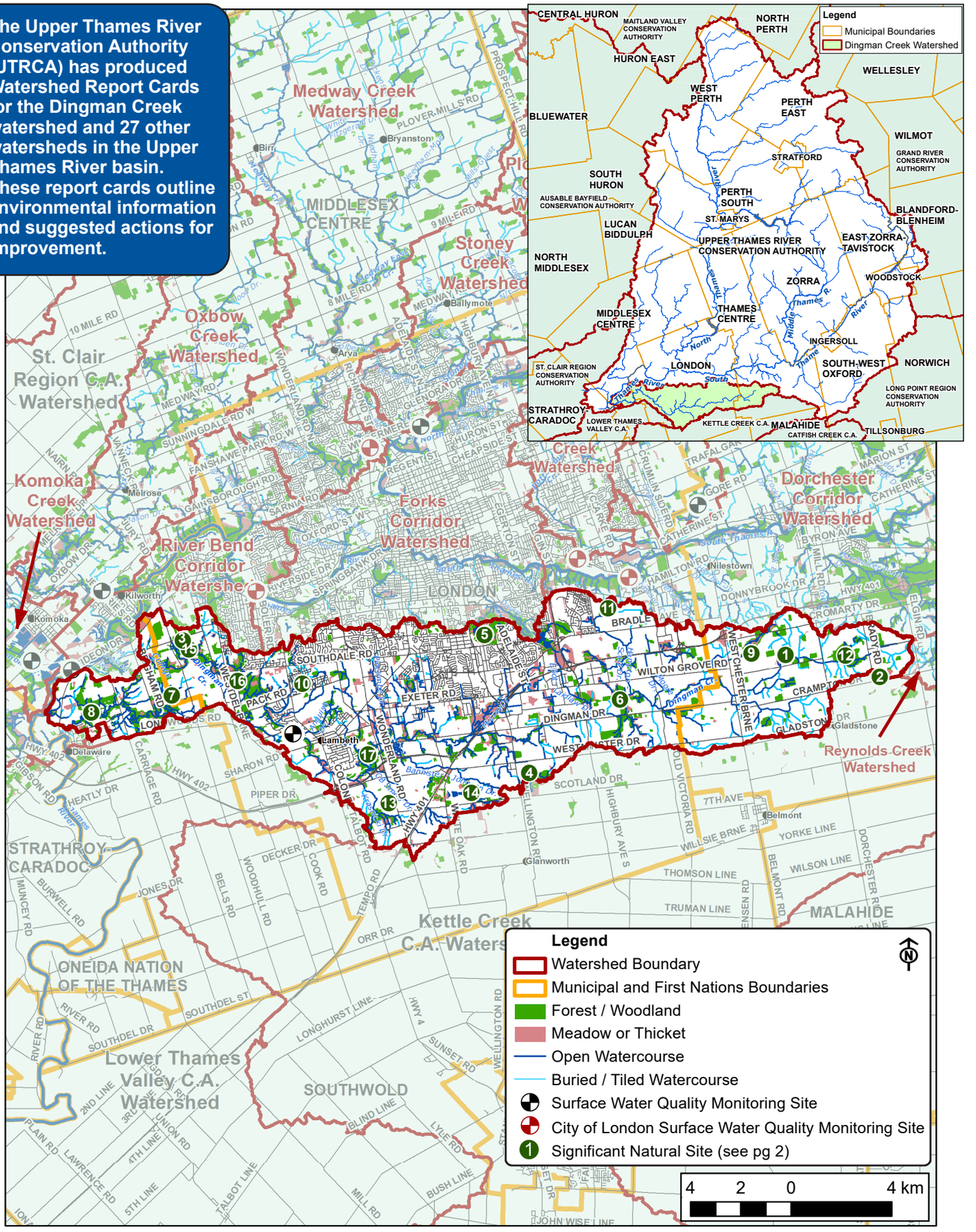
Surface Water Quality
D - Steady

Forest Conditions
D - Steady

2022 Watershed Report Card

Dingman Creek

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



2022 Watershed Report Card

Watershed Features

Feature	Description	
Municipalities	City of London (75%, 126 km²), Thames Centre (18%, 31 km²), Middlesex Centre (7%, 12 km²) Total Area: 16,896 ha (169 km²), 5% of the Upper Thames River watershed	
Significant Natural Sites	Significant Wetlands: (1) Beattie Ponds, (2) Hearns Wetland, (3) Dingman Cr Fen, (4) Regina Mundi Kirk Cousins, (5) Westminster Ponds/Pond Mills, (6) Westminster Wetlands, (7) Brigham Rd., (8) Circle R Ranch, (9) Foster Ponds, (10) N Talbot (11) Meadowlily Woods, (12) Mud Lakes. Other Wetlands: (13) Decker Rd., (14) Silver Swamp. London Environmentally Significant Areas: (15) Delaware East Woodland, (16) Lower Dingman Corridor, (17) East Lambeth Forest. (See numbered sites on map. Some sites have numerous designations).	
Land Cover	50% agriculture, 19% natural vegetation, 4% open space, 26% urban, < 1% aggregates, 1% water. 1.5% less agriculture, 0.5% more open space, and 0.7% more urban than five years ago. 13% impervious cover (e.g., hard surfaces such as roofs and roads).	
Population	84,135 in 2021; an 8% increase since 2016	
Soil Type	44% silty clay loam, 20% not mapped (urban), 15% silty loam, 8% bottomland, 6% very fine sandy loam, 5% coarse sand, 1% organic, 1% fine sandy loam, 1% sandy loam	
Physiography	46% undrumlinized till plain, 31% till moraine, 14% spillway, 4% clay plain, 3% sand plain, 2% beaches	
Soil Erosion/ Delivery	5% 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	47% of the watershed has no tiling, 26% urban drainage, 28% agricultural field tile (19% random + 9% systematic). 1% more of the watershed is tiled/drained compared to five years ago.	
Watercourse Characteristics	Total length: Watercourse type: Temperature: Main channel slope:	391 km of watercourses 35% natural, 42% channelized, 22% buried/closed 22% cool/coldwater, 78% warmwater/unconfirmed 0.24% slope (low/flat); range is 0.09-1.26% in Upper Thames River watersheds
Barriers	103 barriers to fish passage have been recorded. Barriers include dams, weirs, and several others.	
Spills	70 spills reported from 2016-2020. Most spills involved fuels, industrial chemicals, and sewage.	
