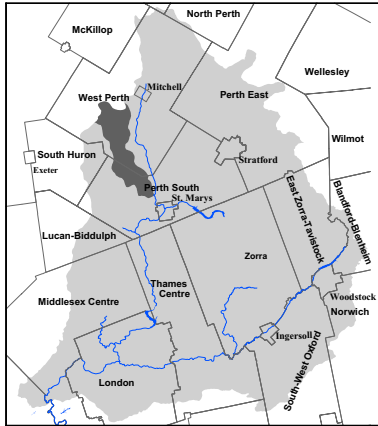




Flat Creek Watershed Report Card

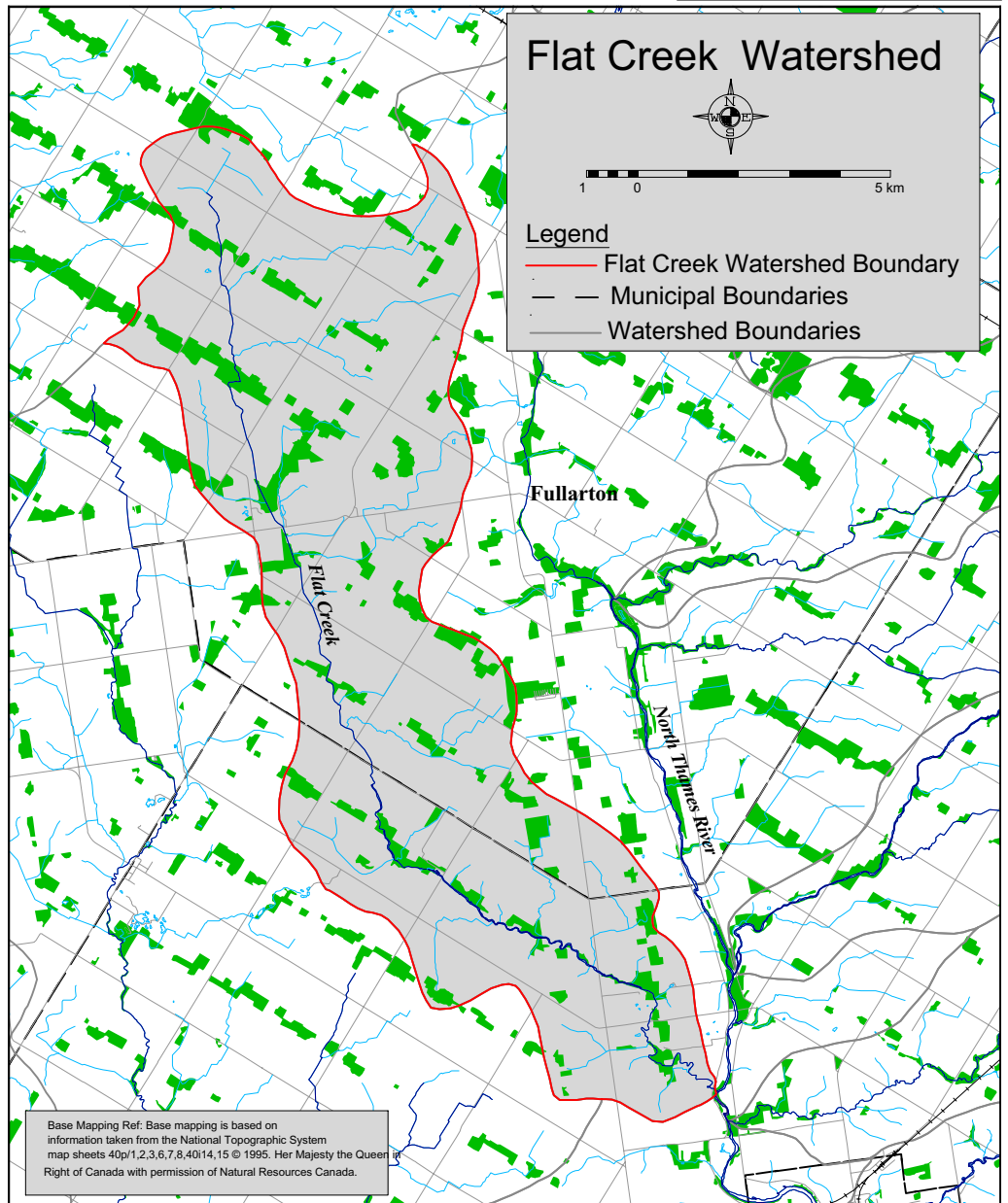


This report card outlines environmental information for the Flat Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, municipalities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

C Surface Water Quality*



Municipalities: West Perth (64 sq. km), Perth South (28 sq. km)
Watercourses: Flat Creek (a tributary of the North Thames River)

