

Lower East Sydenham

SUBWATERSHED

Report Card 2018



The St. Clair Region Conservation Authority has prepared this series of 14 subwatershed report cards as a summary of the state of the forests, wetlands, and water resources in the St. Clair Region.





LOWER EAST SYDENHAM SURFACE WATER QUALITY

C GRADE

Surface Water Quality

Using a provincial grading system, the three surface water quality indicators score one B grade, one C grade, and one D grade, producing an overall grade of C for the Lower East Sydenham subwatershed. Total phosphorus (TP) levels are the second lowest in the St. Clair Region but are still elevated at three times the provincial guideline. Maintaining TP levels below the Interim Provincial Water Quality Objective is intended to control excessive plant growth in rivers and streams and to protect aquatic life. *Escherichia coli* (*E. coli*) levels are the third lowest for the St. Clair Region and are within the provincial guideline for safe recreational use of water. The TP and *E. coli* concentrations may be influenced by dilution at the sampling site from the St. Clair River waters backflowing into the lower East Sydenham River. The stream health grade measured by sampling benthic invertebrate communities is better than the average for the St. Clair Region but still suggests that fairly substantial organic pollution is likely.

Local Actions to Improve Water Quality

- Develop an Environmental Farm Plan and implement agricultural Best Management Practices;
- Plant and maintain vegetated streamside buffers on one side of municipal drains and along both sides of other watercourses to stabilize the banks, shade the water, and capture nutrients;
- Fix faulty septic systems and establish a septic maintenance plan;
- Create or restore wetlands to trap nutrients, mitigate flooding, and improve habitat.

INDICATOR	LOWER EAST SYDENHAM			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	0.06 C	0.08 D	0.09 D	0.15 D	0.03 B	Phosphorus is found in products such as detergents, fertilizers, and pesticides. Phosphorus contributes to excess algae growth and low oxygen levels in streams and lakes.
Bacteria (CFU <i>E. coli</i> /100ml)	86 B	50 B	80 B	211 C	100 B (recreational use)	<i>Escherichia coli</i> (<i>E. coli</i>) bacteria is found in human and animal (e.g., livestock, wildlife) waste. Its presence in water indicates fecal contamination and is a strong indicator that other disease-causing pathogens are present in the watercourse.
Benthic Score (FBI)	5.48 C	5.53 C	5.45 C	5.73 C	<5.00 B (unofficial)	Benthic invertebrates are small animals without backbones that live in stream sediments. The pollution tolerances of taxa present in benthic samples are used to calculate the Family Biotic Index (FBI). The FBI ranges from 0 (excellent water quality) to 10 (very poor water quality).
Overall Grade	C	C	C	D		



LOWER EAST SYDENHAM FOREST CONDITIONS

D GRADE

Forest Conditions

For the Lower East Sydenham subwatershed, the three forest conditions indicators score two D grades and an F grade, producing an overall grade of D. The percent forest cover (5.1%) is lowest for the St. Clair Region and is one-sixth of the recommended cover needed to support natural species diversity and water quality. The percent forest interior (0.4%) is the lowest in the St. Clair Region and is considered very poor as it is less than one-tenth of the recommended value. This indicates that most woodlots are too narrow to support area-sensitive species, such as Scarlet Tanager and Ovenbird. The Environment Canada guideline for southern Ontario is 10% forest interior. The percentage of the riparian zone that is forested (12.9%) is among the lowest in the St. Clair Region, and is one-quarter of the 50% target.

Any changes in forest cover, either from forest loss or reforestation efforts, is visible using aerial photography. Although there have been a number of recent tree planting projects in this subwatershed, forests grow slowly, and young trees are not considered to be forests until they are at least 3 m tall and are developing a canopy.

Local Actions to Improve Forest Conditions

- Establish and enlarge woodlots using a variety of native species to reduce the impact of aggressive insects and extreme weather events on tree health;
- Woodlot owners should prepare and follow Woodlot Management Plans;
- Connect woodlots by planting shelterbelts, windbreaks, and buffers along fields and watercourses to enhance wildlife habitat, protect against soil erosion, and improve water quality.

