

**Fort Erie** 2012 Watershed Report Card



# **Watershed Characteristics**



Area	183 km <sup>2</sup>							
Land Use	Agricultural lands are largely located in northern and western regions of Fort Erie. Eastern and southern regions have rural and urban residential areas with a concentration of business parks and commercial use centralized in the Peace Bridge area. There are two conservation areas as well as various recreational trails and activities such as fishing and golfing.							
Soil Type	0.1% Beach, 16% De Mixed Silt and Loan	eveloped Areas, n Soils, 0.5% Org	66% Mixed Clay and Loam S anic Soils, 0.3% Water	Soils, 0.3% Mixed Sa	ind and Loam Soils, 17	%		
Physiography	The Onondaga Esca include the Fort Eric along Lake Erie. Rar	The Onondaga Escarpment and Haldimand clay plains are major features. Other features in the watershed include the Fort Erie Moraine, Crystal Beach Moraine, and beach deposits in the southern region and beaches along Lake Erie. Ranging from 175m above sea level to 200m above sea level.						
Dams & Barriers	Possible barriers im	peding natural d	une processes and inhibitin	g amphibian habita	at (Fowler's toad).			
Sewage Services	Active sewage treat plant which emptie	Active sewage treatment plants and combined sewer overflows. Town of Fort Erie has a sewage treatment plant which empties treated effluent into Lake Erie. Some rural land owners use private septic systems.						
% Natural Area Types	Total Natural Area= 74.23 km <sup>2</sup> 22% Wooded, 4% Wetland, 43% Swamp, 31% Successional, 0.3% Unique							
	Size Category	Number of Woodlots	Total Woodland Area in WPA (ha)	% Woodland	Largest Woodlot (ha)			
Moodlat or Datab	20 to 50 ha	38	1351.60	7.40	48.36			
Size	50 to 75 ha	5	273.30	1.50	63.67			
5120	75 to 100 ha	5	364.97	2.00	95.24			
	100 to 200 ha >200 ha	4	522.39	2.86	187.20			
Fisheries Resources	41 species of fish ar species.	e present. These	include the northern pike,	largemouth bass, s	hiners and various mir	inow		
Species at Risk	25 species at risk ex Fish – 3; Grass Picke Plants – 9 including Milksnake and Fow	kist in the Fort Er erel, Redside Dac Common Hoptre ler's Toad.	ie watershed. Birds – 7 spec e, and Golden Redhorse. M ee and Eastern Flowering Do	cies including Cerule lammals – Woodlar ogwood. Reptiles –	ean Warbler and King I Id Vole. Mussels – Snu 4 including Eastern	Rail. ffbox.		

# Groundwater



#### Groundwater Vulnerability

The Niagara Water Strategy, NPCA Groundwater Study, and the Niagara Peninsula Source Protection Area Assessment Report have identified the Lake Erie North Shore study area as highly vulnerable to groundwater contamination due to the thin overburden and bedrock outcrops. The thin overburden is unable to effectively provide the groundwater with sufficient protection from bacteria, sediment and other insoluble forms of contaminants that in thicker overburden would become trapped and filtered within the soil pores. In addition, the openings in the fractured bedrock as well as the porous limestone allow for the direct passage of surface water and contaminants to groundwater resources.

#### **Private Wells**

The Fort Erie Creeks Watershed Planning Area is primarily serviced by municipal supplies and less than 21% of the population is on private water supplies such as groundwater wells. Water wells need to be properly constructed and maintained to prevent contamination. The safety, testing and treatment of a private well is the responsibility of the well owner.

#### **Groundwater Stress**

The Niagara Peninsula Source Protection Tier 1 Water Budget identified the Fort Erie Creeks Watershed Planning Area as moderately stressed with respect to groundwater supply relative to its overall demand.

#### **Groundwater Monitoring**

The NPCA has monitored one Provincial Groundwater Monitoring Network well in the Fort Erie watershed area since 2003. The well is located on Holloway Road in Port Colborne and is used to monitor chemistry and water levels of the Onondaga bedrock formation. There have been no exceedances of Ontario Drinking Water Quality Standards at this site. Data for this well show that groundwater levels generally decline from May to October, and increase from fall to spring with the largest increase in March. Groundwater levels were lowest in 2007 during a significant drought year.

