



Surface Water Quality  
**C - Improved**

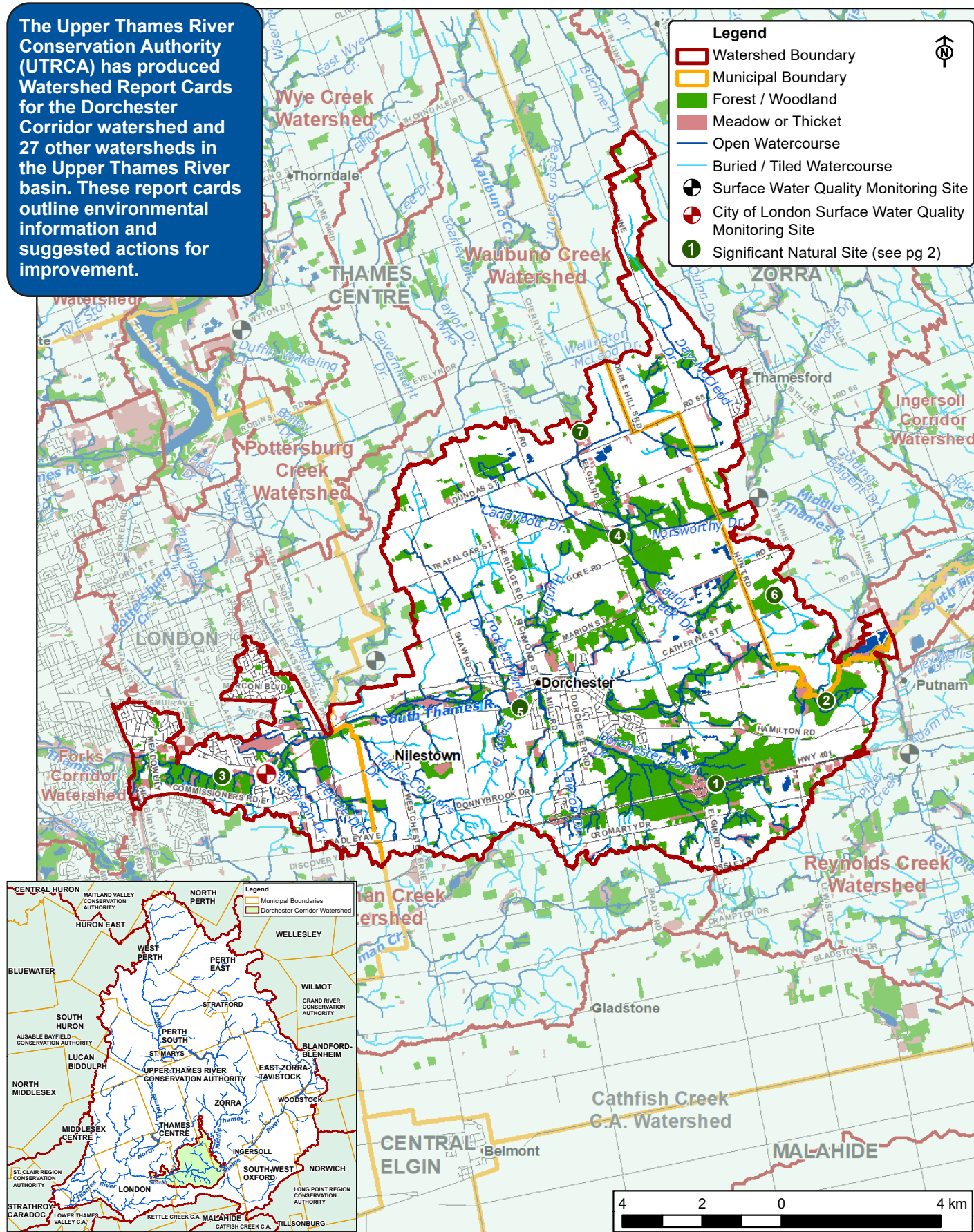


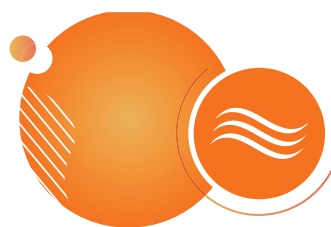
Forest Conditions  
**C - Slight Improvement**

2022 Watershed Report Card

# Dorchester

The Upper Thames River Conservation Authority (UTRCA) has produced Watershed Report Cards for the Dorchester Corridor watershed and 27 other watersheds in the Upper Thames River basin. These report cards outline environmental information and suggested actions for improvement.





