershed Report Card (2013) available at www.scrca.on.ca. Further information including methodology, comparisons with the other 13 St. Clair Region watersheds, regional maps and summary tables are also found in that document.

SURFACE WATER QUALITY

Steady **D**

Indicator	St. Clair River Tributaries		St. Clair Region	Provincial Guideline	Indicator Description
	2005	2010	2010		
Total Phosphorus (mg/L)	0.18	**0.16 D Steady**	0.13 D	0.03	*Phosphorus is found in products such as detergents, fertilizer and pesticides, and contributes to excess algae and low oxygen in streams and lakes.*
Bacteria (#*E. coli*/100mL)	No data	**No data**	169 C	100 (recreational use)	*Fecal bacteria are found in human and animal (livestock/ wildlife) waste. Their presence in water indicates fecal contamination and is a strong indicator that other disease-causing organisms are in the watercourse.*
Benthic Score (FBI)	7.0	**6.8 F Steady**	5.9 D	None	*Benthic invertebrates are small animals without backbones that live in stream sediments. The Family Biotic Index (FBI) scores each taxa according to its pollution tolerance and ranges from 1 (healthy) to 10 (severely degraded).*

FOREST CONDITION

D

Indicators	St. Clair River Tributaries		St. Clair Region	Indicator Description
	2005	2010	2010	
Forest Cover %	14.9	**14.3 D**	11.4 D	*Forest Cover is the percentage of a watershed that is forested. Environment Canada recommends that 30% of a watershed should be forest and other natural cover to sustain native plants and animals.*
Forest Interior %	3.7	**3.9 D**	2.0 F	*Forest Interior is the core area inside a woodlot that some bird species need to breed successfully. The outer 100 m perimeter of a woodlot is prone to high predation, sun and wind damage, and alien species invasion.*
Forested Riparian Buffer %	No data	**18.8 D**	21.2 D	*Forested Riparian Buffer is the 30 m area that is forested on both sides of an open watercourse. Natural cover in this area aids in sediment and nutrient removal.*

The changes in forest condition percentages between the two time periods may reflect more accurate mapping, rather than an actual gain or loss of forest cover.

