

Upper Sydenham River Watershed Report Card 2013

This report card summarizes surface water quality and forest condition in the Upper Sydenham River watershed 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



Indicator	Upper Sydenham River		St. Clair Region 2010	Provincial Guideline	Indicator Description
	2005	2010			
Total Phosphorus (mg/L)	0.09	0.08 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)	152	202 C Declining	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)	5.9	5.75 C 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



Indicators	Upper Sydenham River		St. Clair Region 2010	Indicator Description
	2005	2010		
Forest Cover %	15.5	16.0 C	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 %	1.5	2.4 F	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	30.9 C	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 score a C, F and C, producing an overall grade of D. This watershed is one of the best within the St. Clair Region for forest cover, forested riparian buffers and wetland cover. However, by provincial standards, this is considered poor forest condition. The majority of the woodlands are less than 5 hectares in size. The percent forest cover (16.0%) is the second highest in the St. Clair Region but is still too low for sustainability. The target for southern Ontario is 30% forest cover. The percent forest interior (2.4%) 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 (30.9%) is one of the highest in the St. Clair Region, though lower than the provincial target of 50%.



Highlights Since 2005

- Private landowners in the watershed completed 17 stewardship projects, including wetland restoration and enhancement and tallgrass prairie establishment
- Volunteers in this watershed supported a wildlife rehabilitation centre at Mount Brydges for injured native wildlife including Species at Risk
- Tree planting projects continued, including Memorial Tree plantings at Clark Wright Conservation Area

Surface Water Quality

C
Steady

This watershed had one of the best water quality grades in the St. Clair Region. The surface water quality indicators scored D, C and C producing an overall grade of C (using the provincial grading system).

Levels of phosphorus are better than average for the region but remain elevated at three times the Ministry of the Environment (MOE) guideline. They have not changed significantly since 2005.

Fecal bacteria readings have improved since 2005, although they continue to indicate ongoing contamination from human and animal waste.

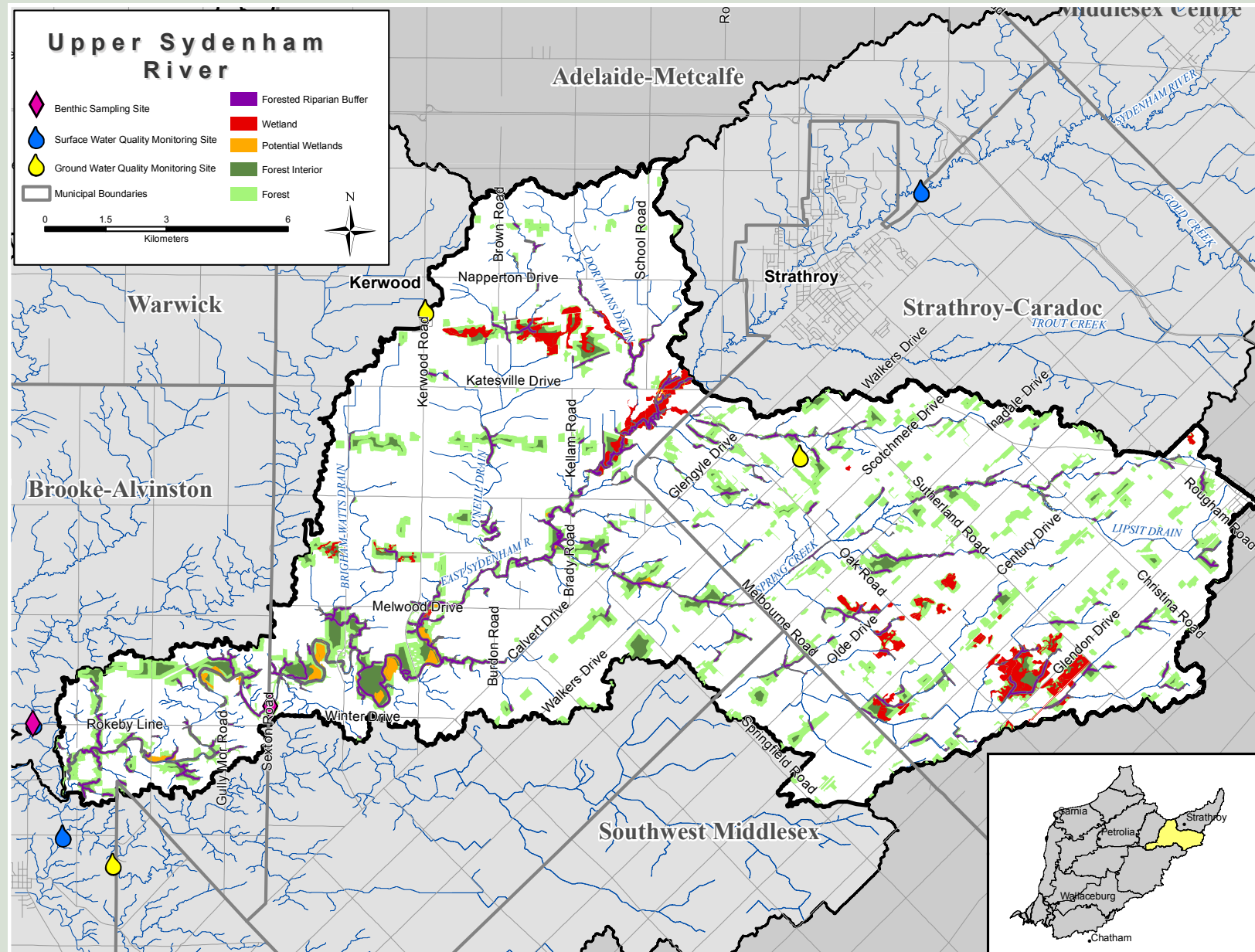
Water quality based on benthic values scores C and has shown some improvement since 2005. The C grade is better than the St. Clair Region average.

