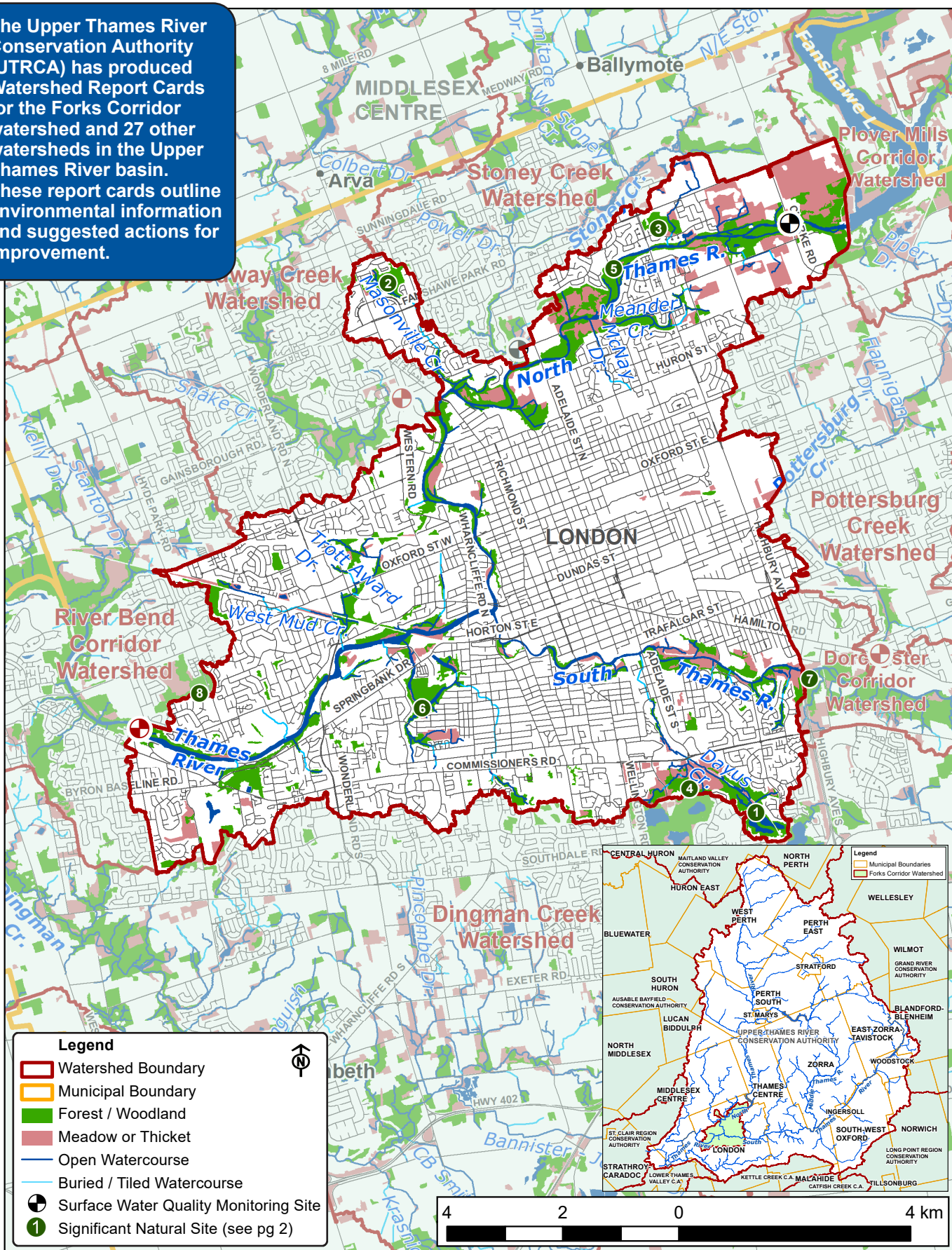


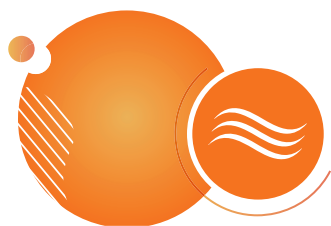


# 2022 Watershed Report Card

## Forks Corridor

**The Upper Thames River Conservation Authority (UTRCA) has produced Watershed Report Cards for the Forks 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	City of London (87 km <sup>2</sup> ). The Forks watershed is 3% of the Upper Thames River watershed. 2,994 km <sup>2</sup> lies upstream.					
Significant Natural Sites	Significant Wetlands: (1) Westminster Ponds/Pond Mills, (2) Arva Moraine Wetland Complex, (3) Highbury Swamp. Life Science Areas of Natural and Scientific Interest: (4) Westminster Ponds. London Environmentally Significant Areas: (1), (2), (5) Kilally Meadows, (6) The Coves, (7) Meadowlily Woods. (See numbered sites on map. Some sites have numerous designations).					
Land Cover	2% agriculture, 14% natural vegetation, 9% open space, 71% urban/built-up, 1% aggregate, 2% water. Approximately 1% more natural vegetation and 1% less open space than five years ago. 40% is in impervious cover (e.g., hard surfaces such as roofs and roads).					
Population	203,174 in 2021; an 8% increase since 2016					
Soil Type	95% not mapped (urban), 3% coarse sand, 1% silty loam, 1% bottomland					
Physiography	54% spillway, 19% sand plain, 18% till moraine, 7% undrumlinized till plain, 2% water					
Soil Erosion/Delivery	Soil erosion and delivery are not calculated for urban areas as most of the land is paved or in sod. Typically, the soil is only exposed during construction activity.					
Tiling and Drainage	71% urban drainage, 29% no artificial drainage or tiling					
Watercourse Characteristics	Total length: Watercourse type: Temperature: Main channel slope:	98 km of watercourses 53% natural, 34% channelized, 13% buried/closed 37% cool/coldwater, 63% warmwater/unconfirmed 0.09-0.18% slope (South, North, and Thames Rivers) which is very flat; range is 0.09-1.26% in Upper Thames River watershed.				
Dams and Barriers	26 barriers have been recorded including Hunt Weir and the Coves Flood Gates, as well as numerous smaller perched culverts, woody debris blockages, beaver dams, and stormwater ponds.					
