

Restoring a Free-Flowing Huron River

Characterization of the Watershed

The Huron River Valley is a special place. It's home to _ million people, supplies drinking water to over 150,000 people, supports one of the state's best smallmouth bass fisheries, is the only State designated scenic river in southeast Michigan, and its watershed contains two-thirds of the public recreational land in southeast Michigan. Portions of the Huron River system fail to meet minimum water quality standards or provide designated uses. Although reductions in point source since the late 1970s have resulted in significant improvements in water quality, the pattern and intensity of land development and use of the river for wastewater disposal have taken their toll on the integrity of the aquatic system. Nutrient enrichment, sedimentation, and excessive and erratic flows are identified as specific concerns in the Huron River system. All of these factors have had a measurable impact as the Michigan 303(d) List of Impaired Waters identifies twenty-one (21) water bodies or river segments within the watershed that require MDEQ to develop Total Maximum Daily Loads (TMDLs). Concern over the entire Huron River system is such that the river is cited on the State's Unified Watershed Assessment as a Category 1 watershed, indicating highest restoration priority.

The Huron River watershed is made up of 24 subwatersheds and covers 910 sq. miles. There are eight sub-watershed management plans in the Huron River watershed (Kent Lake, Brighton Lakes, Chain of Lakes, Mill Creek, Millers Creek, Ann Arbor-Ypsilanti Area, Portage, and Lower Huron Watershed Management Plans). In these plans, the primary pollutants were prioritized during the planning process. Consistently, the top three pollutants are: altered hydrology/high stormwater peak flows; sedimentation and soil erosion; and high nutrient load.

River ecologists are unified in their recommendation to remove three priority dams: the Mill Pond Dam and Impoundment in Dexter; Argo Dam in Ann Arbor; and Peninsular Paper Dam in Ypsilanti. The Michigan Department of Natural Resources (MDNR), Fisheries Division, recommended the removal of these three dams as a key component in the rehabilitation of the Huron River (Fisheries Special Report, No. 16, Huron River Assessment, April 1995).

Problem Statement

Across the United States, 2.5 million dams of all sizes block and harness rivers; of those, 80,000 dams are greater than 6 feet high and store a combined total of approximately 1 billion acre-feet—the equivalent to one year's runoff (Graf, 1999). Dams serve a wide range of purposes such as hydroelectric power, water supply and irrigation, recreation, shipping, and flood control; they have become integral to the identity of some communities. The Huron River watershed alone has no fewer than 98 dams, but a comprehensive inventory likely would increase the tally.

Dams have egregious impacts on rivers as they alter chemical, physical and biological processes. Downstream environmental costs of dams captured scientific attention only recently as obvious effects have resulted in the past 2 decades. Dams block free-flowing

river systems and impede a river's flushing function that enables transport of sediment and nutrients downstream; instead sediment builds up behind the dam. Dams fragment rivers and block movement of fish, mussels and other species. Dams have contributed to or caused many species to become threatened, endangered or extinct, in part, because they are located on prime spawning habitat. Many fish and other riverine aquatic species require high gradient, well-oxygenated water and gravelly streambeds for spawning, which are the same parameters that provide a favorable dam site. Dams alter water temperatures, dissolved oxygen levels, turbidity and salinity both upstream and downstream of the structure. Essentially, dams prevent a river and its tributaries from fulfilling their most basic need and purpose on the landscape—to flow.

The Huron River system is typical of Great Lakes Basin rivers in that this formerly free-flowing river is interrupted by dams on its tributaries and mainstem. Unique to the Huron River is the opportunity to restore more than 100 miles of a freshwater ecosystem, expand viable habitat for sensitive fish, mussel and benthic macroinvertebrate species, and to capture important data during all phases of restoration in order to benefit future dam removals. The Huron River Watershed Council (HRWC) is focusing on coordinating the removal of Mill Pond Dam in Dexter and restoring the historical connection of Mill Creek to the Huron River, building community support and agreement for removal of Argo Dam in Ann Arbor on the Huron River, and facilitating the removal of Peninsular Dam in Ypsilanti on the Huron River.

After many years of research, discussion, and planning the citizens and decision makers in the Village of Dexter recommended full removal of the Mill Pond Dam. The Mill Pond Dam was removed in the summer of 2008. Park planning and restoration is being worked on in 2009.

Downstream from the confluence of Mill Creek and the Huron River is Argo Dam and Pond, which are located in the urban setting of Ann Arbor. Over the century since the dam was built, sediment has filled the impoundment, resulted in erratic flows, and impaired the fishery, ecology, and recreational uses of the river.

Thousands of dams remain on the river systems of the Great Lakes Basin that create sediment-laden impoundments upstream and sediment-starved conditions downstream. *The Huron Watershed alone has 98 documented dams making it one of the most heavily dammed river in Michigan.* Only with a coordinated effort to remove dams that no longer serve a purpose will these river systems be restored to provide habitat for indigenous fish, mussels and other aquatic and terrestrial organisms, to provide recreation to the surrounding communities, and to enable a free-flowing river to transport sediment loads naturally.

