WATERSHED REPORT CARD

Pine River Watershed

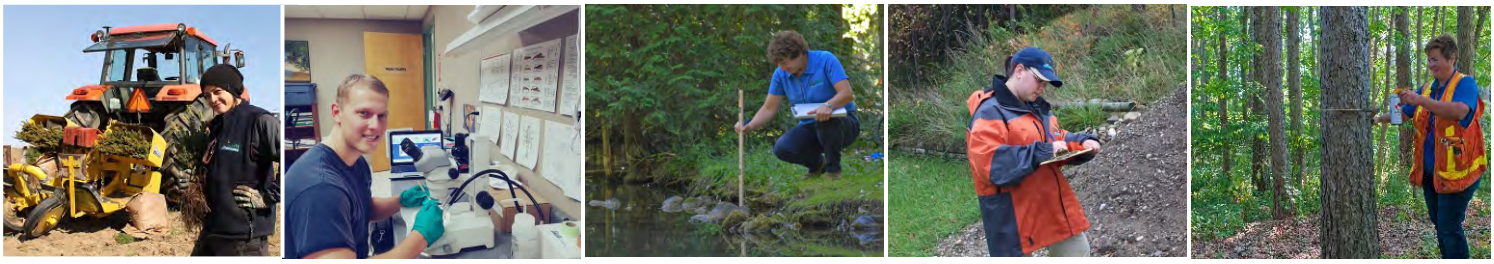
The Pine River is situated in southern Bruce County and flows from east to west through mainly agricultural lands and intensive lakeshore development, before it reaches Lake Huron. Major tributaries include Royal Oak and Clark Creeks as well as the South Pine River.

As a result of the productive soils, much of the land here has been cleared of wetlands and forests. Wetlands that do exist have been significantly impacted by drainage associated with intensified land uses.

Working to Keep Your Future Green

Staff work with partners and organizations in implementing projects that aim to improve the local environment. Research, lab and field work, data analysis, observations, testing, and so much more, is completed by staff in helping to determine the best and most applicable environmental measures to apply in each sub-watershed.

Watersheds are complex systems where everything is connected. We all live downstream.



Saugeen Conservation is a proud member of Conservation Ontario

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Alternative formats of this report are available upon request.

General Information

Area
195 sq. km

Municipalities
Township of Huron-Kinloss, Municipality of Kincardine

Physiography
56% till plain (bevelled), 19% till plain (undrumlinized), 15% sand plain, 6% till moraine, 3% beaches and shorecliffs

Soils
69% clay loam, 12% fine to moderately coarse sandy loam, 7% other (may include small percentages of alluvium, breypan, bottomlands etc), 7% silty loam, 2% coarse sandy loam and loamy sand, 1% medium to moderately fine loam, and 1% organic material

Dams
None on the Pine River and one small dam (1.7 metres in height) on Clark Creek

Sewage Treatment Facilities
Ripley

Woodlot Size
Small woodlots limited to the back of farm lots or around watercourses with the exception of the Huron fringe area