Spills	129 spills reported from 2016-2020. Spills involved fuels, industrial chemicals, sewage, and others.					
Sewage Treatment	The Adelaide Wastewater Treatment Plant (WWTP), Greenway WWTP, Vauxhall WWTP, and Pottersburg WWTP discharge treated effluent within this watershed. There is a significant number of urban and near-urban properties that are serviced by septic systems including the Springbank Drive area and Hamilton Road in the east.					
% Vegetation Cover and Types	Vegetation cover: Composition:	1,166 ha or 13.4% of the Forks Corridor watershed 53% deciduous forest, 5% mixed forest, 3% plantation/coniferous forest, 33% meadow, 7% thicket				
Wetland Cover	1.4% (118 ha) of the watershed is in wetland cover. Environment Canada (2013) recommends at least 6% wetland cover. 0.1 ha of wetland cover was 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)	115	2	249	35	41
	Medium (10-30 ha)	18	18	316	45	
	Large (> 30 ha)	4	36	144	20	
Fish and Mussels	Fish species - 63 including three species with historic records only. Gamefish - Smallmouth and Largemouth Bass, Northern Pike, and Rainbow Trout. Mussel species - 24 including three species with historic records only.					
Species-at-Risk	Birds - 17 species including Bald Eagle and Bank Swallow. Insects - Monarch and Rusty-patched Bumble Bee. Mammals - 3 species including Little Brown Myotis (bat). Fish - 5 species including Black Redhorse and Spotted Sucker. Mussels - 7 species including Wavy-rayed Lampmussel and Round Pigtoe. Plants - 8 species including Eastern Flowering Dogwood and Kentucky Coffee-tree. Reptiles - 7 species including Spiny Softshell Turtle and Map 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 indicators score an overall grade of D. Water quality is affected by the watershed's urban setting as well as the 3,000 sq. km of watershed upstream of the Forks, including inputs from the North and South Thames River and Medway and Stoney Creeks. The UTRCA has a water quality target of a C grade for Forks Corridor by 2037.