Forest Condition

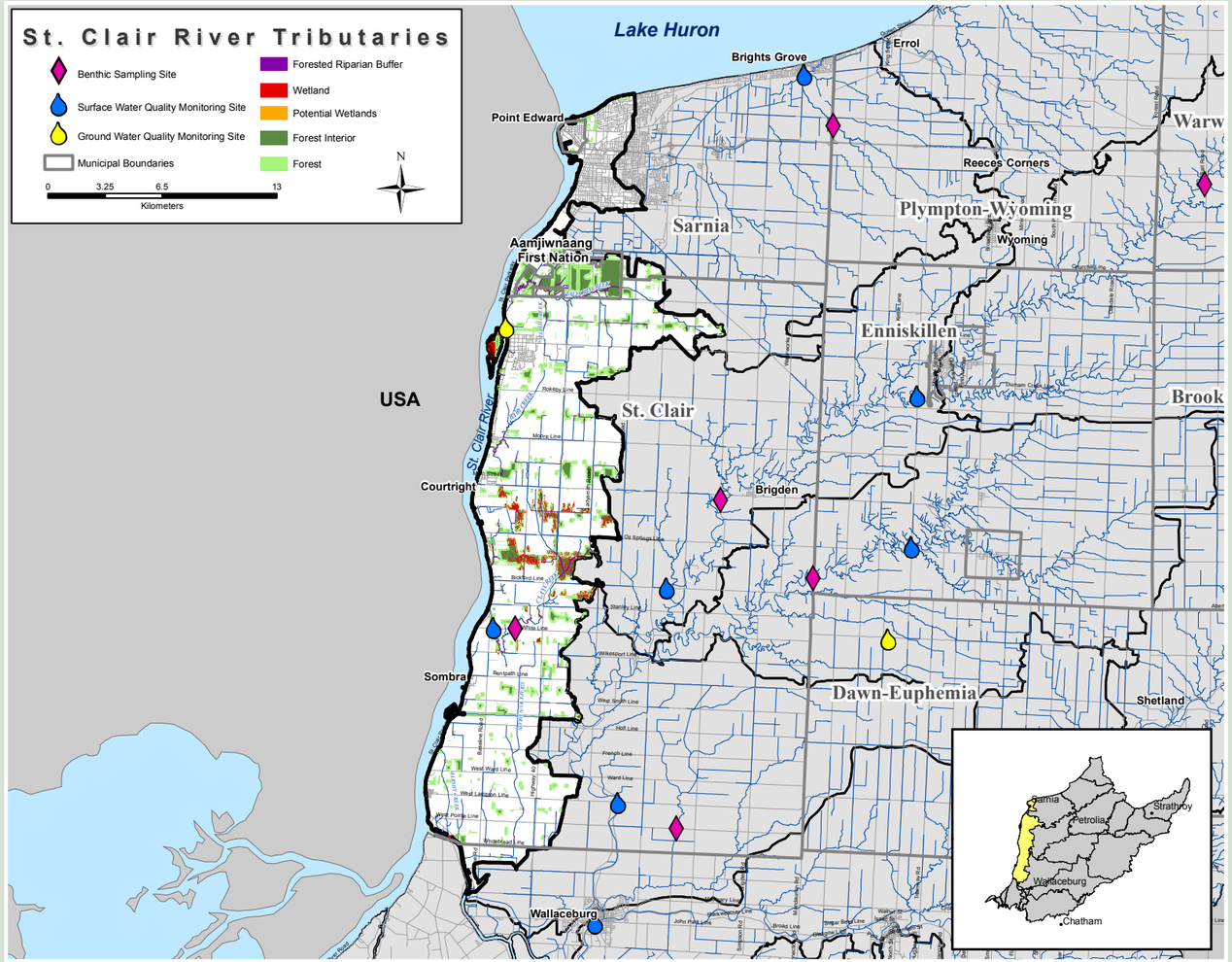
D

The three forest condition indicators all score a D, producing an overall grade of D. This watershed has poor forest cover, poor riparian cover and poor forest interior. The majority of the woodlands are less than 5 hectares in size. The percent forest cover (14.3%) is above average in the St. Clair Region but is still too low for sustainability and the target for southern Ontario is 30% forest cover. The percent forest interior (3.9%) is low indicating that most woodlots are too narrow to support area sensitive species such as Scarlet Tanager and Ovenbird. The target for southern Ontario is 10% forest interior. The percentage of the riparian zone that is forested (18.8%) is high for the St. Clair Region, though lower than the target of 50%.

Although there have been a significant number of tree-planting projects in this watershed, forests grow very slowly, and recent reforestation efforts are not likely to be visible in aerial photography. Young trees are not considered to be forests until the trees are at least 3 m tall and a canopy is developing. Forest loss from land use changes will be visible from above.

Local Solutions to Improve Forest Condition

- To improve the health of individual woodlots, woodlot owners should prepare and follow Forest Management Plans
- Naturalize open urban areas
- Increase forest interior by "bulking up" woodlots with a variety of native species to make the woodlots larger and rounder, to reduce the impact of extreme weather events on tree health



Highlights Since 2005

- 8000 trees were planted at Dow Wetlands for wetland habitat enhancement
- 23 stewardship projects have been completed on private and industrial properties, including wetland enhancement and planting over 36,000 trees and shrubs
- Sydenham Field Naturalists helped plant and maintain a Prairie Passage demonstration site beside Highway 40
- Friends of the St. Clair River continued to support public education and habitat restoration, including engaging students with their support for the rap video on the Remedial Action Plan for the St. Clair River Area of Concern

Surface Water Quality

D Steady

The surface water quality indicators score a D and F producing an overall grade of D (using the provincial grading system).

Levels of phosphorus remain elevated at more than five times the Ministry of the Environment (MOE) guideline. These values are comparable to the 2005 values of six times the MOE guideline.

Fecal bacteria readings are not available for this watershed.

Water quality based on benthic scores remains steady at F since 2005.