Land Use
89% agriculture; 7.8% forested; 1.6% urban

Provincially Significant Natural Areas - none

Groundwater Aquifer Sources
Detroit River Group; Onondage Formation

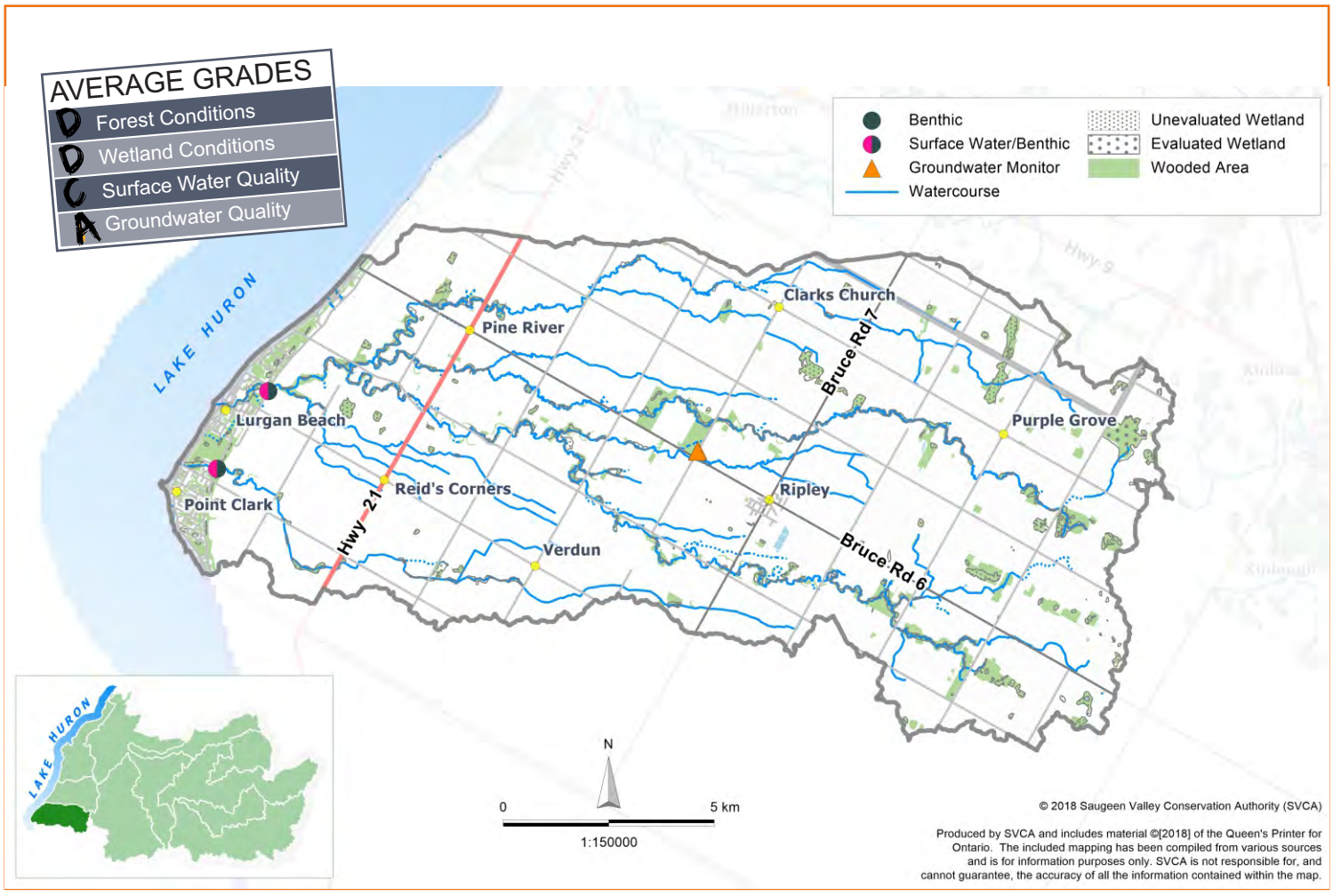
Stream Flow (mean)
Mean annual flow - 2.62 cubic metres per second (cms)

Stream Flow (low) *
7Q10 flow[1] - 0 cms 7Q20 flow[2] - 0 cms (dry in summer)

Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)
American Beach Grass,Tulip Tree, Silk Moth, Clamp-tipped Emerald, Beaked Spike Rush, Blue Leaved Willow, Great Lakes Sand Reed, Great Lakes Wild Rye, Bobolink, Eastern Meadow Lark, Snapping Turtle

* [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.



	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Forest Conditions	Forest Cover (% of Area)	D 7.8	D 7.8	**D 7.7**	Forest cover is the percentage of the watershed that is forested or wooded. ***Environment Canada suggests that 30% forest cover is the minimum required to support healthy wildlife habitat.***
	Forest Interior (% of Area)	F 0.8	F 0.7	**F 0.6**	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. ***Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain healthy plant and animal species.***
	Riparian Cover (% of Area)	C 37.0	D 26.0	**C 27.9**	Riparian Cover is the percentage of forested habitat along a given waterway. ***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.***
	Average Grade	D	D	**D**	Grade D indicates poor ecosystem conditions and overall improvements are necessary.
Wetland Conditio	Wetland Cover	No Data	D 3.4	**D 3.4**	Wetland cover is the percentage of existing wetland in a watershed. ***Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed. Grade D indicates poor ecosystem conditions and overall improvements are necessary.***

	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Surface Water Quality	Benthic Invertebrates (FBI)	D 6.01	C 5.41	**D 6.19**	Benthos or benthic invertebrates are 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. ***The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values ranging from 1 (healthy) to 10 (degraded).***
	Total Phosphorus (mg/L)	D 0.07	C 0.041	**C 0.035**	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. ***The Provincial Water Quality Objective is 0.03 mg/L.***
	E. coli (cfu/100mL)	D 718	C 121	**B 68**	*E. coli* originate from the wastes of warm blooded animals, including humans, livestock, wildlife, pets and waterfowl. ***The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.***
	Average Grade	D	C	**C**	Grade C indicates ecosystem conditions that need to be enhanced.
Groundwater Quality	Nitrite + Nitrate (mg/L)	No Data	A 1.04	**A 1.01**	Nitrates are present in water as a result of decaying plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. ***The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.***
	Chloride (mg/L)	No Data	A 10.8	**A 10.2**	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. ***The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.***
	Average Grade	No Data	A	**A**	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.

Forest Conditions

With an *average* grade of 'D' for forest conditions, this watershed continues to fall short of the Environment Canada guidelines of 30% forest cover and 10% forest interior. Forest cover scored a 'D' grade and forest interior scored an 'F' grade, the same as the last report card. The grade for riparian cover did improve from a 'D' grade to a 'C'. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover, however this watershed has only 27.9%. Although many young trees have been planted in the watershed, it will take years before they have an impact in this regard. It is highly recommended that tree planting continue in order to improve forest conditions.