Samples taken at the downstream site at Byron (see map) show phosphorus concentrations have remained steady since 2015 at five times the provincial aquatic guideline, but have improved over the long term. Phosphorus concentrations entering the Forks Corridor are lower, but still above the guideline. The South Thames River is two times greater than the guideline, the North Thames River is two to

three times greater, Medway Creek is two times greater, and Stoney Creek is just above guideline.

Bacteria (*E. coli*) levels have improved at the outlet of the watershed compared to 2015. *E. coli* levels are generally lower coming into the watershed than at the Byron site.

Chloride levels (mostly from road salt) have had an increasing trend but remain below the aquatic life guideline. Nitrate levels (from sources such as fertilizer) have remained steady, but are above the aquatic life guideline.

Stream health, as indicated by benthic scores at the Forks outlet as well as the North and South Thames branches, have been fairly consistent, indicating conditions are slightly more impaired than the UTRCA watershed average.

Indicators	Forks Corridor					Upper Thames 2016-2020	Provincial Guideline	Indicator Description
	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020			
<b>Phosphorus (mg/l) *</b>	0.290 F	0.220 F	0.190 F	0.150 D	<b>0.158 D Steady</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>	566 D	396 D	617 D	404 D	<b>321 D Improved</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>	6.25 D	6.38 D	6.17 D	6.36 D	<b>6.42 D Steady</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.

Muskellunge (Muskie) have become more common in the Forks Corridor since their movement is no longer seasonally prevented by the former Springbank Dam. Next to sturgeons, Muskies are Canada's largest freshwater fish and travel from Lake St. Clair to as far north as Fanshawe Dam on the Thames River.



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

## 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.



# Forest Conditions

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

The percent forest cover (8.2%) has increased slightly from 8.0% in the last report card, primarily due to mapping improvements and succession (see bottom table). The Environment Canada (EC) guideline is a minimum of 30% forest cover. Meadows and thickets add another 5.3% for a total of 13.5% natural vegetation cover.

The percent forest interior (0.1%) is extremely low, indicating almost all woodlots are too small and narrow to support area sensitive species such as Scarlet Tanager and Ovenbird. The EC guideline is 10%.

The percent riparian zone forested (49.6%) has increased from 47.3% in the last report card, primarily due to improved mapping. Levels are very close to the EC guideline of 50%. Additional riparian areas are in permanent meadows and thickets (16.6%) for a total of 66.2% riparian zone vegetated, giving it one of the highest scores of the 28 subwatersheds in the Upper Thames River watershed.

Indicators	Forks Corridor 2022*	Upper Thames Average 2022*	EC Guideline **	Indicator Description
% Forest Cover	8.2 D	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	0.1 F	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	49.6 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
2000-2006	60
2006-2010	15
2010-2015	15

Approximately 15 ha of forest were cleared and converted to other uses (e.g., urban, agriculture, aggregates) between the 2010 and 2015 air photography. An additional 75 ha

of forest were cleared in the previous 10 years.

### Forest Area Gained

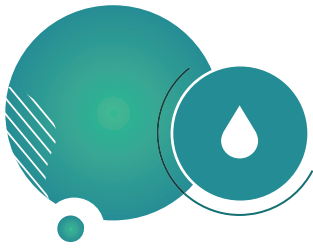
Years	ha
2010-2015	24

New data shows that approximately 24 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.



Great-crested Flycatchers nest locally in tree cavities in mature forests. Photo: Sharon Nethercott



## Municipal Water Supply

The Forks Corridor watershed, as well as most of the City of London and some surrounding areas, is supplied by the London municipal water system pipeline from its source in Lakes Huron and Lake Erie. Seven municipal wells that were maintained as a backup source of water for London are no longer used. Municipal water is tested and treated.

## Private Wells

Approximately 1,355 private wells are on record in the watershed. Properly constructed deep wells have a lower risk of contamination from the surface when compared to 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 are the responsibility of the well owner.

## Groundwater Monitoring

The Provincial Groundwater Monitoring Network has shown 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.

