

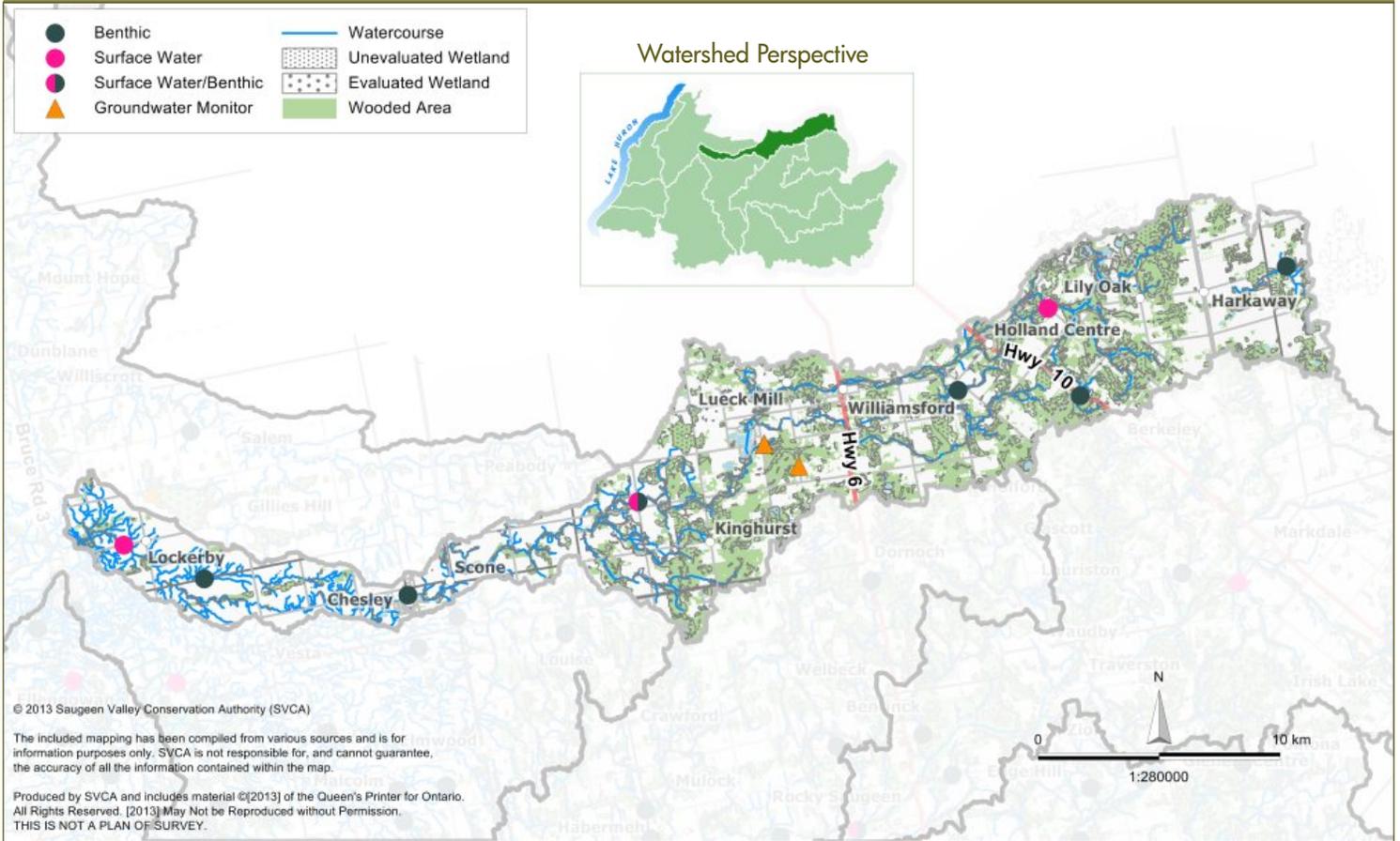


2007-2011

North Saugeen River Watershed REPORT CARD

A report on the general condition of the North Saugeen River Watershed

2013



AVERAGE GRADES

- B** Forest Conditions
- A** Wetland Conditions
- B** Surface Water Quality
- A** Groundwater Quality

The North Saugeen River is a tributary of the Main Saugeen River. It drains 269 square kilometres of predominantly agricultural and forested land. The river is approximately 52 kilometres in length with an average gradient of 3 metres per kilometre. Tributaries of the North Saugeen River include Negro Creek, Hamilton Creek and numerous unnamed smaller creeks. Communities within the watershed include Holland Centre, Williamsford, Mooresburg, Scone, and Chesley.

