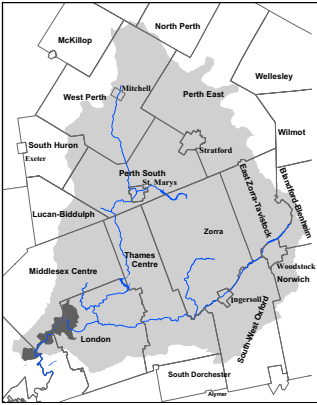




River Bend Watershed Report Card

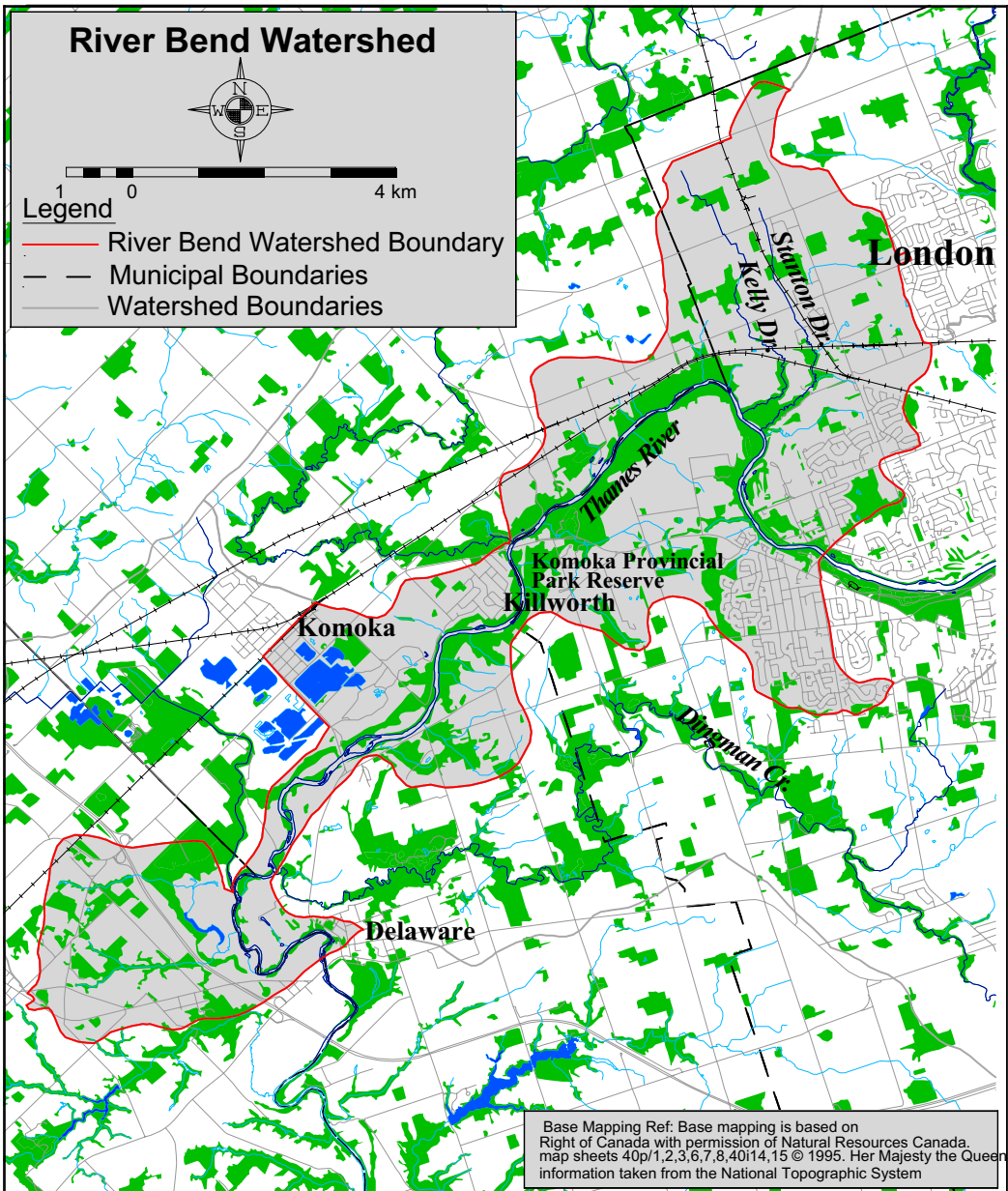


This report card outlines environmental information for the River Bend watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, municipalities 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:

B Forest Conditions

D Surface Water Quality



Grade
B

Forest Conditions

Overall forest conditions in the River Bend watershed score a B grade and the three indicators have grades from A to C. The amount of forest cover (24%) is well above the average for the Upper Thames watershed and close to the level considered sustainable. The ideal amount of natural cover for southern Ontario is 25-30% (Carolinian Canada, 2000). Forest density is also very good, indicating that most

woodlots are close enough to each other to allow seeds to be transported and animals to move between them. Forest interior is relatively low, on the other hand, suggesting most of the woodlots are long and narrow and don't support sensitive species that need to live in large protected habitats.

Indicators	River Bend Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	24%	C	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	96%	A	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	1.9%	C	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.

* This watershed is relatively small and so comparisons with other subwatersheds in the Upper Thames may be somewhat skewed.