# Watershed Features

Feature	Description					
Municipalities	Thames Centre (75%, 106 km <sup>2</sup> ), Zorra (13%, 19 km <sup>2</sup> ), City of London (12%, 16 km <sup>2</sup> ). Total Area: 14,035 ha (140 km <sup>2</sup> ), 4% of the Upper Thames River watershed. 1,205 km <sup>2</sup> lies upstream.					
Significant Natural Sites	Significant Wetlands: (1) South Dorchester Swamp, (2) Putnam/Ivey Tract, (3) Meadowlily Woods, (4) North Dorchester Swamp, (5) Tamarack Swamp. Other Wetlands: (6) Banner Swamp, (7) West Nissouri Swamp WN2D. London Environmentally Significant Area: (3) Meadowlily Woods. (See numbered sites on map. Some sites have more than 1 designation).					
Land Cover	55% agriculture, 24% natural vegetation, 3% open space, 14% urban, 2% aggregates, 2% water. There is 0.5% less agriculture and 0.5% more urban than five years ago. 6% impervious cover (e.g., roofs, roads).					
Population	21,313 in 2021; a 30% increase since 2016					
Soil Type	17% very fine sandy loam, 16% silty loam, 15% sandy loam, 12% silty clay loam, 10% coarse sand, 9% not mapped (urban), 7% organic, 6% fine sandy loam, 6% bottomland, 2% clay loam					
Physiography	55% spillway, 27% undrumlinized till plain, 13% till moraine, 3% sand plain, 1% peat muck, 1% water					
Soil Erosion/Delivery	13% highly erodible (lands that could potentially contribute > 7 tonnes/ha/yr of soil to a watercourse). The average for the Upper Thames River watershed is 9%.					
Tiling and Drainage	24% of the watershed has agricultural field tile (11% random + 13% systematic), 14% urban drainage, 62% no tiling. 3% more of the watershed is tiled/drained compared to five years ago.					
Watercourse Characteristics	Total length: Watercourse type: Temperature: Main channel slope:	312 km of watercourses 45% natural, 27% channelized, 28% buried/closed 22% cool/coldwater, 78% warmwater/unconfirmed 0.28% slope (low/flat); range is 0.09-1.26% in Upper Thames River watersheds				
Dams and Barriers	54 barriers to fish passage have been recorded including the Dorchester Conservation Area Dam and Mill Pond Dam. Other barriers include weirs, perched culverts, stormwater ponds, and beaver dams.					
Spills	2001-2005	2006-2010	2011-2015	2016-2020	Recent reported spills involved fuels, industrial chemicals, and sewage.	
	15	26	16	17		
Sewage Treatment	The Pottersburg Wastewater Treatment Plant (WWTP) services the London portion of this watershed and discharges treated effluent just downstream of the watershed into the South Thames River. The Dorchester WWTP services the Town of Dorchester and discharges in the watershed. All other properties are serviced by private septic systems.					
% Vegetation Cover and Types	Vegetation cover: Composition:	3,290 ha (23.4% of the Dorchester Watershed) 50% deciduous forest, 27% mixed forest, 4% plantation/coniferous forest, 16% meadow, 3% thicket				
Wetland Cover	12.0% (1,690 ha) of the watershed is in wetland cover. Environment Canada (2013) recommends at least 6% wetland cover. 12.2 ha of wetland cover were lost between 2010 and 2015.					
Woodlot or Patch Size	Size Category	Number of Woodlots	Average Size (ha)	Total Woodland Area (ha)	% of Woodland Area	Largest Woodlot (ha)
	Small (< 10 ha)	166	2	402	15	272
	Medium (10-30 ha)	36	16	592	22	
	Large (> 30 ha)	19	87	1648	62	
Fish and Mussels	Fish Species - 47 including two species with historic records only. Gamefish - Smallmouth and Largemouth Bass, Northern Pike, and Brook and Brown Trout. Mussel Species - 17					
Species-at-Risk	Birds - 15 species including Acadian Flycatcher and Bank Swallow. Fish - 3 species including Black Redhorse and Silver Shiner. Insects - Monarch and Rapids Clubtail. Mussels - 5 species including Rainbow and Wavy-rayed Lampmussel. Plants - 5 species including False Hop Sedge and Green Dragon. Reptiles - 6 species including E. Milksnake and Spiny Softshell turtle.					