INDICATOR	LOWER EAST SYDENHAM			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	5.9 D	5.4 D	5.1 D	12.0 D	30.0 B	Percent forest cover is the percentage of the watershed that is forested. Forests are necessary to produce oxygen, store carbon, and offer many ecological services that are essential to the well-being of both humans and wildlife.
Percent Forest Interior (%)	0.4 F	0.4 F	0.4 F	2.1 F	10.0 B	Percentage of the watershed that is forest interior. Forest interior is the core area inside a woodlot that is more than 100 m from the edge. The outer 100 m is 'edge' habitat and is prone to high predation, sun/wind damage, and alien species invasion.
Percent Forested Riparian Buffer (%)	No data	12.3 F	12.9 D	23.1 D	50.0 B	Percent forested riparian buffer is the percentage of forest cover within a 30 m zone along both sides of all open watercourses. Natural cover in this zone prevents sediment and nutrients from entering the water.
Overall Grade	D	F	D	D		



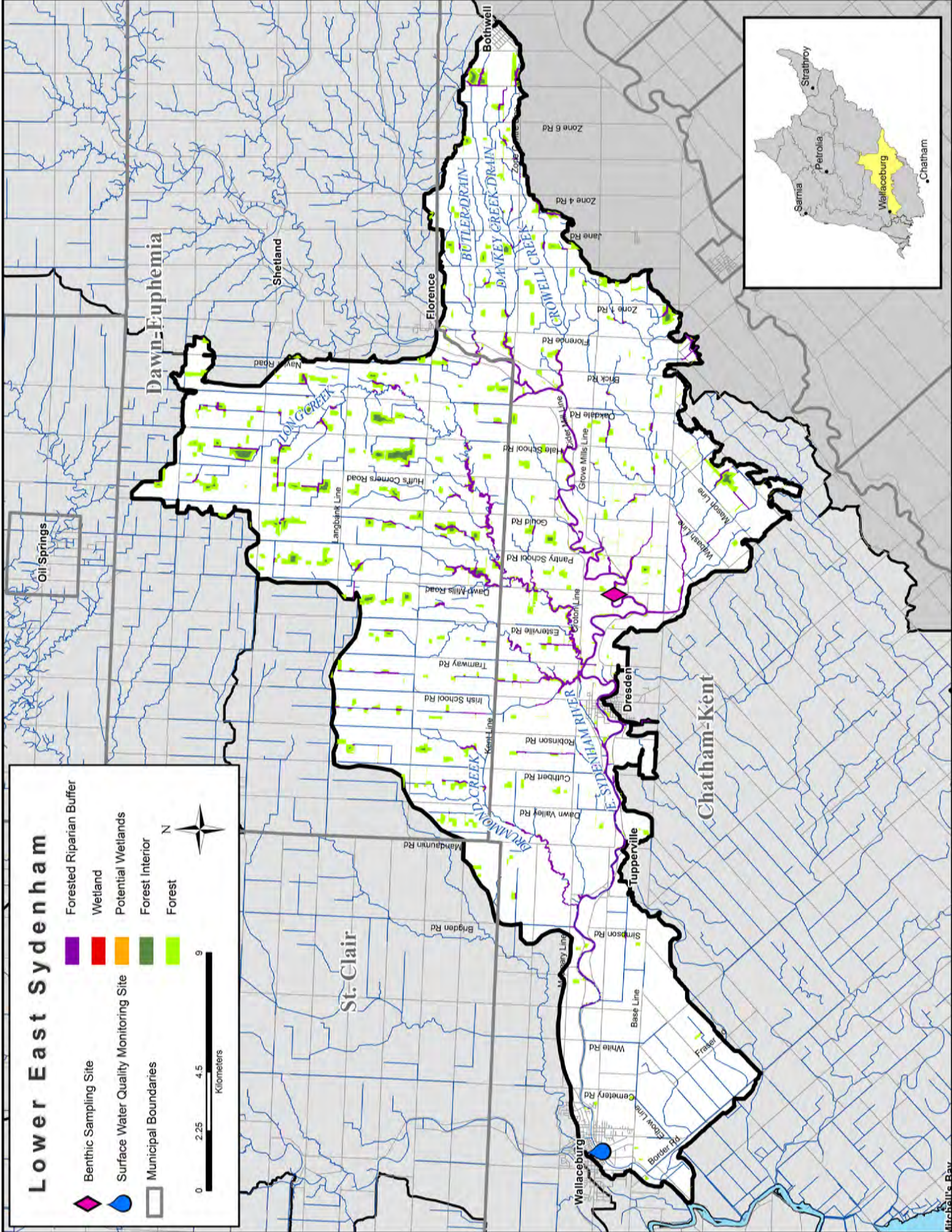
LOWER EAST SYDENHAM WATERSHED FEATURES

Area	397 km ² , 9.6% of the St. Clair Region watershed
Municipalities	Chatham-Kent (245 km ² , 62%), Dawn-Euphemia (150 km ² , 38%), St. Clair (2 km ² , 1%)
Physiography	42% bevelled till plains; 37% sand plains; 21% clay plains; <1% peat and muck
Soil Type	63% silt and clay; 18% sand loams; 7% loam; 6% silt and clay loams; 4% bottom land and beach; 2% not mapped; 1% water; <1% fine sand
Streamflow	At the top of this subwatershed, from 2003 to 2015, the mean annual flow at Florence was 9.17 m ³ /s. From 2011 to 2015 average annual flows were well below this mean, ranging from 3.40 to 3.97 m ³ /s. At the bottom of this subwatershed near Dawn