* Surface water quality grade is based on benthic scores only

Grade
D-

Forest Conditions

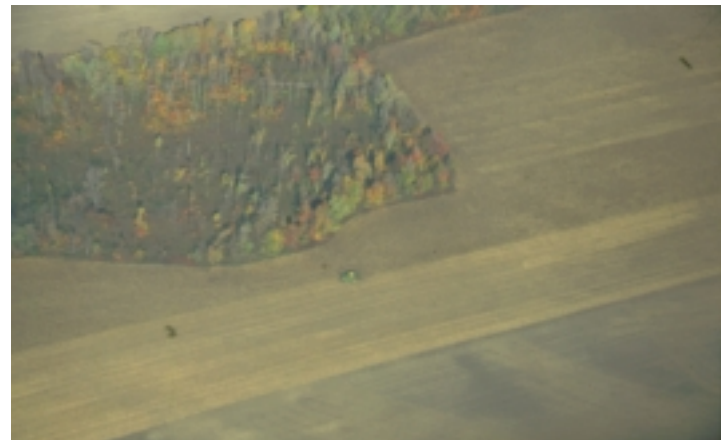
Overall, forest conditions in the Flat Creek watershed score a D- grade and the three indicators each score a D- as well (see table below). The amount of forest cover (10%) is slightly below the average for the Upper Thames watershed and considered too low for sustainability. The ideal for southern Ontario is 25-30% natural cover (Carolinian Canada, 2000). Forest density is also low, indicating most of the

woodlots are isolated and too far from other woodlots to allow seeds to be transported easily and animals to move between them. Forest interior is also low indicating that most of the woodlots are too small and narrow to support sensitive species that need to live in large protected habitats.

Indicators	Flat Creek Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	10%	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	46%	D-	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	0.8%	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 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, restrictive zoning and other appropriate planning measures.
- Forest interior can be increased by “bulking up” woodlots to make 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). There are many woodlots of moderate to large size in this watershed, but few of them contain interior forest due to the fact that they are too narrow (e.g. less than 200 metres wide).
- Connections can be made between woodlots and other habitats by planting hedgerows and windbreaks along fields, watercourses and roads.
- Forest cover along the Flat Creek is sparse except in the mid- to lower reach where it follows a line of woodlots. These woodlots are very narrow and fragmented. This area could be enhanced with additional creek bank naturalization and tree planting, making it an excellent riparian wildlife corridor.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.



Small farm woodlot

Grade
C

Surface Water Quality

The Flat Creek watershed ranks a C for overall water quality based on benthic scores (see chart below). Water quality is poorer in the top end of the watershed but improves moving downstream. Low flow conditions and flat terrain characterize this watershed. Riparian cover

is below the Upper Thames River watershed average. Water quality and flow monitoring stations are lacking in this watershed. Coldwater stream status information of streams is undocumented in this watershed.

Indicators	Flat Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	5.73	C	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)	No Data		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)	No Data		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)	No Data		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:

- Add monitoring station(s) to this watershed to adequately assess changes in water quantity and quality.
- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade. Enhancing vegetative cover is a priority within this watershed.
- Identify temperature status of streams within this watershed and target any potential coldwater streams for rehabilitation.
- Implement protection of identified infiltration zones and continue with groundwater research and monitoring (refer to *Perth County Groundwater Study*, 2001)
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Assess the purpose of the dam to determine if it should be removed or modified to improve river health.
- Target soil erosion measures to areas of high erodibility.
- Encourage drain maintenance and design procedures that protect water quality (e.g. careful timing of work, proper use of silt traps, maintain existing vegetation where possible, use of natural channel design principles)
- 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.

Flat Creek Watershed Features

Area	91 sq. km (3% of Upper Thames River watershed)
Land Use	90% agriculture, 10% wooded (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	73% clay loam, 12% silt loam, 9% bottomland, 6% loam (GIS derived using county soil maps)
Soil Erosion/Delivery	10% 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	57% undrumlinized till plain, 24% spillway, 19% till moraine (GIS derived using digitized physiographic maps, OMAFRA)
Stream Flow	not available
Groundwater	A shallow aquifer (<18 m) follows along the creek, while one large intermediate aquifer (18-45 m) encompasses much of this watershed.
Fishery Resources	22 species of fish have been recorded in this watershed including Smallmouth Bass. Stream status information (e.g. coldwater) is unavailable for this watershed.
Dams	One dam has been documented in the watershed. (UTRCA, 1991)
Sewage Treatment	No sewage treatment plants discharge to Flat Creek. All rural properties are serviced by private septic systems.
Woodlot Size	28% of the woodlots are very small (<4 ha), 24% are small (4-10 ha), 36% are mid-sized (10-30 ha), 2% are large (30-40 ha) and 10% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	17% 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, Black Redhorse (ROM data, UTRCA data, and NHIC, 2000)
Significant Natural Sites	Provincially Significant Wetlands – none Locally Significant Wetlands – McGrath Swamp Significant Natural Areas – none Earth Science Areas of Natural and Scientific Interest – North Thames Valley, Staffa Kame Complex (MNR and UTRCA 1996, County ESA reports)
References:	For a complete listing of references, see the full report: <i>The Upper Thames River Watershed Report Cards</i> (UTRCA, 2001).



Black Redhorse



Benthic Monitoring