For more information on watershed features and how they compare to the other 27 subwatersheds, see the tables in the full report: 2022 Upper Thames River Watershed Report Cards at [www.thamesriver.on.ca](http://www.thamesriver.on.ca).





# Surface Water Quality

Surface water quality scores an overall grade of C and has improved since the last report card. Samples were taken downstream at the City of London monitoring site at Whites Bridge. Water quality is affected by local activities and inputs from the upstream section of the South Thames River, and local tributaries including Middle Thames and Reynolds Creek. The UTRCA has a water quality target of a B grade for Dorchester Corridor by 2037.

Phosphorus concentrations have been steady, with some improvement over the past 25 years. Since 2015, phosphorus has improved to current levels. Upstream phosphorus concentrations are high and levels decrease through the watershed to the outlet. The Middle Thames

contributes relatively low concentrations of phosphorus.

Bacteria (*E. coli*) levels have been fairly steady since 2015. Bacteria levels improve from upstream at Ingersoll to the outlet. Reynolds Creek contributes higher levels of bacteria, and Middle Thames contributes lower levels. Nitrate levels have been steady at the Whites Bridge station since 2000 with half of the samples over the aquatic life guideline.

After a decline in the early 2000s, stream health, based on benthic monitoring, has returned to pre-2000s benthic water quality scores. The largely natural channel flowing through a fairly well-vegetated riparian zone, with inputs from several high quality tributaries, supports benthic water quality better than the UTRCA average.

Indicators	Dorchester Corridor					Upper Thames 2016-2020	Provincial Guideline	Indicator Description
	1996- 2000	2001- 2005	2006- 2010	2011- 2015	2016- 2020			
<b>Phosphorus (mg/l) *</b>	0.190 F	0.170 D	0.170 D	0.100 D	<b>0.060 C Improved</b>	0.110 D	0.030 B Aquatic Life	Phosphorus is found in products such as fertilizer, detergents, and waste, and contributes to excess algae and low oxygen in streams and lakes.
<b>Bacteria (CFU <i>E. coli</i> / 100 ml) **</b>	226 C	203 C	250 C	202 C	<b>172 C Steady</b>	211 C	200 C Recreation	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste. <i>E. coli</i> is a strong indicator of the potential to have other disease-causing organisms in the water.
<b>Benthic Score (FBI)</b>	5.62 C	6.53 D	6.08 D	5.83 D	<b>5.66 C Improved</b>	5.99 D	< 5.00 B Target Only	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index (FBI) scores each taxa according to its pollution tolerance.

\*75th percentile, City of London monitoring data. \*\*Geometric mean, City of London data. Province-wide grading system used (see page 8). In 2019, the Provincial Recreational Guideline for *E. coli* changed from 100 Colony Forming Units *E. coli* / 100 ml to 200 CFU *E. coli* / 100 ml.



The Purple Wartyback mussel, found in the South Thames River, has raised bumps (pustules) on the shell exterior while the inside is purple. They can live up to 40 years.

## Climate Change

Climate change continues to be a critical issue. Locally, storms and floods are becoming more intense and frequent, which affects water quality by increasing runoff and erosion. Flooding and increased temperatures also stress native plant and animal species. Many local municipalities and industries are enacting Climate Action Plans that focus on reducing greenhouse gases and developing adaptation strategies, including nature-based solutions. Increasing natural cover (trees, wetlands, and forests) and green cover (agricultural cover crops) will absorb carbon and improve resiliency to climate change impacts.