Ecologic Benefits of Argo Dam Removal

Argo Dam was built in 1920 by Detroit Edison to produce power for the City of Ann Arbor. However, the dam was retired from hydroelectric production in 1963 due to poor profitability and public relation problems, leaving recreation as the primary benefit.

Argo Dam impacts the Huron River and surrounding community in numerous ways: the ecological damage the dam creates on a high gradient stretch of the Huron River; the financial burden to the City of Ann Arbor; and the risk to public safety in the event of the dam's failure. Recreation that requires a lake-type environment, such as rowing, benefit from the presence of the pond.

Argo Dam facts

Status: retired from hydropower production; recommended for removal

Dam Owner: City of Ann Arbor

Purpose: None (formerly hydropower)

Built: 1920 (Reconstructed in 1972)

Height: 18 ft.

Width: 1940 ft. (200 ft. concrete + 1740 ft. earthen dike)

Ecologic Benefits to Argo Dam Removal:

1. Improve the Water Quality and restore the hypereutrophic conditions of Argo Pond to a free-flowing, "mesotrophic" river: The removal of Argo Dam would improve water quality by increasing flow and dissolved oxygen content and decreasing water temperature. In addition, excessive aquatic plant growth would not occur because increased water velocity would prevent most undesirable, non-native plants from becoming established and because an overabundance of nutrients and sediments that lead to excessive aquatic plant growth would be flushed continuously from the system.
2. Improve the fisheries: The Michigan Department of Natural Resources conducted fish stocking in Argo Pond as recently as 1991. Stocked fish species included channel catfish, smallmouth bass and walleye. In 2001, the Fisheries Division recommended discontinuation of fish stocking in Argo Pond due to declining quality of the Pond, and declining recreational fishing use. The removal of Argo Dam would increase the available habitat for many fish species throughout the Ann Arbor area. The fish community would become more diverse and dominated by riverine fish such as small mouth bass that were once dominant. Currently the fish community is dominated by bluegill and rock bass. A riverine reach with increased gradient would provide spawning habitat for walleye. The aquatic community in general would become more diverse due to an increase in habitat diversity and lowered water temperatures along the 7 miles of high gradient channel once the river from Barton Dam to Geddes Dam is reconnected.
3. Increase habitat for rare mussels and other aquatic species: According to recent and historic surveys, a wide variety of aquatic species have been found in and around Argo Pond. These species include roughly a dozen species of mussels, the most endangered freshwater organisms in North America, and as many as 55 species of fish. A high gradient reach with good water quality would encourage return of native mussel.
4. Gain 28 acres of parkland for the City of Ann Arbor and the associated aesthetic and economic value of this parkland, plus another 23 acres that will serve as floodplain and filter pollutants in runoff.
5. Restore a more natural flow regime to the river downstream of the dam: The U.S. Geological Survey, which maintains a stream gage downstream of the Dam, cites Argo Dam as one of two dams in Michigan that most dramatically alters the natural stream hydrology of its host river.