The majority of the North Saugeen River Watershed lies within two physiographic regions of the Horseshoe Moraines and the Saugeen Clay Plain. Till moraines, spillways, and drumlins are evident in the eastern end of the watershed while clay plains are the predominant feature from Chesley to the mouth of the river (where it enters the Main Saugeen River north of Paisley). There are a number of natural ponds and lakes that exist in this drainage basin, the largest of which are the Robson Lakes and McCullough Lake.

Forest Conditions

With an *average* grade of 'B' for forest conditions, the North Saugeen River Watershed exceeds the Environment Canada guidelines of 30% forest cover and 10% forest interior. Both forest cover and forest interior scored an 'A' grade which is the same as the previous report card. The grade for riparian cover was a 'C' grade. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover. The North Saugeen River Watershed has 42.3% of the riparian zone forested.

Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are maintained or improved. From 2007-2011 there were 43,765 trees planted in this watershed through the Grey Bruce Forestry Service.

Wetland Conditions

This report card summarizes the conditions of both 'evaluated' and 'unevaluated' wetlands. Since the last set of report cards summarized only the 'evaluated' wetlands the present results cannot be compared to the previous report card. When considering the presence of all wetlands, the North Saugeen River Watershed scores an 'A' grade with 21.9% wetland cover. Care should be taken to protect existing wetlands to maintain the current grades.



Surface Water Quality

The North Saugeen River scores an *average* grade of 'B' for surface water quality. A 'B' grade indicates good ecosystem health, however, some areas need to be enhanced. When comparing using the new grading system, the overall grade is the same as the last report card. While there is an improvement in the phosphorus grade to an 'A', the *E. coli* grade stayed the same at a 'B'.

The average total phosphorus concentration is now below the provincial water quality objective of 0.03 mg/L. The *average E. coli* is still below the recreational guidelines of 100 CFU/100mL, both of which are positive trends. Unfortunately, the benthic invertebrate grade went down from a 'B' to a 'C'. Changes in the benthic invertebrate community are seen as early indicators of deterioration in water quality that might not be seen in the chemistry results. Efforts must continue to encourage landowners and the agricultural community to preserve and improve natural land cover. Current stressors such as climate change and invasive species could pose significant threats in this watershed, therefore, efforts should be made to address these stressors to maintain or improve the current scores.

Groundwater Quality

The groundwater quality in the two monitoring wells in this watershed continues to be excellent. The wells monitor three overburden aquifers and one bedrock aquifer. It should be noted that groundwater aquifers do not conform to watershed boundaries but rather flow in an east to west direction through the watershed. Different types of aquifers exist throughout the region and the quality of individual wells on private property may vary from that of the provincial monitoring wells in this report. There have been no exceedences of the Ontario Drinking Water Standards during this study period.

GRADE DESCRIPTION

- A** = Excellent ecosystem conditions. Some protection and enhancement may be required.
- B** = Good ecosystem conditions. Some areas may require enhancement and/or improvements.
- C** = Ecosystem conditions that warrant general improvements.
- D** = Poor ecosystem conditions. Overall improvements necessary.
- F** = Degraded ecosystem. Conditions in need of considerable improvement.

North Saugeen River Watershed

	Indicators	2002-2006 % of AREA	2007-2011 % of AREA	2007-2011 Grade	Trend *	Indicator Description
Forest Conditions	Forest Cover	41.2	44.6	A	↔	Forest cover is the percentage of the watershed that is forested or wooded. <i>Environment Canada suggests that 30% forest cover is the minimum needed to support healthy wildlife habitat.</i>
	Forest Interior	12.3	13.7	A	↔	Forest interior refers to the protected core area found inside a woodlot. It is the sheltered, secluded environment away from forest edges and open habitats. <i>Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain plant and animal species.</i>
	Riparian Cover	**	42.3	C		Riparian Cover is the percentage of forested habitat along a given waterway. <i>Environment Canada guidelines suggest that at least 75% of stream length should have 30 metre naturally vegetated buffers. Forested vegetation represents about two-thirds with the rest being marsh, meadow, and shrub thicket. The equivalent target is 50% of the riparian zone in forest cover.</i>
	Average Grade	A	B		↓	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Wetland Conditions	Wetland Cover	**	21.9	A		Wetland cover is the percentage of existing wetland in a watershed. <i>Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed.</i>
	Average Grade	-	A			Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.