Extreme flooding in February 2018 in St. Marys, Ontario.



# Forest Conditions

Forest conditions in the Dorchester Corridor watershed have improved slightly since the last watershed report card in 2017, and score an overall grade of C. It should be noted that some of the change is due to improved mapping methods and boundary corrections.

The percent forest cover (18.8%) has decreased slightly from 18.5% in the last report card. The Environment Canada (EC) guideline for sustaining species and water quality in southern Ontario is 30% forest cover. Meadows and thickets add an additional 4.6% for a total of 23.4% natural cover.

The percent forest interior (3.5%) is one of the highest in the Upper Thames River watershed, indicating that several woodlots are large enough to support area sensitive species such as Scarlet Tanager and Ovenbird. However, it is still well below the 10% Environment Canada guideline.

The percent riparian zone forested (50.5%) has increased slightly from 47.5% five years ago due to improved mapping, now meeting the recommended guideline of 50%. Additional riparian areas are in meadow and thicket (13.8%) for a total of 64.3% riparian zone vegetated.

Indicators	Dorchester Corridor 2022*	Upper Thames Average 2022*	EC Guideline **	Indicator Description
% Forest Cover	18.8 C	11.3 D	30.0 B	Percent forest cover is the percentage of the watershed that is forested or wooded. Forest cover includes upland and wetland forest types.
% Forest Interior	3.5 D	1.5 F	10.0 B	Percent forest interior is the percentage of the watershed that is forest interior. Forest interior is the protected core area 100 m inside a woodlot that some bird species require to nest successfully. The outer 100 m is considered "edge" habitat and prone to high predation, wind damage and alien species invasion.
% Riparian Zone Forested	50.5 B	35.7 C	50.0 B	Percent riparian zone forested is a measure of the amount of forest cover within a 30 m riparian/buffer zone adjacent to all open watercourses. Riparian habitats support high numbers of wildlife species and provide an array of ecological functions including water quality protection.

\* 2022 report card data is based on 2015 colour air photography. \*\* EC Guideline - Environment Canada guideline based on "How much habitat is enough?" 2013. Grades based on Conservation Ontario (2022).

## Losses and Gains

### Forest Area Removed

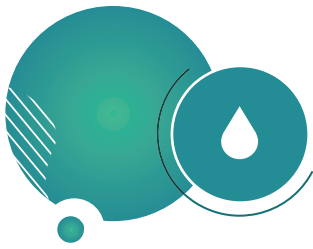
Years	ha	Approximately 21 ha of forest were cleared and converted to other uses (e.g., urban, agriculture, aggregates) between the 2010 and 2015 air photography. An additional 22 ha of forest were cleared in the previous 10 years.
2000-2006	18	
2006-2010	4	
2010-2015	21	

### Forest Area Gained

Years	ha	New data shows that approximately 70 ha of forest were gained between 2010 and 2015 due to forest succession and improved mapping. Several 20- to 30-year-old tree planting sites and some thickets matured to the point where they could be classified as mature woodland in 2015. This data demonstrates the value of continued tree planting and conservation efforts.
2010-2015	70	



Red-bellied Woodpeckers nest locally in tree cavities often at the edge of woodlands. Photo: Sharon Nethercott



## Municipal Water Supply

Areas of the watershed in London are supplied by the London municipal water system by pipeline from its sources in Lake Huron and Lake Erie. All other areas in the watershed are supplied by groundwater. Dorchester has nine municipal wells supplying 4,260 people. Some wells are in a bedrock aquifer. Most of the wells are designated as GUDI (groundwater under direct influence of surface water) as they are in a shallow sand and gravel aquifer.

The four municipal wells in Thamesford (one new well in 2017) supply over 2,430 people. One well draws from a bedrock aquifer and the other two are designated as GUDI wells as they are from a shallow overburden aquifer close to the river. Municipal water is tested and treated.

## Private Wells

Approximately 1,090 private wells are on record in the Dorchester Corridor watershed. Properly constructed deep wells have a lower risk of contamination from the surface than shallow wells. The highest risk to any well is from contaminants and activities closest to the well. The safety, testing, and treatment of a private well is the responsibility of the well owner.