## **Stewardship Highlights**

The Fort Erie Creeks Watershed has benefited from the many activities and the active involvement of individuals, organizations and municipalities on private and public lands. Some examples of the progress which has occurred in the watershed follows:

- Watershed landowners have completed 18 water and habitat improvement projects with the assistance of the NPCA's Water Quality Improvement Program and other organizations such as Land Care Niagara, Ontario Soil and Crop Improvement Association, Ontario Power Generation and the Niagara Region. These projects included Farm Best Management Practices as well as forest, stream and wetland habitat enhancements, using over 20,000 native trees, shrubs and wildflowers.
- *NPCA* undertook a 0.2 hectares prairie restoration project at Stevensville Conservation Area using native grasses and flowers with the assistance of 10 volunteers from *Pheasants Forever*.







• Between 2007-2010, 9 schools within the Fort Erie Watershed Area participated in the NPCA's ECO School schoolyard naturalization program. This program has now been replaced by the NPCA's current Canopies for

Kids program which has seen both Fort Erie Elementary and St. Joseph Catholic Elementary Schools receive 25 shade trees for their school yards.

 Through *Trout Unlimited Canada's* Yellow Fish Road program, the *NPCA* coordinated 5 events in Fort Erie Watershed Area.
215 people from local community groups and elementary schools helped paint yellow fish on 238 stormwater drains and distributed 605 door hangers to inform the public that the water (clean and dirty) that goes down these drains ends up in our local water bodies.



- Since 2008, the NPCA and dedicated volunteers from several local naturalist clubs and community organizations have been coordinating the Niagara Envirothon, a Regional competition associated with the Ontario Forestry Associations Provincial Envirothon and the Canon Envirothon which is North America's largest high school environmental education competition. Fort Erie Secondary School has participated numerous times and placed second in 2008.
- The *Bert Miller Nature Club (BMNC)* commissioned the Lake Erie Coast Project which identified the occurrences and distribution of species at risk and their habitats. The Lake Erie coast is high in biodiversity and supports many species at risk. To date, this project has observed 21 species considered to be at risk. The Committee on the Status of Species at Risk in Ontario (COSSARO) rank 6 of them as endangered, 7 as threatened, and 8 are considered a special concern. These species at risk are comprised of 8 plant, 8 bird, 4 herptiles (reptile and amphibians), and 1 mammal species. In total, hundreds of species have been identified in the study area along the Lake Erie coast. The *BMNC* has also kept busy with research projects in partnership with the local

municipalities as well as engaging landowners in outdoor recreation and educational events.

- The Friends of Fort Erie Creeks (FOFEC) have been active with field work within the watershed which recently resulted in spotted turtles (endangered Provincially and Nationally) being found in Fort Erie. FOFEC has also been engaging the community in public information presentations and wood duck nest box sales and sponsorships.
- The Niagara Restoration Council (NRC) has been working to improve the local water and habitat quality as well as raise awareness of local environmental issues. In 2010 the NRC completed the Niagara River Area of Concern (AOC) Fish Barrier Project, which saw 148 fish barriers removed, unlocking over 850 km of potential fish habitat. The NRC also participated in public education events and took part in environmental restoration efforts within the Fort Erie Watershed.



- The *Niagara Parks Commission (NPC)* has been engaged in many projects in the Fort Erie Watershed since 2007 including erosion and shoreline stabilization project as well as inventories of plants, butterflies and various Species at Risk.
- In 2012 the implementation phase of the Beaver Creek Municipal Drain Project was completed. This project will allow for the ecological impacts of drain maintenance and recovery to be studied in order to better make informed decisions. Research will continue for several years. This was a large project involving the following individuals and organizations: *Town of Fort Erie, private landowners, MNR, Fisheries and Oceans Canada, NPCA, University of Guelph, Niagara College, Urban Environmental Management Inc., LCA Environmental Consultants Inc., K Smart Associates Limited, Suda and Maleszyk Surveying Inc., FOFEC, and the BMNC.*

There has been much work completed on research and improving the health of the Fort Erie Watershed Area since 2007. **Appendix A** provides a list of published documents that describe local issues and contain recommendations and actions for further improvements.



