

Plympton Shoreline Tributaries

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.





PLYMPTON SHORELINE TRIBUTARIES 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 Plympton Shoreline Tributaries subwatershed. Total phosphorus (TP) levels are above the average for the St. Clair Region and are nearly six 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 slightly below average for the St. Clair Region and are 1.5 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 worse than the average for the St. Clair Region and suggests that substantial organic pollution is likely and water quality is fairly poor.

Local Actions to Improve Water Quality

- Fix faulty septic systems and establish a septic maintenance plan;
- 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;
- Limit use of equipment on sensitive areas like shorelines and stream banks;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations;
- Organize and participate in beach cleanups.

INDICATOR	PLYMPTON SHORELINE TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	No data	0.07 D	0.17 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)	No data	No data	146 C	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)	No data	5.85 D	5.85 D	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	No data	D	D	D		



PLYMPTON SHORELINE TRIBUTARIES FOREST CONDITIONS

D GRADE

Forest Conditions

For the Plympton Shoreline Tributaries subwatershed, the three forest conditions indicators score two D grades and an F grade, producing an overall grade of D. The percent forest cover (10.8%) is below the average for the St. Clair Region and is one-third of 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 (22.9%) is close to the average for the St. Clair Region, though only half 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 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;
- Connect woodlots by planting shelterbelts, windbreaks, and buffers along fields and watercourses to enhance wildlife habitat, protect against soil erosion, and improve water quality;
- Plant native species such as dune grass, dogwood, and wild rose for landscaping along the shoreline to help prevent shoreline erosion without introducing exotic species.

INDICATOR	PLYMPTON SHORELINE TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	10.9 D	10.8 D	10.8 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 (%)	1.6 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	22.5 D	22.9 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	D	D	D		



PLYMPTON SHORELINE TRIBUTARIES WATERSHED FEATURES

Area	239 km ² , 5.8% of the St. Clair Region watershed
Municipalities	Plympton-Wyoming (181 km ² , 76%), Warwick (54 km ² , 23%), Lambton Shores (3 km ² , 1%)
Physiography	63% bevelled till plains; 37% till moraines
Soil Type	90% silt and clay; 4% sand loams; 3% bottom land and beach; 3% loam
Streamflow	There is no flow monitoring in this subwatershed.
Precipitation	The average annual precipitation at Sarnia from 2002 to 2015 was 812 mm. From 2011 to 2015, the annual precipitation varied around this value ranging from 614 to 986 mm. The previous period, 2006 to 2010, was slightly wetter with the values ranging from 640 to 1,080 mm.
Air Temperature	The average annual temperature at Sarnia from 2002 to 2015 was 8.7°C. From 2011 to 2015, average annual temperatures ranged more widely from 7.1 to 10.4°C than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 8.0 to 9.8°C.
Tile Drainage	31% not tiled; 13% randomly tiled; 56% systematically tiled
Watercourse Length and Type	Total length: 283 km Watercourse type: 20% natural, 60% municipal drain, 20% unclassified
Dams and Barriers	Four dams, including one public dam on Hickory Creek at Esli Dodge CA
Sewage Treatment	The Forest Sewage Lagoons discharge treated effluent to Hickory Creek, downstream of Forest. The majority of rural Plympton residents are serviced by the Plympton-Lakeshore Wastewater Treatment Plant (WWTP) that outlets treated effluent to Lake Huron. Two privately owned sewage treatment systems seasonally discharge treated effluent to Aberarder Creek and Coultis Valley Drain.



PLYMPTON SHORELINE TRIBUTARIES WATERSHED FEATURES

<p>Fisheries Resources</p>	<p>Thirty-two fish species recorded; game fish include Northern Pike, Rainbow Trout, and Smallmouth Bass.</p> <p>Three freshwater mussel species have been recently documented including White Heelsplitter, Cylindrical Papershell, and Giant Floater.</p>					
<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Least Bittern, Loggerhead Shrike, Prothonotary Warbler, Yellow-breasted Chat</p> <p>Fishes: Lake Sturgeon</p> <p>Mammals: American Badger, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Round Pigtoe, Salamander Mussel</p> <p>Plants: American Chestnut, American Ginseng, Blue Ash, Butternut, Eastern Flowering Dogwood, Goldenseal, Shumard Oak</p> <p>Reptiles: Blanding's Turtle, Butler's Gartersnake, Eastern Foxsnake, Queensnake</p>					
<p>Groundwater</p>	<p>There is a deep aquifer at the interface between the overburden and the bedrock, known as the Fresh Water Aquifer, which has high sodium and chloride and is of limited quantity. Most of the residents are supplied by municipally-piped water from Lake Huron.</p>					
<p>Wetland Cover</p>	<p>72 ha or 0.3% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. Screening by the St. Clair Region Conservation Authority (SCRCA) did not identify any other 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>125</p>	<p>52</p>	<p>259</p>	<p>10</p>	<p>95</p>
	<p>5-10 ha</p>	<p>44</p>	<p>18</p>	<p>323</p>	<p>13</p>	
	<p>10-30 ha</p>	<p>46</p>	<p>19</p>	<p>767</p>	<p>30</p>	
	<p>>30 ha</p>	<p>25</p>	<p>10</p>	<p>1,220</p>	<p>47</p>	
	<p>Total</p>	<p>240</p>		<p>2,569</p>		

