Middle East Sydenham
Watershed Report Card 2013

This report card summarizes surface water quality and forest condition in the Middle East Sydenham 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 **C**

Indicator	Middle East Sydenham		St. Clair Region	Provincial Guideline	Indicator Description
	2005	2010	2010		
Total Phosphorus (mg/L)	0.08	**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)	101	**179 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)	6.4	**5.5 C Improving**	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	Middle East Sydenham		St. Clair Region	Indicator Description
	2005	2010	2010	
Forest Cover %	14.5	**14.7 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 %	2.3	**2.7 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	**26.1 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 each scored 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 (14.7%) is one of the highest 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 (2.7%) 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 (26.1%) is higher than average in the St. Clair Region, though lower than the target of 50%.

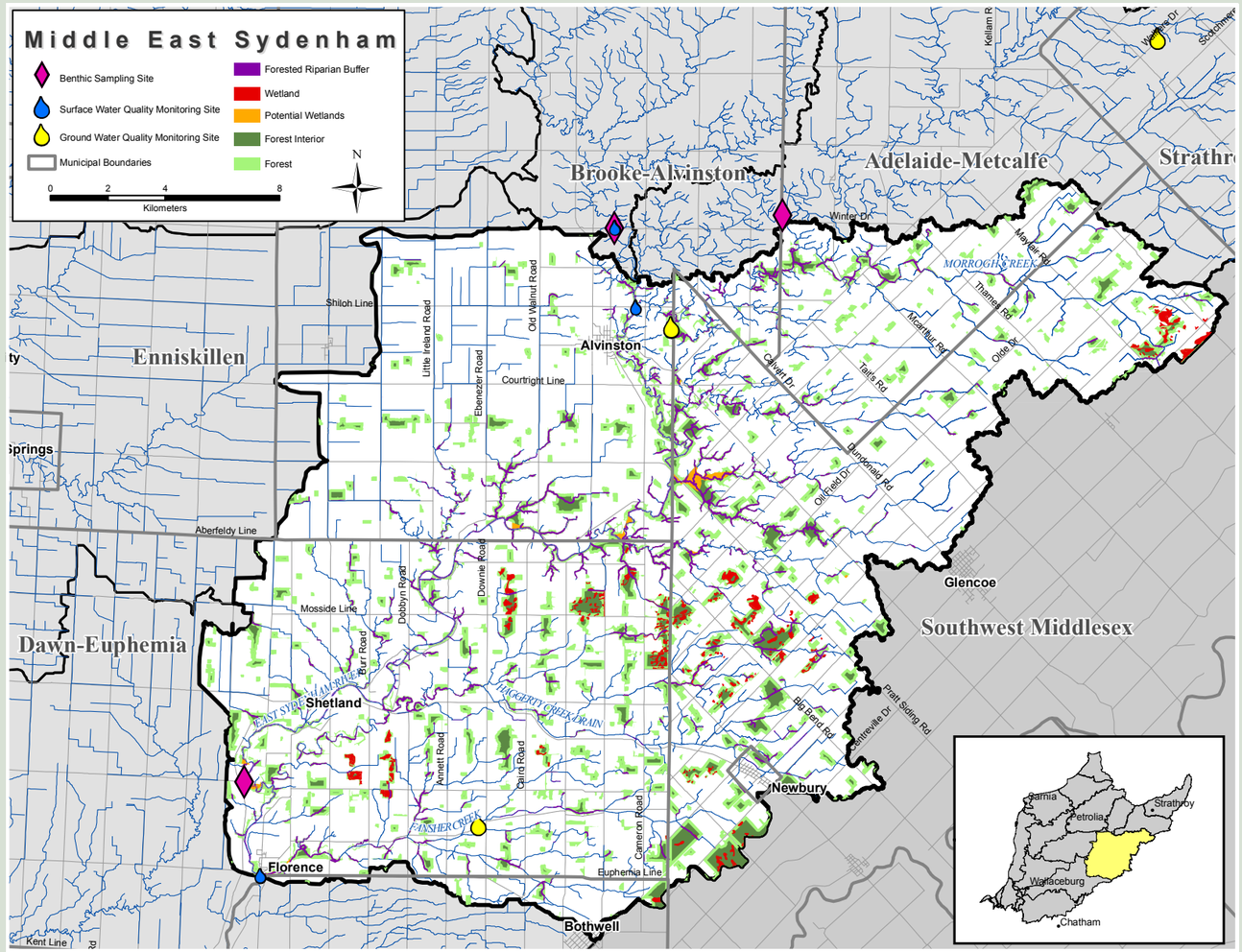
All three forest condition indicators in this watershed are better than the average for the St. Clair Region, although they are poor based on provincial standards. Over the last ten years the majority of the stewardship projects for Species at Risk have been implemented in this watershed which helps to sustain the terrestrial and aquatic diversity.

Local Solutions to Improve Forest Condition

- Increase forest interior by "bulking up" woodlots to make them larger and rounder, to reduce the impact of extreme weather events on tree health
- Woodlot owners should prepare and follow Woodlot Management Plans
- Monitor your woodlots for unauthorized use by ATVs, or garbage disposal

Highlights Since 2005

- Landowners continued to support stewardship actions by completing 30 stewardship projects including tree and shrub planting along watercourses and tallgrass prairie establishment
- Local volunteers annually surveyed the river for basking and nesting sites of rare turtles
- Landowners put personal time and effort into developing large healthy native forests on their properties, attending Lambton County Woodlot Owners Association events and managing their woodlots for wood fibre and species diversity



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Surface Water Quality

C
Steady

The surface water quality indicators scored D, C and C producing an overall grade of C (using the provincial grading system). This grade is better than the St. Clair Region average and has remained steady since the last report card.