# **Six Mile Creek**

2012 Watershed Report Card

GRADES

Water Quality Forest



GRADE

С

GRADE

D

## **Surface Water Quality**

Surface water quality monitoring of Six Mile Creek on Thunder Bay Road was initiated in 2007 and was given an overall grade of C. The water quality of this watershed regularly exceeded provincial guidelines for phosphorus and occasionally exceeded for *E. coli*. There were also frequent exceedances of chloride and total suspended solids observed. The benthic community has not been sampled at this location but will be assessed in the future. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Six Mile Creek.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description
Phosphorus	(μg/L)*	165	30 (Aquatic Life)	Phosphorus is found in products such as soap, detergent, and fertilizer as well as waste, and contributes to excess algae and low oxygen in streams
Gr	Grade	D	В	and rivers
Bacteria	( <i>E. coli/</i> 100ml)**	112	100 <i>E. coli</i> is a fecal coliform bacteria found in hur (Recreation)(livestock/wildlife/pets) waste and, in water,	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.
_	Grade	С	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causin organisms in the water.
Benthic	(FBI)	N/A	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index
-	Grade		В	(FBI) scores each taxa according to its pollution tolerance.

\*75<sup>th</sup> percentile, NPCA data. \*\*Geometric mean, NPCA data. Province-wide Grading System used.

## **Forest Conditions**

The forest condition indicators for Six Mile Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C largely due to the patches of forest in the area south of Dominion Road and east of Centralia and a fairly large municipally owned forested property north of Dominion Road and west of Burleigh Road. Although there are some significant forest patches in this watershed, the Forest Interior % received a grade of F due to the lack of connectivity between the patches. The Riparian Zone Forested % was given a grade of D due to the successional nature of the vegetation along the watercourses.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
5	%	24	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	С	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	1.9	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	F	В	some bird species require to nest successfully. The outer 100 m is considere 'edge' habitat and is prone to high predation, wind damage and alien specie invasion.
Riparian Zone Forested	%	24.5	50.0	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
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.

\*\* Targets for southern Ontario based on Environment Canada (2004) and Conservation Ontario (2011)



# **Kraft Drain**

2012 Watershed Report Card

Surface Water Quality

**GRADES** 

D

С

Forest Conditions



GRADE

D

### **Surface Water Quality**

Surface water quality monitoring of Kraft Drain on Dominion Road was initiated in 2007 and was given an overall grade of D. The water quality of this watershed regularly exceeded provincial guidelines for phosphorus and for *E. coli*. There were also frequent exceedances of chloride and total suspended solids observed. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will the improve water quality of Kraft Drain.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description	
Phosphorus	(μg/L)*	100	30 (Aquatic Life)	Phosphorus is found in products such as soap, detergent, and fertilizer as well as waste, and contributes to excess algae and low oxygen in streams	
Gra	Grade	D	В	and rivers	
Bacteria	( <i>E. coli/</i> 100ml)**	347	100 <i>E. coli</i> is a fecal coliform bacteria found in human and (Recreation)(livestock/wildlife/pets) waste and, in water, indicated	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.	
	Grade	D	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causin organisms in the water.	
Benthic	(FBI)	6.83	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index	
	Grade	F	В	(FBI) scores each taxa according to its pollution tolerance.	

\*75<sup>th</sup> percentile, NPCA data. \*\*Geometric mean, NPCA data. Province-wide Grading System used.

## **Forest Conditions**

GRADE

С

The forest condition indicators for Kraft Drain watershed produced an overall grade of C, the highest overall grade in the Fort Erie watershed area. The Forest Cover % received a grade of B which was very good and in fact exceeded the provincial target. The Forest Interior % received a grade of C. These grades were due to the large contiguous forest corridor north of Dominion Road between Alfred Street and the Crescent Park development. The Riparian Zone Forested % was given a grade of C which can be attributed to the consistent vegetation along the watercourses west of Kraft Road.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
-	%	33	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	В	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	8.4	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	С	В	some bird species require to nest successfully. The outer 100 m is considere 'edge' habitat and is prone to high predation, wind damage and alien speci- invasion.
Riparian Zone Forested	%	42.1	50.0	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
	Grade	С	В	habitats support high numbers of wildlife species and provide an array of ecological functions.

