

Sydenham Headwaters

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.





SYDENHAM HEADWATERS SURFACE WATER QUALITY

D GRADE

Surface Water Quality

Using a provincial grading system, the three surface water quality indicators score one C grade and two D grades, producing an overall grade of D for the Sydenham Headwaters subwatershed. Total phosphorus (TP) levels are the lowest in the St. Clair Region but are still elevated at nearly 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 highest in the St. Clair Region at over three times the provincial guideline for safe recreational use of water, indicating ongoing fecal contamination. The stream health grade measured by sampling benthic invertebrate communities is close to 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;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations.

INDICATOR	SYDENHAM HEADWATERS			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	0.06 C	0.06 D	0.08 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)	297 C	210 C	324 D	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)	5.91 D	5.40 C	5.71 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	D	D		



SYDENHAM HEADWATERS FOREST CONDITIONS

D GRADE

Forest Conditions

For the Sydenham Headwaters subwatershed, the three forest conditions indicators score a C, D and F grade, producing an overall grade of D. The percent forest cover (14.4%) is above the average for the St. Clair Region but is still only half the recommended cover needed to support natural species diversity and water quality. The percent forest interior (1.6%) is below the average for the St. Clair Region and is considered very poor as it is one-sixth 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 (41.6%) is the highest in the St. Clair Region, though lower than the target of 50%.

Any changes in forest cover, either from forest loss or reforestation efforts, is visible using aerial photography. Although there have been a significant 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	SYDENHAM HEADWATERS			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	13.9 D	14.3 D	14.4 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 (%)	1.3 F	1.6 F	1.6 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	37.8 C	41.6 C	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	D	D	D		