Levels of phosphorus remain elevated at almost three times the Ministry of the Environment (MOE) guideline. They have remained consistent since 2005. Fecal bacteria have increased significantly since 2005, and indicate ongoing contamination from human and animal waste.

Water quality based on benthic scores has improved since 2005. The score is now a C grade, which is better than the St. Clair Region average. Benthic conditions may have benefitted from the large number of stewardship projects completed in the last ten years in this watershed. Conditions may also have improved due to increased precipitation and flow levels in the last five years.

Local Solutions to Improve Water Quality

- Implement Environmental Farm Plans, particularly for fertilizer and nutrient management, to reduce nutrient loss
- Fix faulty septic systems and establish a septic maintenance plan
- Municipalities should use Best Management Practices along municipal drains to reduce sediment loss, shade the watercourse and hold on to soil and nutrients

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.

Middle East Sydenham
Watershed Features

Area	538 km², 13% of the St. Clair Region watershed
Municipalities	Dawn-Euphemia (181 km²), Southwest Middlesex (165 km²), Brooke-Alvinston (130 km²), Adelaide-Metcalfe (51 km²), Chatham-Kent (10 km²), Newbury (2 km²)
First Nations	None
Physiography	43% sand plain; 33% clay plain; 24% bevelled till plain
Soil Type	54% silt and clay; 35% sand loam; 5% bottom land and beach; 3% loam; 3% silt and clay loam ; 1% not mapped
Streamflow	The mean annual flow in the Sydenham at the top of this watershed was 7.85 cubic metres per second (cms) at Alvinston with a range close to this mean from 2006-2010, from 5.10 to 12.3 cms. At the bottom of this watershed the mean annual flow at Florence was 12.61 cms, and from 2006-2010 annual flows varied more widely from 7.46 to 19.6 cms. The previous period, from 2003-2005, flows were below the mean at Alvinston, with 5.79, 6.98 and 7.65 cms, and at Florence, with 8.57, 11.9 and 12.2 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 2006-2010, 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	19% randomly tiled; 39% systematically tiled; 42% unknown drainage
Watercourse Length & Type	Total length: 973 km Watercourse type: 11% natural; 54% open municipal drain; 5% buried; 30% unclassified
Dams and Barriers	3 dams including 2 public dams within A. W. Campbell C.A.
Sewage Treatment Plants	Alvinston Wastewater Treatment Plant (WWTP) discharges treated effluent to the Sydenham River below Alvinston at the beginning of this watershed. Newbury WWTP discharges treated effluent to Dolby Drain, part of Haggerty Creek Drain which joins the Sydenham above Shetland. An environmental assessment has been initiated for a municipal treatment system for Florence, at the bottom of the watershed.
Fisheries Resources	54 fish species and 25 freshwater mussel species have been recorded. Game fish include Northern Pike, Largemouth and Smallmouth Bass, Yellow Perch and Walleye.
Species at Risk	Plants: Kentucky Coffee-tree, Climbing Prairie Rose, American Chestnut, Blue Ash, Butternut, Green Dragon, Eastern Flowering Dogwood, Riddell's Goldenrod, Large Whorled Pogonia Reptiles: Blanding's Turtle, Northern Map Turtle, Snapping Turtle, Eastern Spiny Softshell Turtle Birds: Acadian Flycatcher, Cerulean Warbler, Hooded Warbler, King Rail, Bobolink, Prothonotary Warbler, Red-headed Woodpecker Fish: Eastern Sand Darter, Spotted Sucker Mussels: Kidneyshell, Mudpuppy Mussel, Northern Riffleshell, Rayed Bean, Round Pigtoe, Snuffbox, Mapleleaf, Rainbow
Stewardship Projects	30 stewardship projects have been completed in this watershed from 2006 to 2010 including the planting of 10,530 trees and shrubs. Memorial Forest and Conservation Area tree planting from 1988 to 2012 includes an additional 3 projects (11,473 trees and shrubs).
Groundwater	The Bothwell Sand Plain Aquifer is in the overburden in the southern part of this area. It generally has good quality and quantity of groundwater although it is vulnerable to drought and to contamination from surface land uses. The northern area has a deeper aquifer at the interface between the overburden and the bedrock, known as the Fresh Water Aquifer, which is limited in quantity and has elevated chloride. Although the western half of this area is serviced by municipal piped water from the Great Lakes, the majority of residents still use private wells for domestic and agricultural purposes.
Wetland Cover	409 ha (0.8 % of the watershed) are identified as wetlands by MNR. An additional 96 ha (0.2% 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	339	52	657	8	138
5-10 ha	131	20	952	12	
10-30 ha	114	17	1,988	25	
>30 ha	72	11	4,319	55	
Total	**656**		**7,916**		

St. Clair Region Conservation Authority
205 Mill Pond Crescent, Strathroy ON N7G 3P9
E-mail: scrca@scrca.on.ca
Web site: www.scrca.on.ca
Phone (519) 245-3710