## Groundwater Monitoring

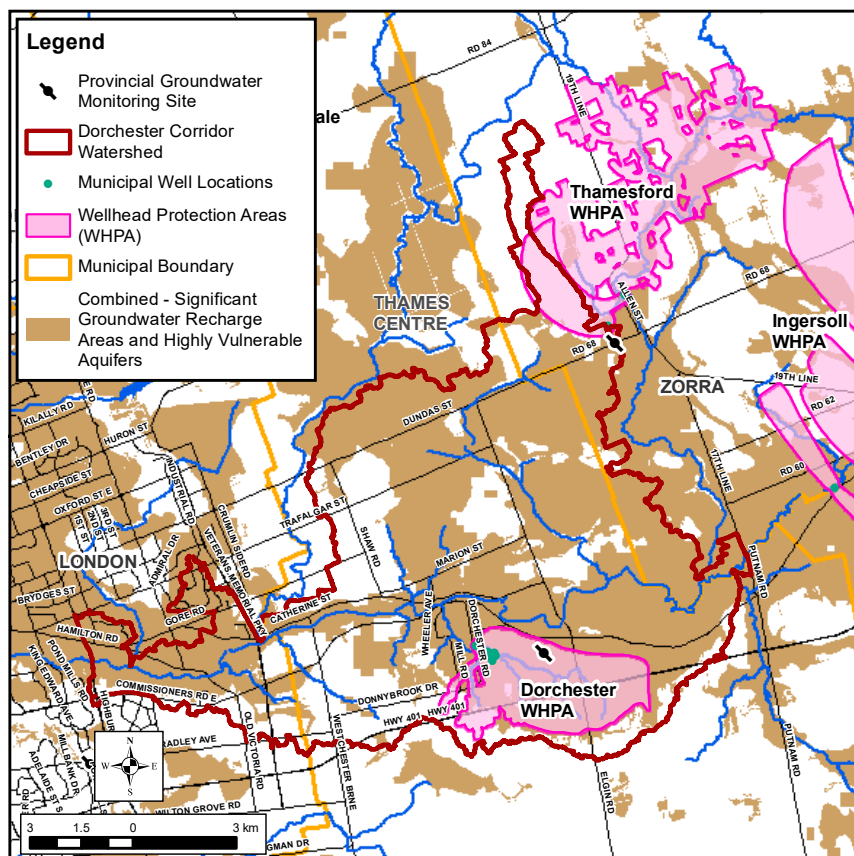
Since 2003, the UTRCA has monitored two Provincial Groundwater Monitoring Network wells in the watershed showing groundwater levels generally decline from May to October and increase (recharge) from late fall to early spring, with the largest increase in March (up to 1.5 m change). Recent data shows the recharge period is shifting later to November to May, with a trend of warmer and drier weather from October to November and cooler temperatures in May. The rate of decline in groundwater levels is directly related to maximum air temperatures. Summer rainfall does not typically affect groundwater levels as evaporation and plant uptake greatly exceeds rainfall, and most rainfall is utilized by plants during summer.

### Did you know?

- About 50-70% of total local streamflow is baseflow from groundwater discharging into streams.

## Drinking Water Source Protection

Local source protection plans have been completed to protect sources of municipal drinking water. The Thames-Sydenham and Region Source Protection Plan (2015) has policies to address risks to municipal water systems. Visit [www.sourcewaterprotection.on.ca](http://www.sourcewaterprotection.on.ca) for information on groundwater resources and Source Protection Plan policies for Dorchester and Thamesford.



## On The Map

### Significant Groundwater Recharge

**Areas:** Areas where a relatively large volume of water makes its way from the ground's surface down to the aquifer.

**Highly Vulnerable Aquifers:** Areas where there is a relatively fast pathway from the ground's surface down to an aquifer, generally making the aquifer more vulnerable to contamination.

**Wellhead Protection Areas:** Areas surrounding the wellhead, through which contaminants are reasonably likely to move toward or reach the well.