Local Solutions to Improve Water Quality

- Work with industry to implement agricultural Best Management Practices on their properties, addressing fertilizer and pesticide use and sediment and erosion control
- Separate the combined sewer outfalls in urban areas, particularly industrial lands
- Develop and maintain streamside buffers along one side of all watercourses, especially municipal drains, to stabilize the banks

Impacts of Climate Change

- We can expect more severe weather: more storms with intense rainfall or snow; and more extended droughts.
- We can expect flooding conditions more often throughout the summer.
- Warmer temperatures will result in shifts in species diversity and will put pressure on species at risk.
- Less predictable weather increases the need to carry out stewardship projects and improved stormwater management to help protect watersheds.

St. Clair River Tributaries
Watershed Features

Area	262 km^2, 6.4% of the St. Clair Region watershed
Municipalities	St. Clair (215 km^2), Sarnia (27 km^2), Chatham-Kent (5 km^2), Point Edward (3 km^2)
First Nations	Aamjiwnaang First Nation (12 km^2)
Physiography	66% bevelled till plain; 28% clay plain; 6% sand plain; 1% beach and shore cliff
Soil Type	80% silt and clay; 7% loam; 5% silt and clay loam; 3% sand loam; 1% bottom land and beach; 4% not mapped
Streamflow	There are no flow monitoring stations in the St. Clair River tributaries.
Precipitation	The average annual precipitation at Sarnia from 2002-2010 was 837 mm. From 2006-2010, levels varied widely from this value, and ranged from 640 to 1080 mm. The previous period, from 2002-2005, was closer to the mean, ranging from 707 to 980 mm.
Air Temperature	The average annual temperature at Sarnia is 8.7°C. From 2006 to 2010, average annual temperatures were close to the normal, ranging from 8.0 to 9.8°C. The previous period of record, 2002-2005, ranged from 7.6 to 9.1°C.
Tileage	18% randomly tiled; 32% systematically tiled; 50% unknown drainage
Watercourse Length & Type	Total length: 276 km Watercourse type: 13% natural; 54% open municipal drain; 1% buried; 33% unclassified
Dams and Barriers	1 public dam on the McKeough Channel, the McKeough Drop structure
Sewage Treatment Plants	Point Edward, Sarnia and Courtright wastewater treatment plants release treated effluent directly to St. Clair River. Sombra wastewater lagoons release treated effluent seasonally to Meyers Drain, a tributary of St. Clair River. Port Lambton wastewater lagoons release treated effluent seasonally to Marshy Creek Drain, a tributary of St. Clair River.
Fisheries Resources	43 fish species have been recorded. Game fish include Northern Pike, Largemouth Bass and Yellow Perch. No freshwater mussel species have been documented, but more sampling is needed.
Species at Risk	Plants: Blue Ash, Butternut, Dense Blazingstar, Climbing Prairie Rose, Shumard Oak, Swamp Rosemallow, White Prairie Gentian, Showy Goldenrod Reptiles: Butler's Gartersnake, Blanding's Turtle, Snapping Turtle Birds: Bobolink, Northern Bobwhite, Peregrine Falcon Fish: Channel Darter, Spotted Sucker, Grass Pickerel, Northern Brook Lamprey
Stewardship Projects	23 stewardship projects have been completed in this watershed from 2006 to 2010, including the planting of 36,860 trees and shrubs. Memorial Forest and Conservation Area tree planting from 1988 to 2012 includes an additional 10 projects (307 trees and shrubs).
Groundwater	There is a deep bedrock aquifer between Sombra and Port Lambton, created from rainfall that occurred thousands of years ago. The groundwater has methane and hydrogen sulfide and is brackish with a high sodium and chloride content. Aamjiwnaang and most municipal residents receive their water from the Lambton Area Water Supply System on Lake Huron.
Wetland Cover	330 ha (1.3% of the watershed) are identified as wetlands by MNR. Screening by the SCRCA did not identify any potential wetlands.

Woodlot Size

Size Category	Number of Woodlots	% of Woodlots	Total Woodland Area (ha)	% of Total Woodland Area	Largest Woodlot (ha)
<5 ha	167	57	337	9	262
5-10 ha	46	16	321	9	
10-30 ha	47	16	818	22	
>30 ha	34	12	2,284	61	
Total	**294**		**3,761**		

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