Sewage Treatment	The Lambeth pumping station pumps sewage to the Greenway Wastewater Treatment Plant. Treated effluent discharges to the Thames River. Rural properties in the watershed are serviced by private septic systems.	
% Vegetation Cover and Types	Vegetation cover: Composition:	3,105 ha or 18.4% of the Dingman Creek watershed 59% deciduous forest, 4% mixed forest, 2% plantation/coniferous forest, 31% meadow, 3% thicket
Wetland Cover	5.4% (906 ha) of the watershed is in wetland cover. Environment Canada (2013) recommends at least 6% wetlands cover. 12.6 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)	194	3	538	26	452
Medium (10-30 ha)	27	16	436	21	
Large (> 30 ha)	11	97	1064	52	

Fish and Mussels	Fish Species - 48 including two new species (Blacknose Shiner and Redfin Shiner). Gamefish - Smallmouth and Largemouth Bass, Black Crappie, Northern Pike, and Brown Trout. Mussel Species - 13.
Species-at-Risk	Birds - 16 species including Bank Swallow and Wood Thrush. Insects - Monarch. Mammals - American Badger. Fish - Northern Sunfish and Silver Shiner. Mussels - Mapleleaf and Rainbow. Plants - 6 species including Blue Ash and E. Flowering Dogwood. Reptiles - 9 species including Snapping Turtle and Spiny Softshell.

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.

2022 Watershed Report Card

Surface Water Quality

Surface water quality in Dingman Creek scores an overall grade of D and has been steady since the last report card. The monitoring station is located at Kilbourne Road in Lambeth (see map). The UTRCA has a water quality target of a C grade for Dingman Creek by 2037.

Phosphorus levels have been improving since the 1970s with some recent increase since 2015. Levels remain elevated at five times the provincial guideline.

E. coli bacteria levels have improved over the past 25 years but remain elevated and above the Upper Thames River watershed average. Since 2015, *E. coli* levels have remained steady. Chloride levels (mainly from road salt) have shown an increasing trend since the 1980s and have increased since 2015, with many samples exceeding the provincial aquatic guideline. Nitrate levels (from sources such as fertilizer) have had some improvement since the mid-2000s, with the majority of recent samples below the aquatic life guideline.

Stream health, as indicated by benthic monitoring, has improved slightly after improving considerably in the early 2000s and leveling off near the Upper Thames River watershed average.