Local Actions Needed for Improvement:

- Protection of all woodlands and Locally Significant Wetlands at the municipal planning level is a very important and effective method of preserving local forest cover. This goal can be achieved through designations in Official Plans, enforcement of tree cutting by-laws, protective zoning and other appropriate planning measures.
- Much of the forest cover within this narrow watershed lies along the Thames River. However, since urban development pressure is high, the goal is to maintain the existing riparian woods and expand and connect them where possible.
- Landowners living next to natural areas should be educated regarding ways to minimize their impact on these sensitive lands (e.g. illegal encroachment, dumping, excess trails, etc.).
- The Komoka Provincial Park Reserve serves as a protected core area that other woodlots should be linked and connected to *via* windbreaks, hedgerows, etc. Current efforts to reforest retired farmland within park boundaries should continue.
- Additional recommendations are made in the *Thames Valley Areas Study: Recommended Subwatershed Plan* (Aquifer Beech Limited, 1995).
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.



Wooded slope along the Thames River near Kilworth

Grade
D

Surface Water Quality

Water quality in the River Bend watershed (part of the Thames River), ranks a D with the four indicators ranging from B to F (see chart below). This subwatershed is influenced by landuses throughout the Upper Thames River watershed since it is the furthest downstream section. Water quality has deteriorated in the last 30 years with nitrates, suspended solids, conductivity and phosphorus all showing increasing trends. Phosphorus levels are well above the Ministry of the

Environment Guideline, suggesting inputs such as fertilizers, eroded soil, soaps/ detergents, and other urban and rural runoff. Conductivity indicates impairment from pollution. Fecal coliform bacteria levels have dropped slightly since the 1980's but are still relatively high indicating on-going contamination from human/animal waste. Benthic indicators are poorest at the upper end of this watershed (within the City of London) but improve towards the downstream end.

Indicators	River Bend Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	4.98	B	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)	0.15*	F	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)	321*	C	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)	664*	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:

- Plant buffers (grass or treed) along all open drains, creeks, and rivers to filter runoff and provide shade to the watercourses. Target the rehabilitation of the three coldwater tributaries.
- Investigate the potential impacts of aggregate extraction and water taking on surface and groundwater.
- Identify groundwater recharge and discharge zones and develop strategies for their protection.
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Assess the purpose of the five dams in this watershed to determine if any should be removed or modified to improve river health. Review operations of Springbank dam to optimize water quality (e.g. aeration).
- Encourage environmentally sustainable practices on golf courses (e.g. Audubon Cooperative Sanctuary Program).
- Implement the recommendations of the *City of London Subwatershed Implementation Plan, (1995)* and the *Thames Valley Downstream* and *Kelly-Stanton Subwatershed Studies, 1995*. Factsheets are also available for specific areas within this watershed.
- The following actions should be targeted in urban areas:
 - 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 new urban developments and implement projects to reduce stormwater runoff (e.g. 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, and 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.



River Bend Watershed Features

Area	56 sq. km (2% of Upper Thames River watershed) (3392 sq. km lies upstream)
Land Use	49% agriculture, 24% wooded, 19% urban, 5% quarries, 3% water (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	25% not mapped, 21% silt loam, 15% bottomland, 13% coarse sand, 9% loamy fine sand, 6% silty clay loam, 6% clay loam and 5% sandy loam (GIS derived using county soil maps)
Soil Erosion/Delivery	6% 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	40% spillway, 22% sand plain, 22% undrumlined till plain, 13% till moraine, 3% water and 1% beaches/ shorecliffs (Chapman and Putnam, 1984)
Stream Flow	39 cubic metres/second is the mean annual flow at the Byron Station, the furthest downstream station on the Upper Thames River. (Environment Canada, 1998)
Groundwater	There are shallow (<18 m), intermediate (18-46 m) and deep (>46 m) overburden aquifers present. (MOE 1981)
Fishery Resources	58 species of fish have been recorded. The Thames supports several gamefish including Northern Pike, Smallmouth and Largemouth Bass, migratory Walleye and salmonids. Three coldwater tributaries are present, one which supports a Brook Trout population. (DFO/UTRCA, ROM, ROM/UTRCA unpublished sample results)
Dams	There are 5 small dams within this watershed. The Springbank Dam marks the upstream end of this watershed. (UTRCA, 1991)
Sewage Treatment	There are two sewage treatment plants discharging treated effluent to the Thames in this watershed: the Oxford Pollution Control Plant and the Kilworth Heights Wastewater Treatment Plant. Rural residences are serviced by private septic systems.
Woodlot Size	67% of the woodlots are very small (<4 ha), 7% are small (4-10 ha), 9% are mid-sized (10-30 ha), 2% are large (30-40 ha), and 15% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	41% 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, Silver Shiner, Eastern Sand Darter Plants – American Chestnut, Blue Ash, Green Dragon, Schreberis Aster, Prickly Bog-Sedge, False Rue-Anemone Reptiles — Queen Snake, Eastern Spiny Softshell Turtle, Eastern Hognose Snake (ROM and UTRCA data and NHIC, 2000)
Significant Natural Sites	Provincially Significant Wetlands – Sifton Bog, Komoka Creek Swamp Complex Locally Significant Wetlands — Komoka Provincial Park Reserve Significant Natural Areas – Kilworth Tuffa Deposits, Komoka Bridge Woodlot, Kilworth Bluff, Hyde Park Potential ESA, Kains Woods, Warbler Woods (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).