Wetland Conditions

This report card summarizes the conditions of all wetlands. This watershed scores a 'D' grade with 3.4% wetland cover. This is below the Environment Canada recommendation of 10% as the minimum required for a healthy watershed. It would be advisable to allow low lying or wet areas to naturalize. These are key areas to overall watershed health. It is also important, where possible, to restore previously drained wetlands and to protect the few wetlands that remain.

The wetland evaluation system was created to protect important wetlands valued at a provincial level. Under the Planning Act, provincially significant wetlands are protected from development and alteration.

Surface Water Quality

This watershed scores an average grade of 'C' for surface water quality, the same as the last report card. The average total phosphorus concentration remains above the Provincial Water Quality Objective of 0.03 mg/L. The average E. coli is now below the recreational guidelines of 100 CFU/100mL, however, counts do increase considerably after storm events. The grades have improved since the last report card going from 'C' to 'B'. The benthic invertebrate grade, however, went down from a 'C' to a 'D'. Changes in aquatic organisms or benthic invertebrates are seen as early indicators of deterioration in water quality. Efforts should continue to encourage landowners and the agricultural community to preserve and improve natural land cover that will then help to improve water quality.

Groundwater Quality

To date, only nine annual samples have been taken from the well in this watershed. The groundwater quality (based on data from this one monitoring well) is excellent. 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. There have been no exceedences of the Ontario Drinking Water Standards during this study period.

Ecosystem Grade Description

A	Excellent conditions.
B	Good conditions. Some areas may require enhancement and/or improvements.
C	Conditions that warrant general improvements.
D	Poor conditions. Overall improvements necessary.
F	Degraded conditions, in need of considerable improvement.

What is being done *in this Watershed?*

✓ **Saugeen Conservation** aims to improve watershed health through virtually all its programs.

✓ **Saugeen Conservation** is a key player in providing assistance and technical expertise to local groups, committees, ministries etc. that work to improve the local environment.

✓ The **Pine River Watershed Initiative Network** or PRWIN (initiated in 2000) partners with numerous organizations, including Saugeen Conservation in addressing environmental issues along this river system. Since 2000 they have planted 122,550 trees, installed 7,295 metres of cattle exclusion fencing helping to protect over 7.3 km of riparian habitat and assisted farmers with the installation of 12 water and sediment control berms and the construction of wetlands to aid in water quality.

✓ **Saugeen Conservation** in partnership with **OMAFRA and the MOECC** continue to **conduct water quality sampling** to better understand runoff events and possible contaminants entering the river system.

✓ The **Municipality of Huron-Kinloss** implements a **septic re-inspection program** in response to water quality concerns in the local rivers and Lake Huron. All systems will be inspected on a 7-9 year cycle. The Municipality also carries out an extensive water quality monitoring program to better understand issues in this watershed.

✓ The **Municipality of Huron-Kinloss** implements a **control program for the invasive Phragmites** plant that has taken over much of the shoreline area.

✓ Saugeen Conservation works closely with **local agricultural organizations** to provide ongoing workshops and seminars for farmers on a variety of different conservation topics.

✓ The **Forest Health Collaborative helps to** educate municipalities and the public on forest health issues.

What is being done *in this Watershed?*

- ✓ **Stewardship Grey Bruce** offers funding and technical support for landowners in the watershed interested in completing habitat enhancement projects.
- ✓ The **Lake Huron Fishing Club** (with funding from Bruce Power), works with local schools in setting up fish aquariums to educate students about the importance of a healthy fishery.
- ✓ Saugeen Conservation offers over **50 different hands-on environmental programs** to over 10,000 children annually, including the Grey Bruce Children's Water Festival and the Bruce Grey Forest Festival.
- ✓ **Grey-Bruce ALUS** program recognizes land stewardship and assists farmers in implementing and funding projects to produce ecosystem services. ALUS aims to improve the biodiversity on the agricultural landscape.
- ✓ **Bruce Grey Woodlands Association** educates the community through workshops and tours on forest related topics.
- ✓ The **Lake Huron Centre for Coastal Conservation** works with Saugeen Conservation, in providing expertise relating to Lake Huron and shoreline issues. They specialize in research, technical advice, education programs, public outreach, stewardship efforts and much more.
- ✓ **Healthy Lake Huron** has designated the Pine River Watershed as a priority area where long-term monitoring, research, sampling and stewardship efforts are recommended due to degraded conditions.
- ✓ The **Huron Fringe Field Naturalists** work to preserve wildlife and natural habitat and to promote public interest and knowledge of the natural history in this area. In doing so, they conduct public hikes and workshop, participate in tree planting efforts, bird house construction and bird counts.
- ✓ **Environmental self assessments** are now available for the rural non-farm landowner with the release of The Rural Landowner Stewardship Guide for the Lake Huron Watershed. This guide provides a framework for landowners to evaluate their property and help determine best management practices.

Recognizing our Important Partners