**Protecting these areas is very important for the protection of local groundwater as a source of drinking water.**





# Local Actions for Improvement

Individuals, groups, businesses, municipalities, and agencies all have a role in improving the health of the watershed through these suggested actions. For more information on agencies that can help, contact the UTRCA (see page 8).

A number of the local actions listed below are also identified in the following reports:

- London Climate Emergency Action Plan, or 'CEAP' (2021/2022)
- London Wastewater Treatment Operations Master Plan (2021/2022)
- The Thames River (Deshkan Ziibi) Shared Waters Approach to Water Quality and Quantity (Thames River Clearwater Revival, 2019)
- East Park Sewage Pumping Station Upgrades (RV Anderson Assoc. Ltd. for City of London, 2016)
- Upper Thames River Source Protection Area Approved Assessment Report (Thames-Sydenham Source Protection Region, 2015)
- Middlesex Natural Heritage Systems Study (County of Middlesex, 2014)
- Thames Valley Corridor Plan Phase 2B (City of London, 2012)
- Recovery Strategy for the Thames River Aquatic Ecosystem (Thames River Recovery Team, 2007)
- Old Victoria Area Plan (City of London, 2007)
- Dorchester Swamp Management Plan (UTRCA, 1997)

## Local Actions to Improve Surface Water and Groundwater

- Protect and establish buffers (native trees, grasses) along watercourses to cool streams, provide food for aquatic species, stabilize banks, and trap and absorb nutrients and other pollutants.
- Protect and rehabilitate coldwater streams and potential coldwater streams, including Caddy and Dorchester Swamp Creeks.
- Consider dam or barrier removal to improve stream health and fish passage, especially when a barrier no longer serves its intended purpose. There are 52 dams/barriers in this watershed.
- Use drain maintenance methods that protect aquatic habitat (e.g., low flow channels, spot or bottom cleanouts).
- Repair or replace faulty septic systems and ensure proper maintenance of the system.
- Continue to implement agricultural Best Management Practices (BMPs):
  - Establish cover crops to protect soil from erosion, prevent nutrient loss, and build soil health.
  - Reduce nutrient loss from cropland (4R Stewardship Approach: right source, right rate, right time, right place).
  - Use best practices in manure storage and spreading, pesticide and fertilizer storage and application, fuel storage, and restricting livestock access to watercourses.
  - Complete and follow Environmental Farm Plans and Nutrient Management Plans ([www.omafra.gov.on.ca](http://www.omafra.gov.on.ca)).
  - Utilize grants for stewardship work from the UTRCA Clean Water Program ([www.cleanwaterprogram.ca](http://www.cleanwaterprogram.ca)).
- In urban areas, continue the following actions:
  - For new development, implement urban stormwater planning using Low Impact Development (LID), stormwater BMP, subwatershed studies, catchment area planning, and erosion control.
- Incorporate LID into the planning process and promote the implementation of LID techniques, including in Master Plans, Secondary Plans, and any subwatershed studies.
- Consider using a water balance and landscape approach for inbuilt and new development to manage stormwater runoff.
- Maintain base flow to natural heritage features through water balance.
- For existing development, implement pollution prevention and control planning for all aspects of stormwater runoff including combined storm-sewer overflows.
- Continue to upgrade sewer systems where risk of contamination is greatest (e.g., extend sanitary sewers to urban properties on septic systems).
- Minimize use of fertilizers, adhere to Ontario's Cosmetic Pesticide Ban, and utilize the municipal hazardous waste disposal program.



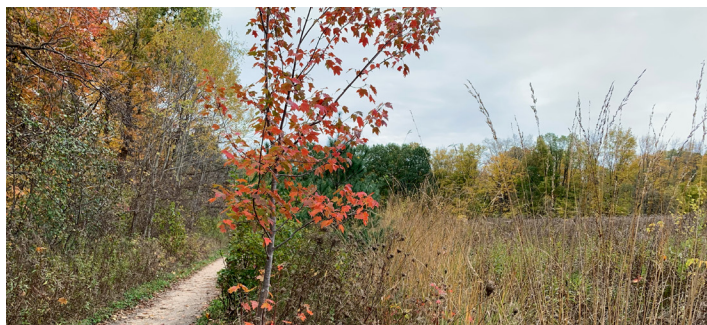
Trilliums blooming along a hiking trail in Meadowlily Woods ESA

