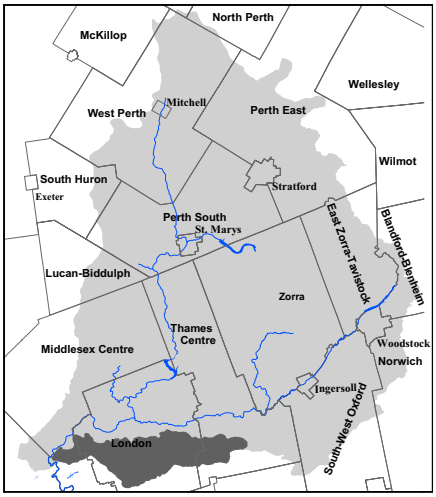
Dingman Creek Watershed Report Card

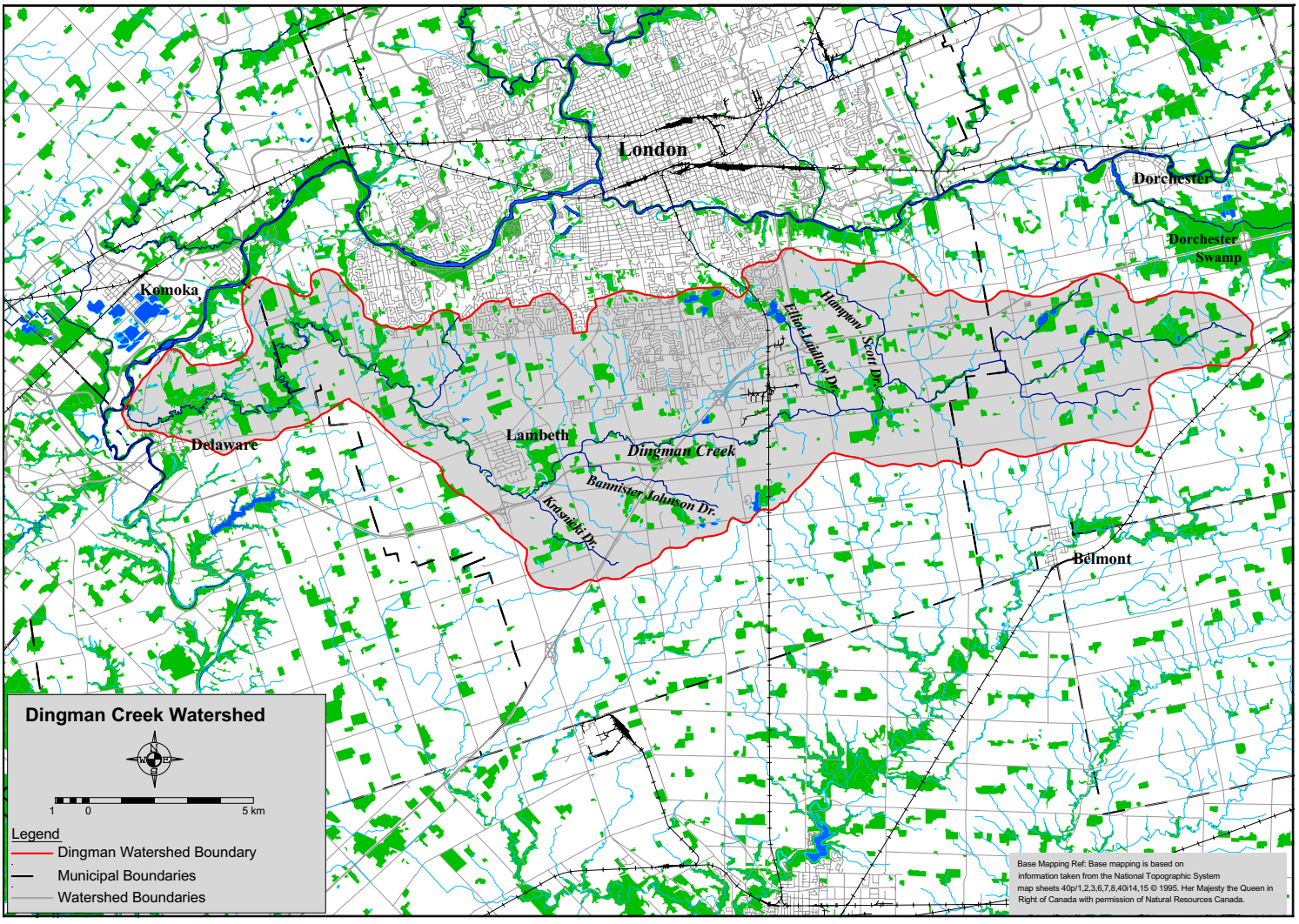


This report card outlines environmental information for the Dingman Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, municipalities and interested parties working for the protection of local forest and water resources. These report cards are part of a larger report titled *The Upper Thames River Watershed Report Cards* (UTRCA, 2001) that is posted on the Upper Thames River Conservation Authority (UTRCA) web site. (See back)

Grades:

