Huron River Watershed Council

Protecting the river since 1965

Portage Creekshed Report

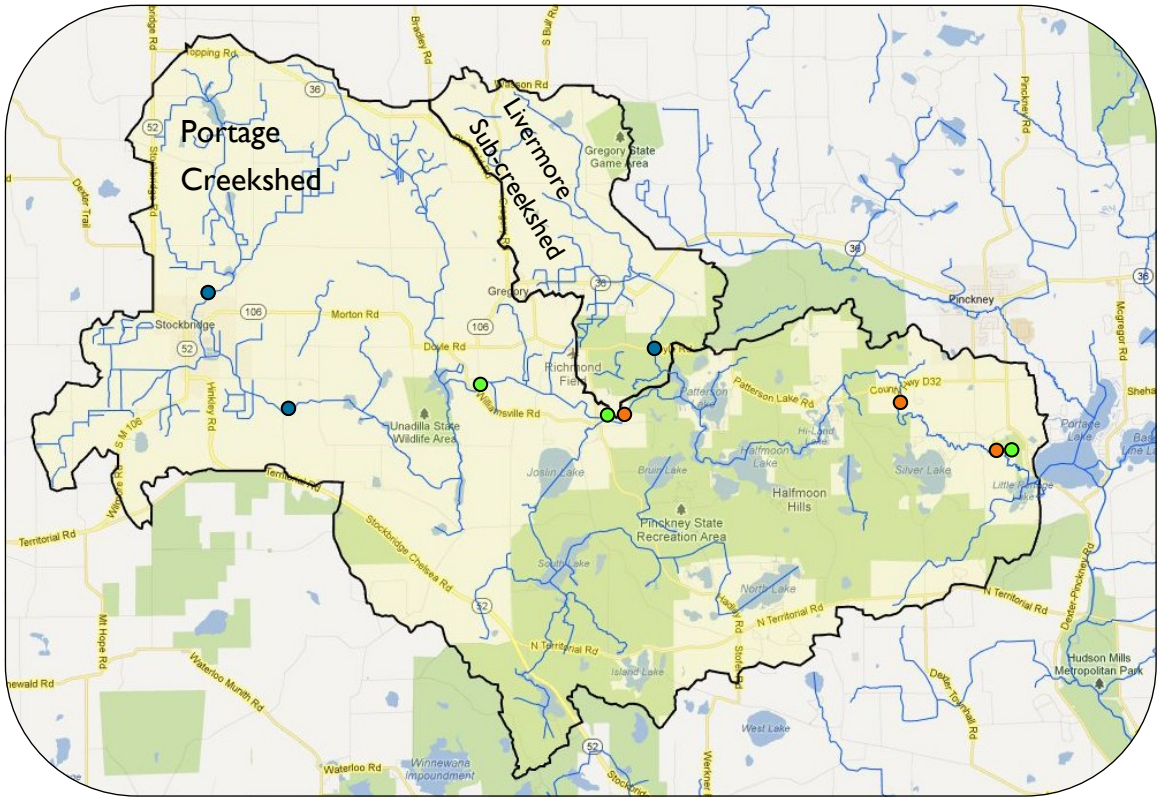
www.hrwc.org/portage

Creekshed Profile

Portage Creek, once one of Robert Cavelier de la Salle's main routes to Chicago, links to Portage Creek of the Grand River with an overland carry of one mile. Called Hell Creek by residents, it is easily one of the region's prettiest and healthiest tributaries. The Portage creekshed includes major lakes such as North Lake, Halfmoon Lake, and Portage Lake. Much of this lakefront was divided into very small parcels in the early 1900s for seasonal cottages. However, over the past several decades, the housing has been converted to year-round use, taking a toll on the lakes with the impacts of septic systems, increased impervious surfaces, and a loss of riparian vegetation.

Portage Creek flows through Ingham, Jackson, Livingston, and Washtenaw Counties; Dexter, Lyndon, Putnam, Stockbridge, Unadilla, and Waterloo Townships; and the Village of Stockbridge. It is composed of 115 miles of branching stream channels, and it drains 79 square miles of land. Over its length, the creek's elevation drops 116 feet. The average slope is 11 feet per mile, which is slightly less steep than most of the other tributaries of the Huron River. There are 29 lakes (open water > 5 acres) and 62 ponds (open water < 5 acres) in the Portage creekshed.

The Portage Creek watershed is geologically unique due to glacial activity. Water retention in the wetlands, floodplains and lakes, as well as fast water drainage in the upland areas, creates a mosaic of different habitats. The varied terrain allows for an array of ecological communities and thus the creekshed has a large diversity of plants and animals, including several rare species. Much of the Portage creekshed lies in the beautiful Pinckney Recreation Area, which has great opportunities for paddling, hiking, and mountain biking.