\*\* Targets for southern Ontario based on Environment Canada (2004) and Conservation Ontario (2011)



# **Frenchmans Creek**

2012 Watershed Report Card



D

D

Surface Water Quality Forest

Conditions



GRADE

D

GRADE

### **Surface Water Quality**

Surface water quality monitoring of Frenchman Creek on Phipps Road was initiated in 2003 and was given an overall grade of D. The water quality of this watershed regularly exceeded provincial guidelines for phosphorus and for *E. coli*. Although this watershed obtained a low surface water quality grade, there has been a decreasing trend in phosphorus and metal concentrations at this sample station. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient and bacteria contamination will improve the water quality of Frenchman Creek.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description	
Phosphorus	(µg/L)*	70	30 (Aquatic Life)	Phosphorus is found in products such as soap, detergent, and fertilizer as well as waste, and contributes to excess algae and low oxygen in streams	
	Grade	D	В	and rivers	
Bacteria	( <i>E. coli/</i> 100ml)**	130	100 (Recreation)	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal contamination.	
	Grade	С	В	<i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.	
Benthic	(FBI)	7.31	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments) are good indicators of water quality and stream health. The Family Biotic Index	
-	Grade	F	В	(FBI) scores each taxa according to its pollution tolerance.	

\*75<sup>th</sup> percentile, NPCA data. \*\*Geometric mean, NPCA data. Province-wide Grading System used.

## **Forest Conditions**

The forest condition indicators for Frenchman Creek watershed produced an overall grade of D. The Forest Cover % received a grade of B which was very good and close to the provincial target. This grade was largely due to the forests remaining in the headwater areas of this watershed as the lower reaches are more urban in nature. The Forest Interior

% and the Riparian Zone Forested % both received a grade of D due to the successional nature of the vegetation that does exist along the watercourses in much of this watershed.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
E	%	22	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	В	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	3.6	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot that
	Grade	D	В	some bird species require to nest successfully. The outer 100 m is considere 'edge' habitat and is prone to high predation, wind damage and alien specie invasion.
Riparian Zone Forested	%	25.0	50.0	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
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.

\*\* Targets for southern Ontario based on Environment Canada (2004) and Conservation Ontario (2011)



# **Black Creek**

2012 Watershed Report Card

GRADES

D

Surface Water Quality Forest



### **Surface Water Quality**

Surface water quality monitoring of Black Creek on Phipps Road was initiated in 2003 and was given an overall grade of D. The water quality of this watershed regularly exceeded the provincial guideline for phosphorus but met the guideline for *E. coli*. Since 2003 there has been decreasing trend in *E. coli* concentrations at this sample station. The benthic community found in this watershed mainly consisted of pollutant tolerant animals and indicated impaired water quality. Watershed initiatives that reduce nutrient contamination will improve the water quality of Black Creek.

Indicators		2007 - 2011	Provincial Guideline	Indicator Description
Phosphorus	(µg/L)*	180	30	Phosphorus is found in products such as soap, detergent, and fertilizer as
	Grade	D	В	and rivers
Bacteria	( <i>E. coli/</i> 100ml)**	42	100	<i>E. coli</i> is a fecal coliform bacteria found in human and animal (livestock/wildlife/pets) waste and, in water, indicates fecal
	Grade	В	В	contamination. <i>E coli</i> is a strong indicator for the potential to have other disease-causing organisms in the water.
Benthic	(FBI)	6.9	<5.00 (Target Only)	Benthic organisms (aquatic invertebrates that live in stream sediments)
	Grade	F	В	Index (FBI) scores each taxa according to its pollution tolerance.

\*75<sup>th</sup> percentile, NPCA data. \*\*Geometric mean, NPCA data. Province-wide Grading System used.

## **Forest Conditions**

The forest condition indicators for Black Creek watershed produced an overall grade of D. The Forest Cover % received a grade of C largely due to a few large patches in the headwaters and in the area north of Netherby Road. The Forest Interior % received a grade of D as did the Riparian Zone Forested %. These grades are likely due to the successional nature of vegetation between the larger forested patches and the watercourses.

Indicators		2007 - 2011	S. Ont. Target**	Indicator Description
Farmed Carrier	%	21	30	Percent forest cover is the percentage of the watershed that is forested or
Forest Cover	Grade	С	В	wooded. Forest cover includes upland and lowland forest types.
Forest Interior	%	4.0	10.0	Percent forest interior is the percentage of the watershed that is forested interior. Forest interior is the protected core area 100 m inside a woodlot th some bird species require to nest successfully. The outer 100 m is considere 'edge' habitat and is prone to high predation, wind damage and alien specie invasion.
	Grade	D	В	
Riparian Zone Forested	%	23.1	50.0	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. Ripar
	Grade	D	В	habitats support high numbers of wildlife species and provide an array of ecological functions.

\*\* Targets for southern Ontario based on Environment Canada (2004) and Conservation Ontario (2011)

GRADE

D

GRADE

D