D Forest Conditions

D– Surface Water Quality



Municipalities: City of London (131 sq. km), Thames Centre (32 sq. km) and Middlesex Centre (14 sq. km)

Watercourses: Dingman Creek (a tributary of the Thames River), Hampton/Scott Drain, Elliot-Laidlaw Drain, Bannister Johnson Drain, Krasnicki Drain

Grade D

Forest Conditions

Overall, forest conditions in the Dingman Creek watershed score a D grade and the three indicators have grades from C to D- (see table below). The amount of forest cover (14%) is slightly above the average for the Upper Thames watershed, but still considered too low for sustainability. The ideal for southern Ontario is 25-30% natural cover (Carolinian Canada, 2000). Forest density is fair indicating some woodlots are located close enough to each other to allow seeds to be transported and wildlife to move between them. The amount of forest interior (1.2%) is quite low indicating that most of the woodlots are too small and narrow to support sensitive species that need to live in large habitats with significant central areas. In fact, 79% of the woodlots are under 10 hectares in size.

Indicators	Dingman Creek Results		Upper Thames Watershed Average		Indicator Description
Forest Cover	14%	D	12%	D	Forest cover is the percentage of the watershed that is forested. It is believed there should be 25-30% natural cover in southern Ontario's landscape to sustain our native plants and animals.
Forest Density	71%	C	55%	D	Forest density is a measure of how close woodlots are to each other. Woodlots that are near several other woodlots tend to have greater species diversity than those that are isolated. The movement of seeds and animals between woodlots ensures a healthy gene pool.
Forest Interior	1.2%	D-	1.8%	D	Forest interior refers to the protected core area found inside a woodlot that some bird species require to nest and breed successfully. The outer 100m perimeter of a woodlot is considered 'edge' habitat and prone to high predation, alien species invasion, sun and wind damage, etc.

Local Actions Needed for Improvement:

- Protection of all woodlots and Locally Significant Wetlands at the municipal planning level is a very important and effective method of preserving forest cover. This goal can be achieved through designations in Official Plans, enforcement of tree cutting by-laws and other appropriate planning measures.
- Forest interior can be increased by 'bulking up' woodlots making them larger and rounder by planting native trees and shrubs around existing woodlots or allowing the edges to naturalize on their own (e.g. retire land near woodlot edges).
- Connections can be made between woodlots and other habitats in rural areas by planting hedgerows and windbreaks along fields, roads and watercourses. Priority should be given to creating links with Dorchester Swamp, the largest natural area in the region.
- Forest cover along the Dingman Creek is sparse, except for the stretch downstream of Lambeth. Connecting, extending and widening these riparian woodlots through tree planting or naturalization would protect the river and create an excellent wildlife corridor.
- With landowner cooperation, strategies should be put in place for the management of the identified significant woodlands and wetlands in the watershed.
- Educate landowners living next to natural areas on ways to minimize their impacts on these sensitive lands (e.g. cutting, dumping, encroachment) and develop a London-wide encroachment strategy.
- Natural vegetation cover can be increased in urban areas by targeting the naturalization of school yards, public parks and open spaces, river valleys, residential properties and open areas within industrial/commercial properties.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.
- Additional recommendations are laid out in the *Dingman Creek Subwatershed Study* (1995).

Westminster Ponds Environmentally Significant Area

Grade D-

Surface Water Quality

Water quality in the Dingman Creek ranks D- and the lowest in the Upper Thames River watershed. Scores for the four indicators range from D to D- (see chart below). Phosphorus levels are high as are bacteria concentrations (almost 6 times higher than the safe swimming guideline). Some key limiting factors include highly erodible, fine textured soils, extensive riverbank erosion (mainly in the downstream section), lack of baseflow, lack of riparian cover, degraded stream structure, rural runoff, urban development impacts, and spills. Many portions of watercourse in the upstream half of the watershed have been channelized and lack vegetation cover. The downstream portion has well forested buffers and is in a more natural state. However increasing amounts of water discharged in this area have increased flows, resulting in some severe bank erosion problems. There have been 27 spills reported since 1988, the majority urban/industrial based. This number of spills is high relative to most other subwatersheds.

Indicators	Dingman Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	6.7	D-	5.66	C	---	Benthic organisms are the aquatic invertebrates that live in stream sediments and are a good indicator of water quality and stream health. The 'Family Biotic Index' (FBI) scores each species according to its pollution tolerance.
Phosphorus (mg/l)	0.11*	D -	0.08*	D	0.03 (Provincial Objective)	Phosphorus is found in such products as soaps, detergents, fertilizers and pesticides, and contributes to excess algae and low oxygen in streams and lakes.
Bacteria (per 100 ml)	591*	D	304*	C	100 (Recreational Swimming Guideline)	Fecal coliform bacteria are found in human and animal waste and their presence in water indicates fecal contamination. Fecal coliform bacteria are a strong indicator for the potential to have other disease-causing organisms in the water.
Conductivity (μs/cm)	762*	D	642*	D	---	Conductivity is a measure of water's ability to conduct an electrical current and is an indicator of the level of dissolved solids and pollutants in water.