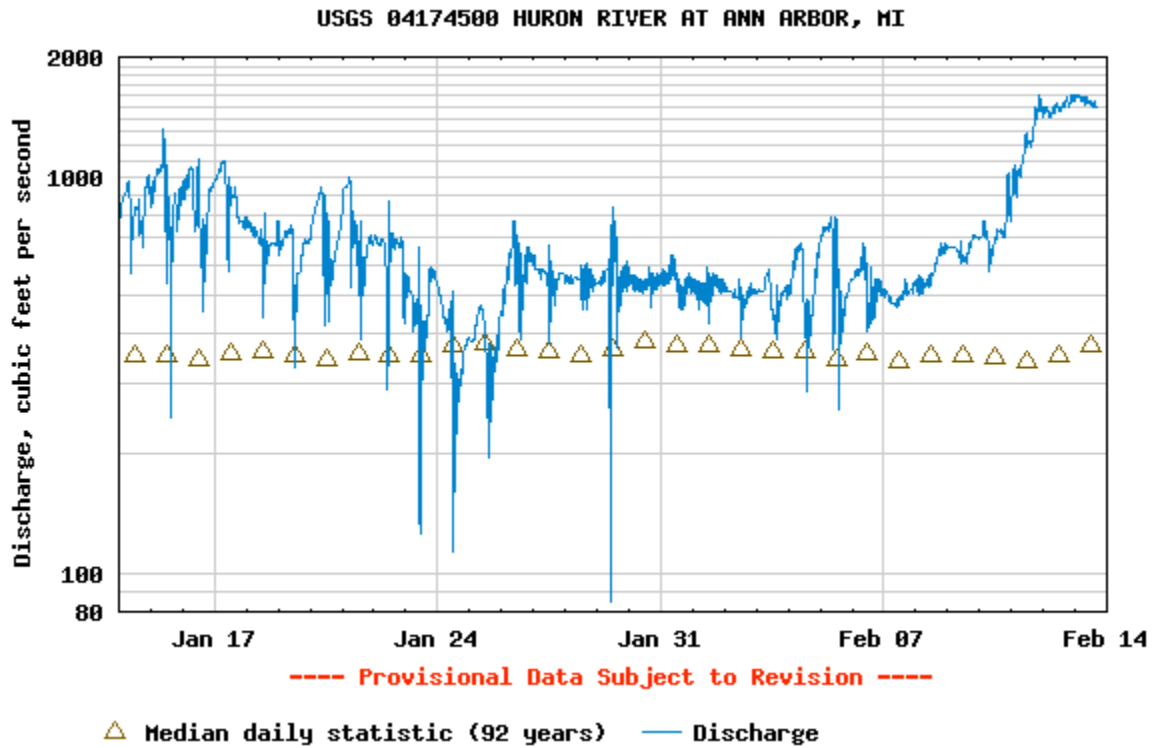


Figure 1: this hydrograph of the Huron River Downstream of Argo near Broadway Bridge shows erratic stream flow

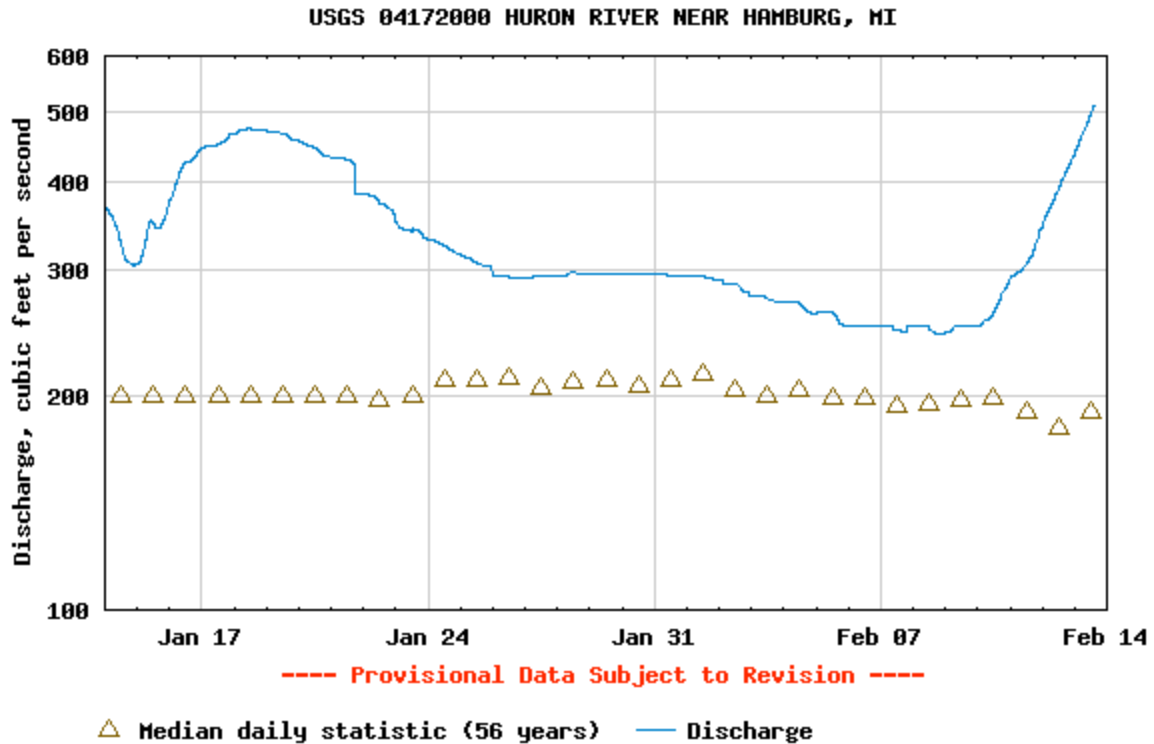


Figure 2: this hydrograph of the Huron River near Hamburg shows more natural stream flow

Relevant sources

- Assessment of the Feasibility of Hydroelectric Development of Four City-owned Dams. Ayres, Lewis, Norris, and May Inc. April 1981. Ann Arbor, Michigan.
- Huron River Assessment. Fisheries Special Report No. 16. Michigan Department of Natural Resources, Fisheries Division. April 1995. Lansing, Michigan.
- 2000-2005 Parks, Recreation and Open Space Plan. Ann Arbor Parks and Recreation Department.
- Argo Pond Sediment Sampling Study. December 2002. Prepared by Barr Engineering Co. for the Huron River Watershed Council.