Indicators	Dingman Creek					Upper Thames 2016-2020	Provincial Guideline	Indicator Description
	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020			
Phosphorus (mg/l) *	0.152 D	0.104 D	0.106 D	0.112 D	**0.176 D Declined**	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.
Bacteria (CFU *E. coli*/ 100 ml) **	744 D	480 D	300 C	341 D	**321 D Steady**	211 C	200 C Recreation	*E. coli* is a fecal coliform bacteria found in human and animal (livestock/ wildlife/pets) waste. *E. coli* is a strong indicator of the potential to have other disease-causing organisms in the water.
Benthic Score (FBI)	6.76 F	6.07 D	5.81 D	6.11 D	**5.85 D Improved**	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, MECP Provincial Water Quality Monitoring Network data. **Geometric mean, Health Unit 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 Silver Shiner is a species-at-risk found in Dingman Creek. It is primarily a surface feeder and may even jump to catch flying insects.

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.

2022 Watershed Report Card

Forest Conditions

Forest conditions in the Dingman Creek watershed have remained fairly steady since the last watershed report card 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 (12.1%) is unchanged since 2017. While real loss is still occurring, it is offset by forest succession (see below). The Environment Canada (EC) guideline for sustaining species and water quality in southern Ontario is 30% forest cover. Meadows and thickets add an additional 6.3% for a total of 18.4% natural cover.

The percent forest interior is very low (1.0%), indicating most woodlots are too small and/or narrow to support area sensitive birds such as Scarlet Tanager and Ovenbird. The EC guideline for southern Ontario is 10% forest interior.

The percent riparian zone forested (34.4%) has increased slightly from 32.5% in the last report card due to improved mapping, but is below the guideline of 50%. Additional riparian areas are in permanent meadows and thicket (18.9%) for a total of 53.3% riparian zone vegetated.

Indicators	Dingman Creek 2022*	Upper Thames Average 2022*	EC Guideline **	Indicator Description
% Forest Cover	**12.1 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	**1.0 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	**34.4 C**	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	82
2006-2010	34
2010-2015	40

Approximately 40 ha of forest were cleared and converted to other uses (e.g., urban, agriculture, aggregates) between the 2010 and 2015 air photography. An additional 116 ha of forest were cleared in the previous 10 years. This is an urbanizing watershed.

Forest Area Gained

Years	ha
2010-2015	37

New data shows that approximately 37 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

2022 Watershed Report Card

Groundwater

Municipal Water Supply

Most of the urban portions of Dingman Creek watershed are supplied by the London municipal water system through pipelines from Lake Huron and Lake Erie. All other areas in the watershed are supplied by groundwater. Municipal water is tested and treated.

Private Wells

Approximately 1,613 private wells are on record in Dingman Creek watershed. The majority of wells draw groundwater from overburden aquifers. 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 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.

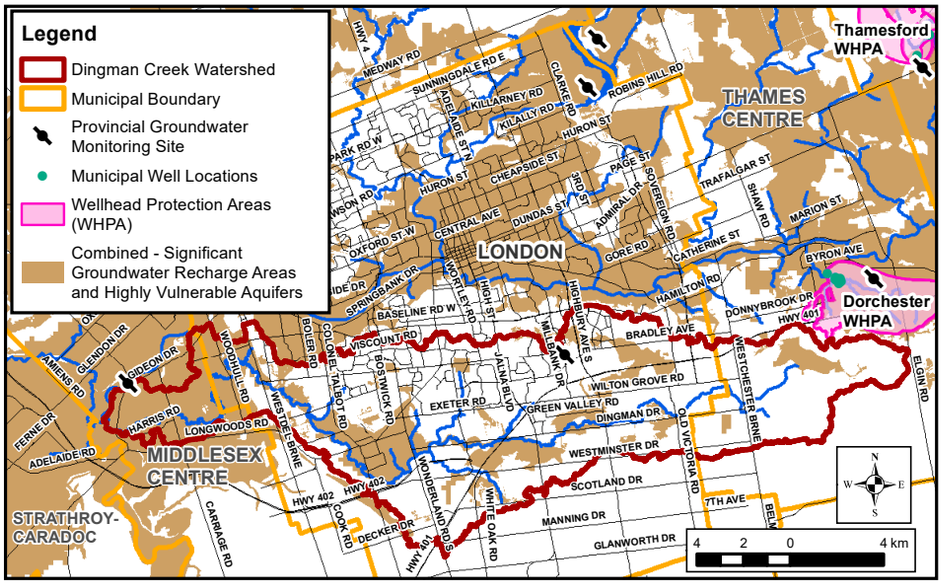
The rate of decline in groundwater levels is directly related to maximum air temperatures. Summer rainfall does not typically affect groundwater levels as evaporation and plant uptake greatly exceeds rainfall, and most rainfall is utilized by plants during summer.