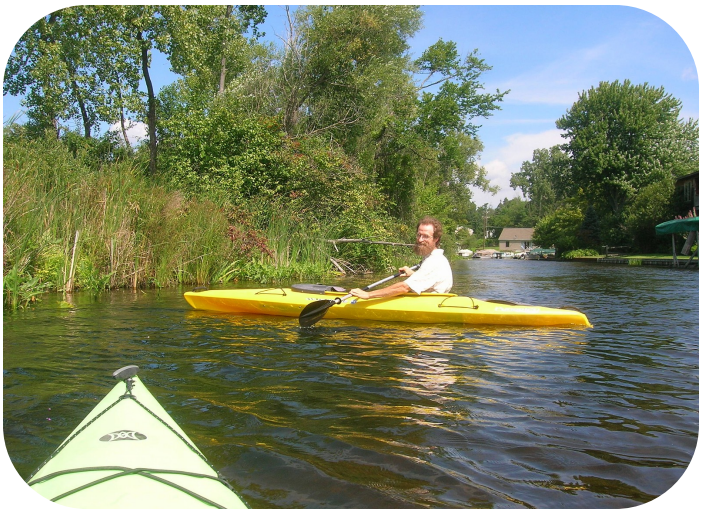


- Monitoring sites for Aquatic Insects, Stream Habitat, and Stream Temperature
- New 2012/2013 monitoring sites for Aquatic Insects and Stream Habitat (analysis in this report is not based on these sites)
- Flow monitoring sites (2008-09)

For more details on all of these parameters, please see inside.

Huron River Watershed Council, 1100 North Main Street, Ann Arbor, MI 48104, (734) 769-5123, **Updated 2013**

Creekshed Status and Trends



HRWC volunteer Jeff Campbell paddles through Little Portage Lake in order to assess the wetland shoreline. Credit: HRWC

Creekshed Land Use

Habitat for a healthy ecosystem

Total creekshed Size: 79 square miles
Land use based on the year 2000:
Agriculture: 33%, *27 square miles*
Residential & urban: 12%, *10 square miles*
Forest: 17%, *14 square miles*
Open: 13%, 10 *square mile*
Wetland: 19%, *15 square miles*

Total impervious surface: 5% , *3 square miles*

Numerous studies have shown that fish and insect communities are less diverse when the amount of impervious surface exceeds 10-12% of the total watershed area. Only 5% of the Portage creekshed is currently impervious, and so the creek enjoys the benefits of the natural water cycle.

Creekshed Natural Areas

Intact natural lands

The creekshed's forests, wetlands, and grasslands soak up rainwater and runoff, filter pollutants from runoff, and provide wildlife habitat and beautiful places for us all to enjoy. About 42% of the creekshed remains as intact natural areas, with about 44% of those areas enjoying a measure of protection as state land and private preserves. The other 56% of natural areas are not protected and face an uncertain future. It will be important to keep these lands natural, so they can continue to help keep the creek healthy.

Stream Habitat

Excellent at the mouth; otherwise fair throughout

In the downstream study site, Portage Creek has the riffles, pools, bends, and runs that are characteristic of low human impact. The substrate at this location is a mix of sand, rocks, and cobble. However, the two upstream sites have been channelized in the past and have less habitat and more fine sediment. The stream map indicates that many creeks upstream of Pinckney Recreation Area have been straightened in the past, probably for agricultural purposes.

Dams and Impoundments

Present, but do not dominate the system

While dams provide recreational benefits, they greatly alter a stream's hydrology, and degrade fish and insect habitat. The major dam in the Portage creekshed creates Hi-Land Lake at Hell. Hi-Land Dam is located on the main branch of Portage Creek and cuts off fish passage from the lower half of Portage Creek to the upper tributaries.

Fish Community

Cool-water fish community

Portage Creek is home to smallmouth and largemouth bass and northern pike, but smaller species and suckers compose most of the fish community, including blacknose dace, creek chub, mottled sculpin, rainbow darters, and hognose suckers. The creekshed is also full of lakes with plentiful panfish and bass populations, and several of the lakes are known to hold cisco, a state-listed threatened salmonid.

Aquatic Insect Community

Excellent at the mouth but declining; otherwise fair throughout

At the two upstream sampling sites on Unadilla and Williamsville Road, the diversity of the insect community is average for streams of this size. However, where Portage Creek ends by flowing into Portage Lake, the aquatic insect population is very diverse, and the creek contains several sensitive insect types. However, there has been a statistically significant decrease in diversity over the past 10 years at this location.

Stream Water Temperature

Cool water

Portage Creek receives a mix of cold groundwater and warmer surface runoff. Much of the stream is shaded by natural riparian areas. Temperature measurements show that the water temperature of Portage Creek rarely gets above 75 °F and rarely drops below 65 °F during July and August. This is a normal water temperature for a creek with these properties and in this area of Michigan.