## Local Actions to Improve Drinking Water

- Decommission abandoned wells according to Ministry of Environment, Conservation, and Parks standards.
- Homeowners with wells should understand the condition of their well and risks to their water supply (see [www.wellaware.ca](http://www.wellaware.ca)).
- Sample private wells each spring and fall (available through the Health Unit).
- Keep contaminants (e.g., fuel, pesticides, manure, waste) away from your well area. Consider septic system inspections (see [www.omafra.gov.on.ca](http://www.omafra.gov.on.ca)).
- To protect municipal drinking water sources, implement Source Protection Plan policies.

## Local Actions to Improve Forests and Vegetation Cover

- Increase natural vegetation cover in urban areas by targeting the naturalization of manicured parks and open spaces, river valleys, residential and industrial areas, school yards, and through urban planning and design.
- For tree planting and naturalization projects, create a more natural and diverse habitat by using a variety of native plant species that are better adapted to the local climate, pests, etc. The UTRCA provides tree planting assistance and advice, and grants may be available (see contact information on page 8).
- Municipalities can conserve woodlands, wetlands, and other natural areas by strengthening tree conservation by-laws and enforcement, Official Plan designations, and providing landowner incentives and education.
- Connect isolated woodlots by planting shelterbelts, windbreaks, and buffers along fields and watercourses, which will also protect against soil erosion and improve water quality. Thin old, dense windbreaks.
- Increase forest interior by making woodlots larger and wider by planting native trees and shrubs along the edges or allowing the edges to naturalize on their own.
- Landowners wishing to selectively log their woodlots should use Good Forestry Practices (i.e., Basal Area Guidelines, not Diameter Limit Harvesting) and hire a Certified Tree Marker to mark the woodlot and oversee harvesting.
- Woodlot owners can improve the quality of their woodlots by identifying and removing invasive alien species such as buckthorn (see [www.ontarioinvasiveplants.ca](http://www.ontarioinvasiveplants.ca) and [www.thamesriver.ca.on.ca](http://www.thamesriver.ca.on.ca)).



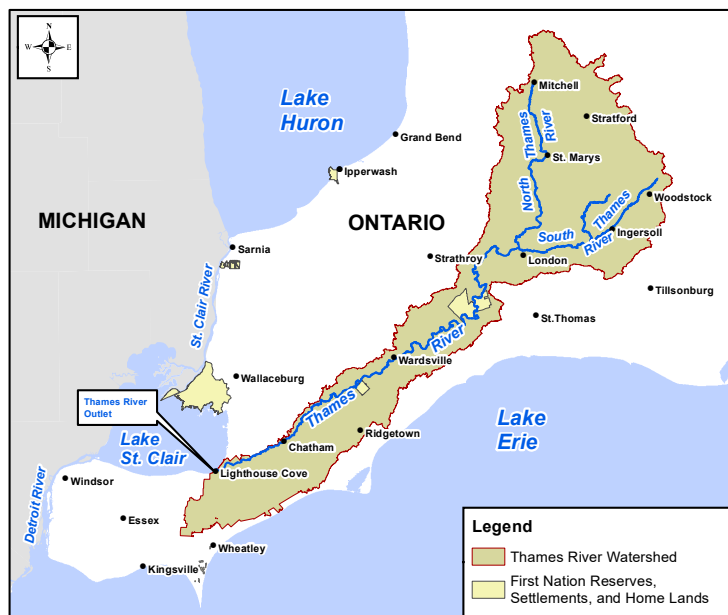
Newly planted trees and grasses in Meadowlily Woods ESA

## Great Lakes Connection

The Dorchester corridor is in the Thames River watershed, which is part of the Lake Erie watershed. Water from the Dorchester corridor takes 4-10 days to flow through London and Chatham, and into Lake St. Clair. About two weeks later, it reaches Lake Erie via the Detroit River.