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 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 Wastewater Treatment Operations Master Plan (2021/2022)
- London Environmental Review Policy (2021)
- London Climate Emergency Action Plan, or 'CEAP' (2021/2022)
- Dingman Creek Subwatershed Stormwater Servicing Study Master Plan and Schedule B Municipal Class EA (2020)
- Dingman Creek Subwatershed - Historical Report - Draft. Prepared for the City of London (UTRCA, 2020)
- The Thames River (Deshkan Ziibi) Shared Waters Approach to Water Quality and Quantity (Thames River Clearwater Revival, 2019)
- Upper Thames River Source Protection Area Approved Assessment Report (Thames-Sydenham Source Protection Region, 2015)
- Middlesex Natural Heritage Systems Study (UTRCA, 2014)
- Southwest Area Sanitary Servicing Master Plan (Stantec Consulting Ltd. for City of London, 2014)

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.
- There are many dams/barriers on Dingman Creek. Consider removal to improve stream health and fish passage, especially when a barrier no longer serves its intended purpose.
- 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).
  - Utilize grants for stewardship work from the UTRCA Clean Water Program (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.

Low Impact Development techniques such as rain gardens help reduce stormwater runoff to local streams in developed areas.

- 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.

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).
- 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)
- 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. Older, denser windbreaks should be thinned.
- 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 species such as buckthorn (see www.ontarioinvasiveplants.ca and www.thamesriver.on.ca).

Great Lakes Connection

The Dingman Creek watershed is in the Thames River watershed, which is part of the Lake Erie watershed. Water from the Dingman Creek enters the Thames River near Delaware and 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 Dingman Creek 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 include:

- Dingman Constructed Wetland continues to mature and provide multiple benefits. It is designed to store additional water in the existing floodplain for erosion control while creating enhanced wildlife habitat and reducing erosion upstream of Lambeth.
- 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.
- Since 2016, the City of London has installed 87 LID features in build-out areas as part of 21 infrastructure renewal projects. The preferred stormwater strategy for the Dingman Creek watershed now includes LID source controls and conveyance controls combined with end-of-pipe facility controls.
- Greenway Wastewater Treatment Plant completed a significant expansion project in 2018, increasing treatment capacity by 12%. This expansion further protects water quality in the Thames River.
- The Dingman Creek Municipal Stormwater Environmental Compliance Approval (ECA) (2015, ongoing) is being developed to provide a plan for stormwater management solutions that will facilitate development in south London for the next 20 years. It includes natural corridor enhancement, stormwater management improvements, LID applications, and river bank erosion control. In 2019, the UTRCA and the City of London initiated a multi-year monitoring program to measure environmental conditions as part of the ECA. Water quality and benthic invertebrate monitoring is underway at 22 locations and three new flow gauging stations. The UTRCA has also expanded fish and aquatic species-at-risk sampling.
- Landowners planted 2,545 trees at 13 sites through the UTRCA's Private Land Reforestation Program from 2016 to 2020. Through the UTRCA's Communities for Nature Program, 25 students and volunteers helped plant almost 800 trees at Westmount Park.
- Starting in 2017, the City of London contracted the UTRCA to manage the Lower Dingman Environmentally Significant Area (ESA). Projects completed include: trail development, signage installation, naturalization work, invasive species control, and encroachment mitigation.

AON volunteers helped with trail trimming and invasive species removal in the Lower Dingman Creek ESA.

- The UTRCA continues to manage the Westminster Ponds/Pond Mills ESA under contract with the City of London. Many projects have been completed including native wildflower planting, invasive plant species removal, Purple Loosestrife Beetle release, trail maintenance and improvements, and turtle nesting habitat creation. Programs such as Adopt-an-ESA contribute to increasing citizen awareness and stewardship.
- The City of London has made advancements in forestry policies including a new private Tree Protection By-law (2021), Tree Planting Strategy (2017-2021), a tree inventory (commenced in 2019), implementation of woodland management / invasive species management, and others. The City has set a goal to increase 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.
- Watershed landowners completed three Clean Water Program projects involving fragile land retirement and reforestation.

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). 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).

For more information, contact:

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UPPER THAMES RIVER CONSERVATION AUTHORITY

Thames Canadian Heritage River