	Indicators	2002-2006 Result	2007-2011 Result	2007-2011 Grade	Trend *	Indicator Description
Surface Water Quality	Benthic Invertebrates	3.97	5.27	C	↓	Benthos or benthic macroinvertebrates are large bottom dwelling insects, crustaceans, worms, mollusks, and related aquatic animals that live in watercourses. They are good indicators of water quality, responding quickly to environmental stressors such as pollutants. <i>The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values range from 1 (healthy) to 10 (degraded).</i>
	Total Phosphorus	0.026 (mg/L)	0.006 (mg/L)	A	↑	Total phosphorus is indicative of nutrient levels within a watercourse. Phosphorus is required for the growth of aquatic plants and algae, however, concentrations above the Provincial Water Quality Objective may result in unhealthy stream conditions. <i>The Provincial Water Quality Objective is 0.03 mg/L.</i>
	<i>E. coli</i>	57 (CFU/ 100mL)	41 (CFU/ 100mL)	B	↔	<i>E. coli</i> originate from the wastes of warm blooded animal, including humans, livestock, wildlife, pets and waterfowl. <i>The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.</i>
	Average Grade	B	B		↔	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Groundwater Quality	Nitrite + Nitrate	0.16 (mg/L)	0.19 (mg/L)	A	***	Nitrates are present in water as a result of decay of plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. <i>The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.</i>
	Chloride	8.8 (mg/L)	9.5 (mg/L)	A	***	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. <i>The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.</i>
	Average Grade	A	A		***	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.

* For the 2007-2011 report cards the grading system has changed. To be able to compare the results, the scores from the 2002-2006 report cards were included. The new grading system was applied to these former scores and it was then determined whether the grades have stayed the same ↔, improved ↑, or declined ↓.

** The data was calculated differently for the previous set of report cards so it is not possible to compare to the 2007-2011 data.

*** Insufficient data to establish trends.

Surface water data used for this interpretation were obtained through the Provincial Water Quality Monitoring Network (PWQMN), the Ontario Benthos Biomonitoring Network (OBBN) and Saugeen Conservation's Water Quality Monitoring Network.

Groundwater data used for this interpretation were obtained through the Provincial Groundwater Monitoring Network (PGMN). It should be noted that groundwater aquifers do not conform to watershed boundaries but rather flow in an east to west direction through the watershed.

North Saugeen River Watershed General Information

Area

269 sq. km

Municipalities

Municipality of Arran-Elderslie, Municipality of West Grey, Township of Chatsworth, Municipality of Grey Highlands

Physiography

34% till moraine, 28% spillway, 22% till plain (drumlinized), 10% clay plain, 1% water, 1% sand plain, 1% drumlin, 1% peat and muck, 1% till plain (undrumlinized)

Soils

65% medium to moderately fine loam, 11% organic material, 9% silty clay, 5% fine to moderately coarse sandy loam, 4% other (may include small percentages of alluvium, breypan, bottomlands etc), 2% clay loam, 2% silty loam, 1% coarse sandy loam and loamy sand

Dams

In total there are 12 dams in the watershed, of which 9 are considered large dams (greater than 3 metres in height).

Sewage Treatment Facilities

Chesley

Woodlot Size

Large forested areas with forest interior in the central watershed

Land Use

51% agriculture; 45% forested; 1% urban

Areas of Natural and Scientific Interest (ANSI)

- Kinghurst Forest, Kinghurst West, Beaverdale Fen, Lily Oak Forest, Robson Lakes

Groundwater Aquifer Sources

Salina Formation, Guelph Formation, Amabel Formation

Stream Flow (mean)

Mean annual flow - 5.35 cubic metres per second (cms)

Stream Flow (low) *

7Q10 flow¹ - 1.87 cms 7Q20 flow² - 1.85 cms

Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)

Hungerford's Crawling Beetle, Eastern Prairie Fringed-orchid, Ebony Boghaunter, Jefferson X Blue-spotted Salamander, Eastern Ribbonsnake, Harlequin Darner, Hart's-tongue Fern, Massasauga Rattlesnake, Milksnake, Northern Map Turtle, Scarlet Beebalm, Schweinitz's Sedge, Northern Long-eared Bat

* ¹ 7Q10 - the lowest mean flow for seven consecutive days that has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year.

² 7Q20 - the lowest mean flow for seven consecutive days that has a 20-year recurrence interval period, or a 1 in 20 chance of occurring in any one year.

Environmental Initiatives from 2007-2011

- **Saugeen Conservation** through its various programs continually monitors watershed and subwatershed conditions. From 2007 to 2011 conservation efforts included water quality monitoring and the planting of **43,765** trees.
- Environmental self assessments are available for the rural non-farm landowner using The **Rural Landowner Stewardship Guide** for the Lake Huron Watershed. This guide provides a framework that allows landowners to evaluate their property and its management. Landowners can learn what they are doing right and where they can improve in protecting the natural environment. See the website www.theguide.huronstewardship.on.ca to find out how to get a guide.
- **Grey County Forest Stewardship Council** endeavoured to foster education and new initiatives that promote natural resource sustainability within Grey County. The main focus was to initiate and support stewardship projects and demonstrations of sustainable resource management practices.



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For more information about the report card process, indicators and how grades were calculated, please refer to the **Background** document.

Alternative formats of this report are available upon request.