E. coli

Some outbreaks at bathing beaches

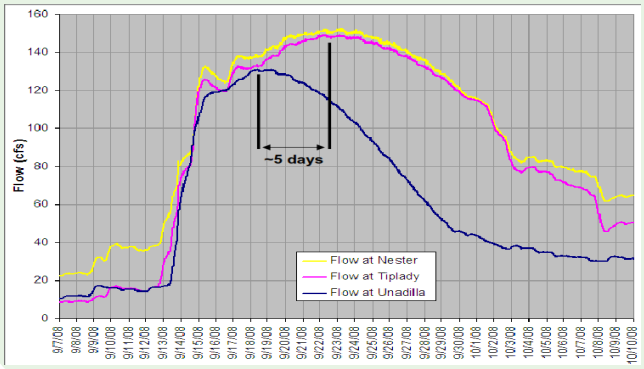
E. coli bacteria is a useful water quality indicator for the presence of fecal contamination. HRWC does not monitor water quality in Portage Creek, but swimming beaches are monitored locally and have periodically exceeded state standards for human health. It can take up to 48 hours after heavy rain events for high bacteria levels to return to safe levels.

Stream Flow

Natural flow dynamics

Stream flow is an important underlying factor for determining likely erosion rates, stream habitat quality, and aquatic community diversity. An important measure is "flashiness" or the rate a stream rises and falls through a storm event (see below). Portage Creek is less flashy (i.e. more natural) than comparable Michigan and Midwestern streams. Many natural lakes and dammed impoundments moderate peak flows in the system.

2008 Storm Event Graph



7 inches of rain fell September 12-15.

Color Coded Ranking

Excellent | Fair | Poor

Water Quality

Unknown; limited data

Beyond bacteria and conductivity, little water quality data has been collected from Portage Creek. In other streams, HRWC measures nutrients, dissolved oxygen, sediments, and a few other characteristics. MDEQ data suggest that Portage Creek has good water quality, however.

Conductivity

Slightly elevated

Conductivity is a measurement of the amount of ions (also known as salts) dissolved in water. Conductivity is a quick and easy measurement to make, and is useful as an indicator of potential problems. Conductivity levels in Portage Creek are normal and have been normal since monitoring began in 1995.

Wetlands

Intact wetlands and functions, but they have declined in size over time

Wetlands provide important physical, chemical and biological functions for a watershed. A DEQ assessment for Portage creekshed shows a slower rate of wetlands loss (30%) than other parts of the watershed and state. However, wetlands have become increasingly fragmented. The greatest functional loss is in flood storage (43% loss) and nutrient processing (30% loss). Wetland habitat functions are stable and may have increased since pre-settlement.

The sun sets over Halfmoon Lake in the Portage creekshed. Credit: HRWC

Successes & Challenges

Successes

• In 2008 HRWC brought Portage Creek stakeholders together in a two-year process to develop a Watershed Management Plan for Portage Creek. The plan identified threats and impairments, and it provides a detailed action plan for future protection. Dexter, Lyndon, and Unadilla Townships are currently working with HRWC on green infrastructure planning and implementing parts of the plan through a two-year grant under the Clean Water Act.

• The Livingston County Road Commission has implemented projects, specifically at the Tiplady and Unadilla Road crossings, that have significantly reduced erosion and sedimentation at these locations.

• 9,671 acres of the creekshed enjoy permanent preservation thanks to ownership by numerous organizations, including Michigan DNR, Legacy Land Conservancy, Livingston Land Conservancy, and University of Michigan.

• Construction of sanitary sewer systems around Silver, North, Halfmoon, Blind, Patterson, Joslin, Island, and Gregory Lakes reduced very high *E. coli* levels and improved water quality.

• Dexter Township amended its Zoning Ordinance to require stormwater management on lots that were more than 20% impervious. Dexter Township encourages the use of cost-effective Low Impact Development (LID) techniques and refers contractors and homeowners to SEMCOG's Low Impact Development Manual for Michigan.

Challenges

• Water quality data from the Portage system is limited. A few years of water chemistry data could help to establish Portage Creek's quality for aquatic biology and human use, and prioritize best practices for activities on agricultural lands and road deicing.

• Pathogens from improperly functioning septic systems continue to present a challenge to water quality.

• Communities will continue to face the challenges of balancing growth with protecting natural resources. Portage creekshed holds many natural areas that are not protected and could be developed in the future.

A lush riparian zone surrounds Portage Creek as it flows through Reichert Nature Preserve. Credit: Kernie King

What You Can Do!

At home

• Have your septic system checked regularly.

• If you own property adjacent to a water body, establish and maintain a riparian buffer to minimize erosion and nutrient runoff.

• Don't use phosphorus fertilizer. State law prohibits application of phosphorus fertilizer without a soil test to prove that the phosphorus is needed.

In your community

• Stop the spread of invasive species attached to boats—remove mud and vegetation & drain water between visiting various water bodies.

• Help HRWC implement the Portage Creek Watershed Management Plan! Contact Kris at kolsson@hrwc.org for more information.

• If you spend time in Pinckney Recreation Area, get involved in the Michigan DNR's state park stewardship program.