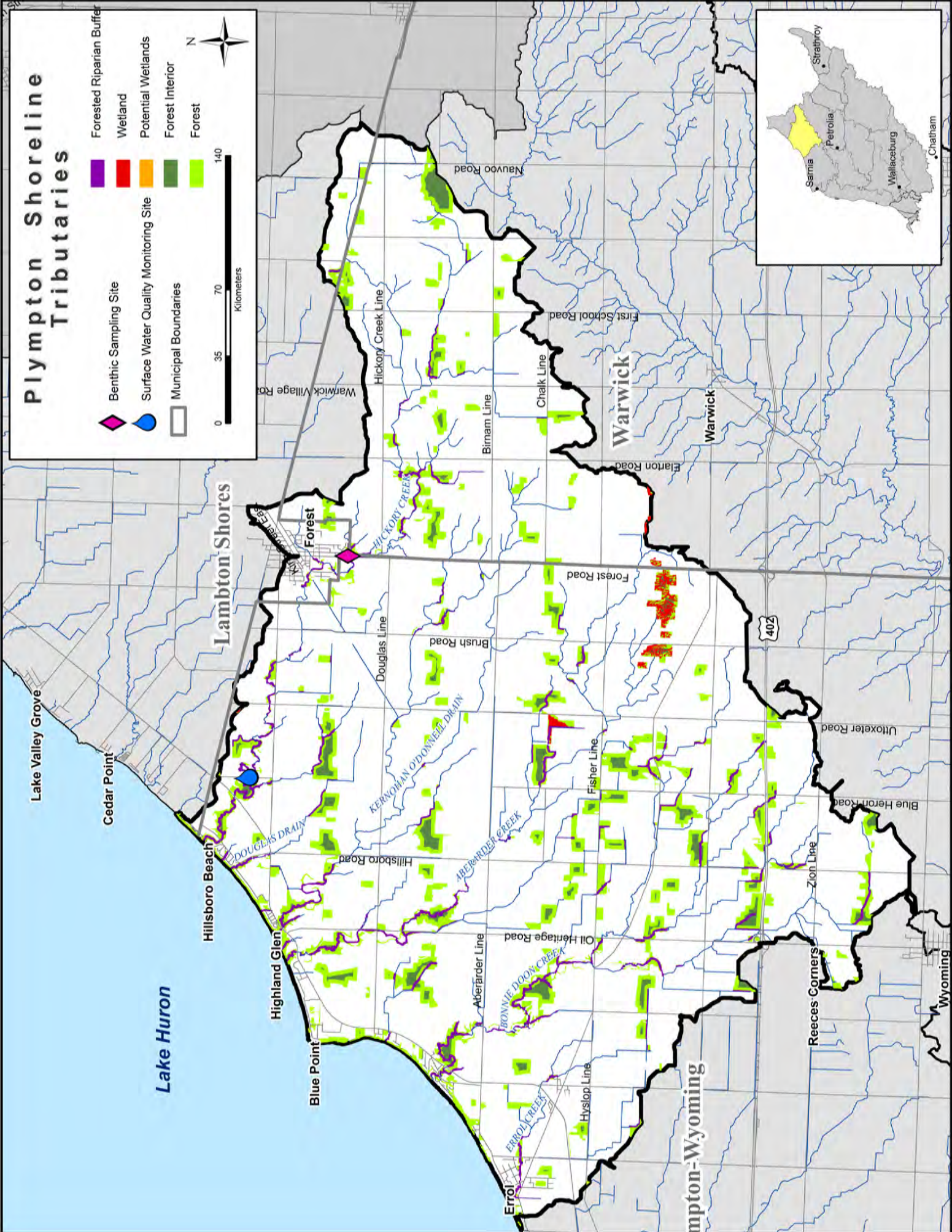
Plympton Shoreline Tributaries

◆ Benthic Sampling Site
● Surface Water Quality Monitoring Site
 Municipal Boundaries

■ Forested Riparian Buffer
■ Wetland
■ Potential Wetlands
■ Forest Interior
■ Forest

0 35 70 140
 Kilometers

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PLYMPTON SHORELINE TRIBUTARIES HIGHLIGHTS

Highlights and Progress Since 2011

- There were 19 landowner stewardship projects completed in the Plympton Shoreline Tributaries subwatershed from 2011 to 2018. These projects included the planting of trees, windbreaks, and cover crops. More than 39,300 trees were planted and the total value of all the projects was \$138,700 (92% grants).
- In 2014, SCRCA staff planted over 1,000 native dune grass plugs at the C.J. McEwen Conservation Area (left photo). Dune grass roots help secure sand on the beach and reduce erosion by wind and water.



- The SCRCA co-hosted a Dunes and Gardens Workshop in summer 2017 with the Ausable Bayfield Conservation Authority. The focus was on conserving sand dunes to protect the Lake Huron shoreline and on improving soil health in gardens and farm fields.
- Tearza and her daughter, Taryn Daly, organized several Great Shoreline Cleanup events at the Highland Glen Conservation Area where they removed more than 215 lbs of garbage and recyclables from the park and beach.
- Volunteer events were held in 2013 and 2014 to plant wetland species and trees as part of the Forest Lagoon Habitat Revitalization Project (right photo). The lagoons support local species and are an important rest stop for migrating birds.
- For the Lambton Natural Heritage Study led by the County, North-South Environmental surveyed natural areas in nine municipalities from 2010 to 2012, providing records for over 350 plants species and 46 species of birds, reptiles, amphibians and mammals. Regionally rare birds or plants were noted at every site, highlighting the importance of maintaining and enhancing even small natural areas.



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