Mills, the river bottom is at lake level therefore flow at Dresden and downstream is influenced by lake levels and wind effects. The mean annual flow at Dresden was 15.12 m ³ /s from 2003 to 2015. From 2011 to 2015 average annual flows ranged around the mean from 8.96 to 19.19 m ³ /s. During the previous period, from 2006 to 2010, average annual flows ranged widely around the subwatershed means – at Florence they ranged from 7.46 to 19.60 m ³ /s and at Dresden they ranged from 8.33 to 27.30 m ³ /s.
Precipitation	The average annual precipitation at Wallaceburg from 2002 to 2015 was 871 mm. From 2011 to 2015, the annual precipitation varied widely around this value ranging from 657 to 1,226 mm. The previous period, 2006 to 2010, was wetter with the values close to or above the mean ranging from 848 to 1,022 mm.
Air Temperature	The average annual temperature at Wallaceburg from 2002 to 2015 was 10.4°C. From 2011 to 2015, average annual temperatures ranged more widely (9.4 to 12.2°C) than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 10.1 to 11.4°C.
Tile Drainage	21% not tiled; 19% randomly tiled; 60% systematically tiled
Watercourse Length and Type	Total length: 588 km Watercourse type: 18% natural, 68% municipal drain, 13% unclassified
Dams and Barriers	Two dams, including one public dam
Sewage Treatment	At the top of this subwatershed, an environmental assessment has been started for a municipal treatment system for Florence. The Dresden Wastewater Treatment Plant (WWTP) outlets treated effluent to the East Sydenham River at the downstream end of Dresden. The Wallaceburg WWTP outlets treated effluent to the Sydenham River at the downstream end of Wallaceburg.