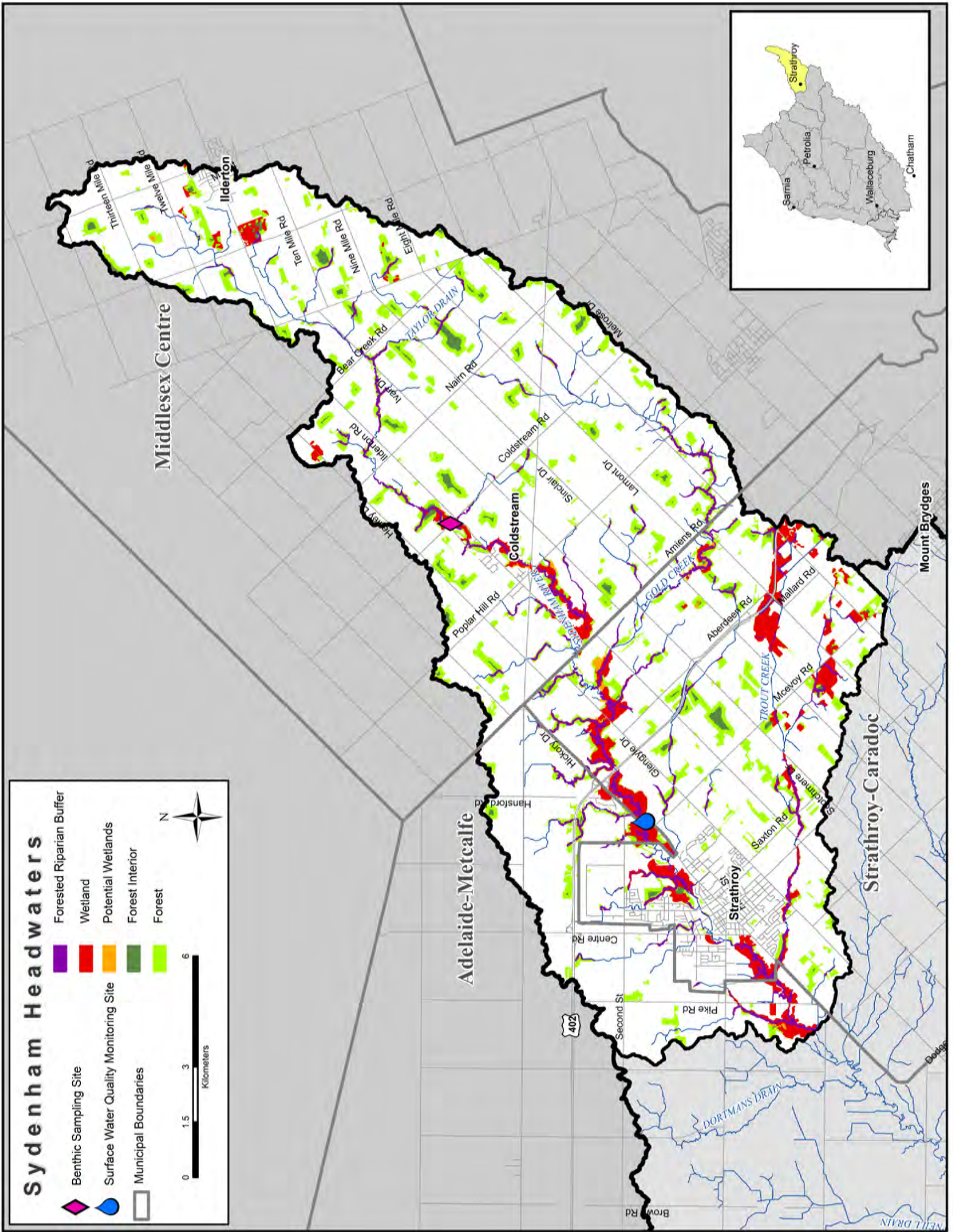
SYDENHAM HEADWATERS WATERSHED FEATURES

Area	224 km ² , 5.4% of St. Clair Region watershed
Municipalities	Middlesex Centre (115 km ² , 51%), Strathroy-Caradoc (79 km ² , 35%), Adelaide Metcalfe (29 km ² , 13%)
Physiography	45% sand plains; 29% till plains (undrumlinized); 24% till moraines; 2% spillways; 1% clay plains
Soil Type	41% silt and clay; 20% sand loams; 15% loam; 11% bottom land and beach; 9% silt and clay loams; 3% not mapped; 1% fine sand; <1% organic
Streamflow	The mean annual streamflow measured in the Sydenham at Strathroy from 2003 to 2015 was 2.08 m ³ /s. From 2011 to 2015, mean annual flows remained close to but slightly below this mean, ranging from 1.92 to 2.09 m ³ /s. During the previous period from 2006 to 2010, flows varied more widely around the mean ranging from 1.54 to 3.13 m ³ /s.
Precipitation	The average annual precipitation at Strathroy from 2002 to 2015 was 912 mm. From 2011 to 2015, the annual precipitation varied widely around this value ranging from 663 to 1,165 mm. The previous period, 2006 to 2010, was wetter ranging from 804 to 1,241 mm.
Air Temperature	The average annual temperature at Strathroy from 2002 to 2015 was 8.5°C. From 2011 to 2015, average annual temperatures ranged more widely from 6.6 to 10.0°C than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 8.1 to 9.4°C.
Tile Drainage	72% unknown drainage; 10% randomly field tiled; 18% systematically field tiled
Watercourse Length & Type	Total length: 248 km Watercourse type: 30% natural, 47% municipal drain, 23% unclassified
Dams and Barriers	Ten dams, including public dams at Coldstream CA, Cuddy Woods Dam and Strathroy CA
Sewage Treatment	The Strathroy Wastewater Treatment Plant (WWTP) discharges treated effluent to the East Sydenham River at the lower end of this subwatershed. One bypass has been reported (2004-2015). Ilderton's WWTP discharges to Oxbow Creek, a tributary of the Thames River. All other homes and businesses in the subwatershed are serviced by private septic systems.



SYDENHAM HEADWATERS WATERSHED FEATURES

<p>Fisheries Resources</p>	<p>Sixty-nine fish species recorded; game fish include Largemouth and Smallmouth Bass, Rock Bass, and Rainbow Trout.</p> <p>Two freshwater mussels species have been recently documented including White Heelsplitter and Giant Floater.</p>					
<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, King Rail, Least Bittern, Yellow-breasted Chat</p> <p>Fishes: Silver Shiner</p> <p>Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Round Hickorynut</p> <p>Plants: American Chestnut, Blue Ash, Butternut, Crooked-stem Aster, Drooping Trillium, Eastern False Rue-anemone, Eastern Flowering Dogwood, False Hop Sedge, Goldenseal, Green Dragon, Willow-leaved Aster, Wood-poppy</p> <p>Reptiles: Eastern Hog-nosed Snake, Queensnake, Snapping Turtle, Spiny Softshell</p>					
<p>Groundwater</p>	<p>Extensive shallow (overburden) aquifers are found in this subwatershed and most of the area has groundwater wells, including very shallow sandpoint wells. Groundwater is generally good quality for drinking but some wells have elevated iron and manganese and all the aquifers are vulnerable to influence from surface land uses. Elevated levels of nitrates have been reported in Strathroy and Mount Brydges. Strathroy and Mount Brydges have recently connected to a Lake Huron water supply. Poplar Hill, Coldstream and rural subwatershed residents are supplied by private groundwater wells.</p>					
<p>Wetland Cover</p>	<p>969 ha or 4.3% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. An additional 43 ha (0.2% 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>228</p>	<p>60</p>	<p>403</p>	<p>13</p>	<p>128</p>
	<p>5-10 ha</p>	<p>64</p>	<p>17</p>	<p>471</p>	<p>15</p>	
	<p>10-30 ha</p>	<p>58</p>	<p>15</p>	<p>890</p>	<p>28</p>	
	<p>>30 ha</p>	<p>26</p>	<p>6</p>	<p>1,455</p>	<p>45</p>	
	<p>Total</p>	<p>376</p>		<p>3,219</p>		



SYDENHAM HEADWATERS HIGHLIGHTS

Highlights and Progress Since 2011

- There were 32 landowner stewardship projects completed in the Sydenham Headwaters subwatershed from 2011 to 2018. These projects included the restoration of wetlands, stabilization of streambanks, and the planting of trees, windbreaks and riparian buffers. More than 82,500 trees were planted and the total value of all the projects was \$555,800 (43% grants).
- The Cuddy Corporation donated a 7-hectare property to the St. Clair Region Conservation Foundation in 2011. The beautiful Cuddy Woods Conservation Area includes a pond, trail, and newly forested lands.
- Mr. Nick Prigioniero generously donated 2.8 hectares of forest and provincially significant wetland abutting the Strathroy Conservation Area to the SCRCA in 2013.



- In 2015, the Municipality of Strathroy-Caradoc, planted 200 trees with local students along boulevards in Strathroy to help green its streetscapes.
- Since 2015, volunteers have planted 600 native trees in Strathroy and Mount Brydges through the TD Tree Days event held each fall (left photo).
- The volunteer group, Enviro-Friends of Coldstream, has been fundraising for and running the Coldstream Conservation Area since 1994, keeping the park beautiful for the community.
- The Coldstream Public Library and SCRCA hold an annual citizen science event (right photo).
- Each year, in celebration of Earth Day, staff from Bonduelle Foods volunteer to do a clean-up of the Strathroy Conservation Area and local trails. In 2014, Bonduelle donated \$10,000 to support the facilities (trails, benches, picnic areas) at the Strathroy Conservation Area.



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