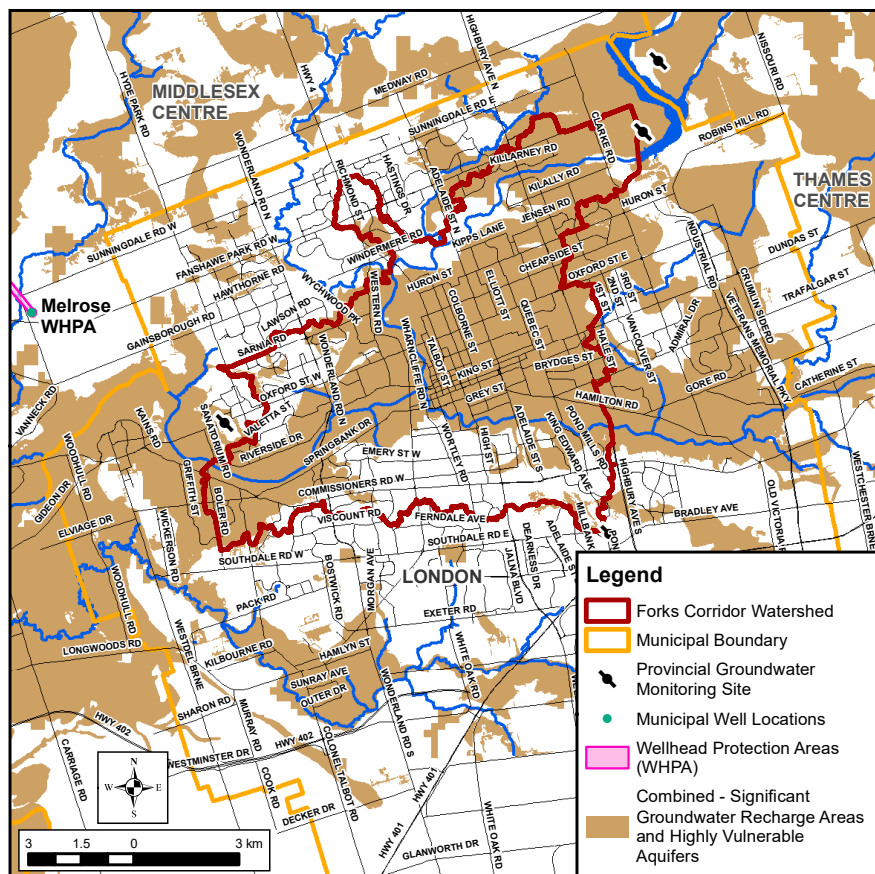
The rate of decline in groundwater levels is directly related to maximum air temperatures. Summer rainfall does not typically affect groundwater levels as evaporation and plant uptake greatly exceeds rainfall, and most rainfall is utilized by plants during summer.

### Did you know?

- About 50-70% of total local streamflow is baseflow from groundwater discharging into streams.
- Vegetation relies more on groundwater as it is more stable than rainfall. Most remaining wetlands are groundwater dependent.

## 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, Source Protection Plan policies.



## 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)
- London Environmental Review Policy (2021)
- The Thames River (Deshkan Ziibi) Shared Waters Approach to Water Quality and Quantity (Thames River Clearwater Revival, 2019)
- Mud Creek Subwatershed Class EA (CH2MHILL for City of London, 2015)
- Upper Thames River Source Protection Area Approved Assessment Report (Thames-Sydenham Source Protection Region, 2015)
- Conservation Master Plan for the Coves ESA (North-South Environmental Inc. for the City of London, 2014)
- Thames Valley Corridor Study Phases 1 and 2 (City of London, 2007 and 2012)
- Westminster Ponds/Pond Mills Master Plan Update (UTRCA, 2005)
- Recovery Strategy for the Thames River Aquatic Ecosystem (Thames River Recovery Team, 2005)

## 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.
- Evaluate the role, function, and aquatic habitat impacts of all barriers and dams, and consider removal or modification to improve river health and fish passage.
- Use drain maintenance methods that protect aquatic habitat (e.g., low flow channels, spot or bottom cleanouts).
- 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.