LOWER EAST SYDENHAM WATERSHED FEATURES

<p>Fisheries Resources</p>	<p>Seventy-seven fish species and 19 freshwater mussel species recorded. Game fish include Northern Pike, Largemouth and Smallmouth Bass, and Walleye.</p>					
<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Cerulean Warbler, Chimney Swift, Eastern Meadowlark, Least Bittern, Prothonotary Warbler, Yellow-breasted Chat</p> <p>Fishes: Blackstripe Topminnow, Brindled Madtom, Eastern Sand Darter, Spotted Sucker</p> <p>Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Fawnsfoot, Kidneyshell, Mapleleaf Mussel, Rayed Bean, Round Hickorynut, Round Pigtoe, Salamander Mussel, Snuffbox, Threehorn Wartyback, Wavy-rayed Lampmussel</p> <p>Plants: American Ginseng, Blue Ash, Butternut, Dense Blazing-star, Eastern Flowering Dogwood, Eastern Prairie Fringed Orchid, Goldenseal, Purple Twayblade, Small White Lady's-slipper</p> <p>Reptiles: Blanding's Turtle, Butler's Gartersnake, Common Five-lined Skink, Eastern Foxsnake, Eastern Hog-nosed Snake, Snapping Turtle, Spiny Softshell</p>					
<p>Groundwater</p>	<p>The groundwater that occurs at the bedrock interface is very patchy in distribution and has elevated sodium levels. There are some shallow wells in the scattered sand lenses. Most of the area is serviced by municipally-piped water from the Lake Huron intake at Sarnia. Wallaceburg has an intake on the Chenal Ecarte. Dresden and Tupperville are supplied by the Chatham-Kent intake on Lake Erie.</p>					
<p>Wetland Cover</p>	<p>No wetlands are identified in this subwatershed by the Ministry of Natural Resources and Forestry. Four hectares (0.01% of the subwatershed) are identified by the St. Clair Region Conservation Authority (SCRCA) as potential wetlands. Wetlands are vital to the landscape as they reduce flooding and filter water. Environment Canada recommends a minimum of 6% wetland cover at a subwatershed scale.</p>					
<p>Woodlot Size</p>	<p>Size Category</p>	<p>Number of Woodlots</p>	<p>% of Woodlots</p>	<p>Total Woodland Area (ha)</p>	<p>% of Total Woodland Area</p>	<p>Largest Woodlot (ha)</p>
	<p><5 ha</p>	<p>211</p>	<p>63</p>	<p>459</p>	<p>22</p>	<p>60</p>
	<p>5-10 ha</p>	<p>60</p>	<p>18</p>	<p>432</p>	<p>21</p>	
	<p>10-30 ha</p>	<p>50</p>	<p>16</p>	<p>757</p>	<p>37</p>	
	<p>>30 ha</p>	<p>9</p>	<p>3</p>	<p>393</p>	<p>19</p>	
	<p>Total</p>	<p>330</p>		<p>2,041</p>		



Lower East Sydenham

-  Benthic Sampling Site
-  Surface Water Quality Monitoring Site
-  Municipal Boundaries
-  Forested Riparian Buffer
-  Wetland
-  Potential Wetlands
-  Forest Interior
-  Forest



LOWER EAST SYDENHAM HIGHLIGHTS

Highlights and Progress Since 2011

- There were nine landowner stewardship projects completed in the Lower East Sydenham subwatershed from 2011 to 2018. These projects included tree planting, wetland restoration, and farm equipment modification. More than 11,000 trees were planted and the total value of all the projects was \$80,400 (69% grants).
- For the Lambton Natural Heritage Study led by the County, North-South Environmental surveyed natural areas in nine municipalities from 2010 to 2012. Regionally rare birds or plants were noted at every site, highlighting the importance of maintaining and enhancing even small natural areas.



- Fisheries and Oceans Canada (DFO) monitors populations of native freshwater mussels in this stretch of the East Sydenham as it is a hotspot for mussel diversity. DFO offers an annual mussel identification course to professionals, in partnership with the SCRCA (left photo).
- The Municipality of Chatham-Kent is working with the Sydenham Field Naturalists to restore and preserve a 4-hectare old growth woodland north of Wallaceburg. The property was purchased in 2005 and established as the Wallaceburg Sycamore Woods nature reserve.
- The Belan family has been practicing no-till since 1991 and has more recently adopted cover crops and planting green. The Belans have also hosted farm tours and spoken at events to share their experiences implementing best management practices with other farmers (right photo, PC: Mike Belan).
- The Dresden and District Horticultural Society maintains park areas in town and educates schools on gardening, they have also increased appreciation of native trees and the Sydenham River.



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