## Shared Waters Approach

In 2012, partners in the Thames River watershed formed the Thames River Clear Water Revival to work together on the protection of water, with the shared goal of a healthy and vital Thames River which would also benefit Lake St. Clair and Lake Erie. This partnership brings together Indigenous peoples, three levels of government, two local conservation authorities, and the local community. A state of the environment report with a focus on actions needed for water quantity and quality was completed in 2019: The Thames River (Deshkan Zibi) Shared Waters Approach to Water Quality and Quantity. Implementation by all partners is underway. The Shared Waters Approach contains significant input from four of the eight distinct First Nations whose traditional territory includes the Thames River watershed and highlights the positive participation and sharing of traditional ecological knowledge within this approach.







## Highlights of Progress Since 2017

The Dorchester Corridor watershed is benefiting from many conservation efforts that continue to be implemented by individuals, groups, businesses, agencies, and municipalities on private and public lands. Examples of activities since 2017 include:

- In 2021, the UTRCA's 282 ha portion of the 405 ha Dorchester Swamp east of London was recognized as a Canadian Protected and Conserved Area. This Provincially Significant Wetland is included in Canada's Aichi target of conserving 25% of Canada's land by 2025. In 2022, the UTRCA received a donation of 2 ha of quality wetland within Dorchester Swamp. Middlesex County and private landowners own the remainder of this rich and diverse Provincially Significant Wetland.
- The Dorchester Wastewater Treatment Plant (WWTP) underwent a significant expansion between 2019 and 2021 to increase the plant's capacity and install tertiary filtration. The interconnecting force main linking Pottersburg WWTP to Vauxhaul WWTP was completed. These upgrades help protect the quality of the South Thames River, the receiving water body.
- Amendments to the Meadowlily Woods Environmentally Significant Area (ESA) Conservation Master Plan were completed and have confirmed the new ESA boundary. An additional 14 ha were added to the management area. London City Council adopted the plan as an official guideline document. The UTRCA continues to manage the ESA under contract with the City of London. Land management activities have included invasive alien species removal, trail realignment, and tree planting. In 2017, the City completed drainage work on Meadowlily Road to slow erosion in the ravines within the ESA.
- In 2019, London City Council declared a Climate Emergency. In response, the London Climate Emergency Action Plan or CEAP (2021/2022) was developed to reduce greenhouse gas emissions, improve resilience to climate change while listing over 200 actions for the London community to implement. Zorra Township also has climate change adaptation requirements recognized

through Oxford County's Future Oxford objectives including a target of 100% renewable energy by 2050.

- Through the UTRCA's Communities for Nature Program, over 2,000 trees and 2,000 flowers, grasses, and aquatic plants were planted at nine sites by 700 students and community volunteers. Sites included Dorchester Golf Course, Thames Centre Operations Centre, Harris Trail, Dorchester Conservation Area, and Dorchester Mill Pond.
- 10,508 trees were planted on 17 rural properties through the UTRCA's Private Land Reforestation Program.
- Rural landowners completed 7 Clean Water Program projects including fragile land retirement and erosion control measures.
- In 2017, the UTRCA worked with the Dorchester Mill Pond Committee and the Municipality of Thames Centre to rebuild a 33 m section of the Mill Pond trail (photo below). In 2022, additional improvements were made to keep hikers safe and protect the sensitive shoreline environment.



UTRCA staff making improvements to the Dorchester Mill Pond trail.



### Ontario-Wide Report Cards

Conservation Authorities produce report cards for their watersheds every five years to track changes, using a standardized grading system ([www.conservationontario.ca](http://www.conservationontario.ca)). Grades vary across the province, reflecting the range of physical characteristics and human activities. The complete set of UTRCA report cards and supporting information are available in a report titled 2022 Upper Thames River Watershed Report Cards ([thamesriver.on.ca](http://thamesriver.on.ca)).

### For more information, contact:

**Upper Thames River Conservation Authority**  
1424 Clarke Road, London, Ontario, Canada N5V 5B9  
519-451-2800  
[info@thamesriver.on.ca](mailto:info@thamesriver.on.ca)  
[www.thamesriver.on.ca](http://www.thamesriver.on.ca)



Thames  
Canadian Heritage River