Ongoing infrastructure work to install separated storm and sanitary sewers. Old systems with combined sewers overload the wastewater treatment plants, resulting in poorly treated water being discharged into the river. Photo: City of London

## Local Actions to Improve Drinking Water

- Assess the scope of abandoned wells and decommission them according to Ministry of Environment, Conservation, and Parks standards.
- Recognizing that most residents in this watershed use municipal water, individuals using private 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 Forest and Vegetation Cover

- Continue to connect the existing riverside woodlands and meadows with additional plantings to create a continuous wildlife corridor along the Thames River, and its branches and tributaries.
- Increase natural vegetation cover in urban areas by targeting the naturalization of manicured urban parks and open spaces, river valleys, residential and industrial areas, and school yards.
- 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.
- Increase and maintain vegetation cover through urban planning and design.



Volunteers from the Thames Valley Trail Association collecting prairie seeds in Kilally Meadows, an Environmentally Significant Area.

- Continue with overall area planning and implementation through community plans to ensure natural heritage features are protected and preserved with future development.
- Continue to educate landowners living next to natural areas on the ways in which to minimize their impacts (e.g., encroachment, dumping). Continue to manage Environmentally Significant Areas to maintain biodiversity.
- Continue to promote street tree plantings to cool urban areas which, in turn, helps to protect and support urban woodlands.

## Great Lakes Connection

Forks Corridor is in the Thames River watershed, which is part of the Lake Erie watershed. Water from the Forks Corridor takes 4-10 days to flow through 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 Ziibi) 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.







## 2022 Watershed Report Card

# Highlights of Progress Since 2017

The Forks 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 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.
- Greenway Wastewater Treatment Plant (WWTP) completed a significant three year expansion project in 2018 to increase treatment capacity by 12%. Vauxhall WWTP completed a vegetated berm and effluent pumping station in 2020 for flood protection.
- The City of London completed the Greenway WWTP Climate Resiliency Environmental Assessment (2020/2021) to improve resilience to extreme wet weather.
- The UTRCA continues to manage the Coves, an Environmentally Significant Area (ESA), under contract with the City of London. Projects included trail improvements, tree planting, alien plant species removal, encroachment mitigation, and culvert clearing. Beaver bafflers have also been installed to mitigate flood risk. The Friends of the Coves continue to assist with stewardship work.
- The City of London and the UTRCA completed several projects at the Westminster Ponds/Pond Mills ESA including alien plant species removal, trail improvements, signage, tree planting, and turtle nesting habitat creation. A large 2 ha restoration project commenced in 2017. At Kilally Meadows ESA, invasive alien plant removal, native wildflower and tree planting, and beaver damage mitigation work continued. Adopt-an-ESA volunteers are assisting in awareness and stewardship.
- The UTRCA continues recovery work on the endangered Spiny Softshell turtle. Researchers collect eggs at nest sites, incubate them, and then release the healthy hatchlings back into the river to counter the almost 100% turtle egg mortality rate. Since the UTRCA began protecting eggs in the 1990s, the local Spiny Softshell population has shown increases in the number of turtles of all age classes and their expansion back into parts of their historic range along the Thames River.
- The removal of Springbank Dam has been beneficial for many aquatic wildlife species, allowing for more natural flow rates, ease of movement up and downstream, and fewer negative impacts often associated with impoundments.
- Through the UTRCA's Communities for Nature program, over 6,940 trees and shrubs and almost 3,000 wildflowers were planted by 315 students and 4,952 community members at 15 sites including St. Julien Park Earth Day, Trees for Woodfield, Glen Cairn, and the Coves ESA.
- From 2016-2020, 200 trees were planted on a property under the UTRCA's Private Land Restoration Program.
- The City of London has made advancements in forestry policies including a new private Tree Protection By-law (2021), Tree Planting Strategy (2017-2021), and others. The TreeMe grant program for planting trees on private lands was also expanded. The City has set a goal of increasing canopy cover to 28% by 2035 and 34% by 2065. Note: tree canopy cover is different from forest cover as tree canopy includes street and yard trees.
- The City of London has incorporated several road right-of-way LID features into their stormwater strategy.



TD Tree Days at Brookside Park



### 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:

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Canadian Heritage River