Local Solutions to Improve Forest Condition

- Conserve woodlands through designations in Official Plans, supporting the Woodlands Conservation Bylaw, and providing incentives and education for landowners
- Woodlot owners should prepare and follow Woodlot Management Plans
- Increase forest interior by "bulking up" woodlots to make them larger and rounder

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.



Local Solutions to Improve Water Quality

- Implement Environmental Farm Plans, particularly for fertilizer, pesticide and fuel storage and nutrient management
- Fix faulty septic systems and establish a septic maintenance plan
- Develop and maintain streamside buffers along one side of all water-courses, especially municipal drains



Upper Sydenham River Watershed Features

Area	229 km ² , 5.6% of the St. Clair Region watershed					
Municipalities	Adelaide-Metcalf (111 km ²), Strathroy-Caradoc (92 km ²), Brooke-Alvinston (16 km ²), Southwest Middlesex (10 km ²)					
First Nations	None					
Physiography	56% clay plain; 43% sand plain; 1% till moraine					
Soil Type	42% sand loam; 37% silt and clay; 10% loam; 8% bottom land and beach; 2% fine sand					
Streamflow	The mean annual flow measured in the Sydenham at Strathroy is 2.13 cubic metres per second (cms). From 2006-2010, annual flows were usually above this mean, ranging from 1.54 to 3.13 cms. The previous period, from 2003-2005, flows were below the mean, ranging from 1.65 to 1.9 cms.					
Precipitation	The average annual precipitation at Strathroy from 2002-2010 was 917 mm. From 2006-2010, levels were slightly above this value, ranging from 804 to 1241 mm. The previous period, from 2002-2005, was lower, ranging from 682 to 980 mm.					
Air Temperature	The average annual temperature at Strathroy is 8.6°C. From 2006 to 2010, average annual temperatures were usually above the normal, ranging from 8.1 to 9.4°C. The previous period of record, 2002-2005, experienced cooler temperatures with a range of 7.6 to 9.1°C.					
Tileage	17% randomly tiled; 21% systematically tiled; 62% unknown drainage					
Watercourse Length & Type	Total length: 417 km Watercourse type: 18% natural; 37% open municipal drain; 6% buried; 38% unclassified					
Dams and Barriers	6 dams including one public dam at Clark Wright C.A.					
Sewage Treatment Plants	None					
Fisheries Resources	51 fish species and 18 freshwater mussel species have been recorded. Game fish include Northern Pike, Largemouth and Smallmouth Bass, and Rainbow Trout.					
Species at Risk	Plants: American Chestnut, False Hop Sedge, Blue Ash, Green Dragon, Riddell's Goldenrod Reptiles: Eastern Spiny Softshell Turtle, Blanding's Turtle, Snapping Turtle, Northern Map Turtle Mussels: Kidneyshell, Rayed Bean, Round Pigtoe					
Stewardship Projects	17 stewardship projects have been completed in this watershed from 2006 to 2010, including the planting of 9,450 trees and shrubs. Memorial Forest and Conservation Area tree planting from 1988 to 2012 includes an additional 2 projects (6,382 trees and shrubs).					
Groundwater	The Caradoc Sand Plain Aquifer is extensive in the overburden layers of this area, and is generally of good quality and quantity. It is an unconfined aquifer, vulnerable to surface land uses and Mount Brydges has experienced elevated nitrates from agricultural land uses. The groundwater which occurs at the base of the overburden layer tends to have elevated sodium and chloride levels and high iron concentrations and low yield. Most residents rely on groundwater wells.					
Wetland Cover	505 ha (2.2% of the watershed) are identified as wetlands by MNR. An additional 95 ha (0.4% of the watershed) are identified by SCRCA as potential wetlands.					
Woodlot Size	Size Category	Number of Woodlots	% of Woodlots	Total Woodland Area (ha)	% of Total Woodland Area	Largest Woodlot (ha)
	<5 ha	206	60	381	10	177
	5-10 ha	55	16	365	10	
	10-30 ha	53	15	921	25	
	>30 ha	31	9	2,009	55	
	Total	345		3,676		