**10 year average concentration, 1990-2000 (Ministry of the Environment data)*

Local Actions Needed for Improvement:

- Implement the recommendations of the *City of London Subwatershed Implementation Plan,* 1995 and the *Dingman Creek Subwatershed Study,* 1995.
- Plant buffers (grassed or treed) along creeks, rivers and open drains in this area to filter runoff and provide shade. Target rehabilitation of the two coldwater tributaries.
- Encourage drain maintenance and design procedures that protect water quality (e.g. careful timing of work, proper use of silt traps, maintaining existing vegetation where possible, use of natural channel design principles).
- Enhance low base flow conditions through methods such as natural channel design and stormwater management design.
- Identify groundwater recharge and discharge zones, and develop strategies for these areas.
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Address the high number of spills through education, regulation, and improved response.
- Assess the purpose of each dam to determine if any should be removed or modified to improve river health.
- Encourage environmentally sustainable practices on golf courses (e.g. Audubon Cooperative Sanctuary Program).
- Within the City of London, the following actions should be targeted:
  - upgrade sewer systems where risk of contamination is greatest (e.g. combined sanitary/storm sewers), extend sanitary sewers to urban properties on septic systems, and repair or replace faulty existing septic systems;
  - implement stormwater management plans for all new urban developments and implement projects to reduce stormwater runoff (e.g. through infiltration ponds, pavement alternatives, etc);
  - encourage river clean-up /stream stewardship projects to improve stream habitat; and
  - educate urban residents regarding urban Best Management Practices such as reduction and proper use of pesticides and fertilizers, proper household hazardous waste disposal.

(continued on back)

The following actions should be targeted in rural areas:

- encourage landowners to repair or replace faulty septic systems;
- encourage agricultural Best Management Practices in the areas of manure storage and spreading, soil conservation practices, fertilizer and pesticide storage and application, fuel storage, milkhouse washwater disposal, and cattle access restriction; and
- promote the completion of Environmental Farm Plans and Nutrient Management Plans.

Dingman Creek Watershed Features

Area	176 sq. km (5 % of Upper Thames River watershed)
Land Use	64% agriculture, 21% urban,14% wooded (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	44% silty clay loam, 20% not mapped (urban) 15% silt loam, 8% bottomland, 6% very fine sandy loam, 5% coarse sand, 1% organic, 1% fine sandy loam, 1% sandy loam (GIS derived using county soil maps)
Soil Erosion/Delivery	5% of the watershed is classified as highly erodible, meaning lands that contribute over 7 tonnes/ha of soil to a watercourse per year. The average for the Upper Thames River watershed is 9%. (GIS derived using 1991 Geomatics data)
Physiography	46% undrumlinized till plain, 31% till moraine, 14% spillway, 4% clay plain, 3% sand plain, 2% beaches (Chapman and Putnam, 1984)
Stream Flow	1.5 cubic metres per second is the annual mean flow on Dingman Creek near Lambeth. The Dingman Creek contributes approximately 4% of the flow in the Thames River downstream of London. (Environment Canada, 1998)
Groundwater	Predominantly shallow (<18m) and intermediate (18-45m) overburden aquifers are found in this watershed. (MOE 1981)
Fishery Resources	21 fish species have been recorded. Two tiny coldwater streams/drains may provide minimal spawning habitat for migratory salmonids. (UTRCA and DFO, 2000)
Dams	Four dams are located on watercourses in this watershed including the Dingman Conservation Area Dam and three small private dams. (UTRCA, 1991)
Sewage Treatment	Two Pollution Control Plants (PCPs) discharge to Dingman Creek and service that portion of the watershed that lies within London. These include the Westminster PCP and Southland Park/Lambeth PCP. Rural properties are serviced by private septic systems.
Woodlot Size	58% of the woodlots are very small (<4 ha), 20% are small (4-10 ha), 11% are mid-sized (10-30 ha), 2% are large (30-40 ha) and 8% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	31% of the riparian zone (20 metres on either side of all watercourses) is forested. The average for the Upper Thames watershed is 24%. (GIS derived using 1997 NTS maps)
Rare Species	Fish – Greenside Darter Reptiles – Spotted Turtle, Eastern Hognose Snake, Eastern Spiny Softshell Turtle Plants – American Chestnut, Blue Ash, Broad Beech Fern, False Hop Sedge (NHIC, 2000)
Significant Natural Sites	**Provincially Significant Wetlands** – Dingman Creek Wetland Complex, Hearns Wetland, Dingman Wetland & Fen, Regina Mundi Wetland, Westminster Wetlands, Westminster Ponds/Pond Mills Wetland **Locally Significant Wetland** – Elliot-Laidlaw Complex **Environmentally Significant Areas** – East Lambeth Forest ESA, Delaware NE Woodlot, Silver Swamp, Foster Ponds, Lower Dingman Corridor, Mud Lakes **Earth Science Areas of Natural and Scientific Interest** – Kilworth Shoreline (UTRCA 1996, County ESA reports)

References: For a complete listing of references, see the full report: *The Upper Thames River Watershed Report Cards* (UTRCA, 2001).

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