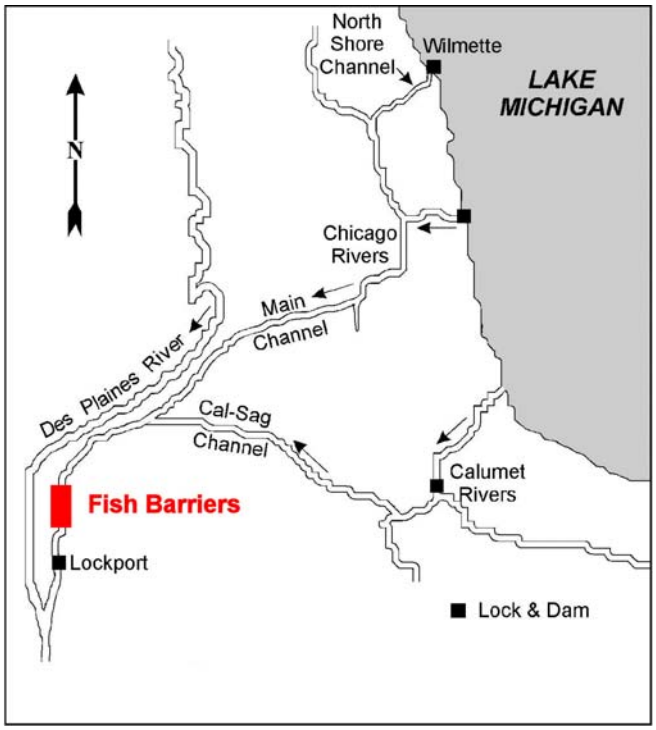
US Army Corps of Engineers

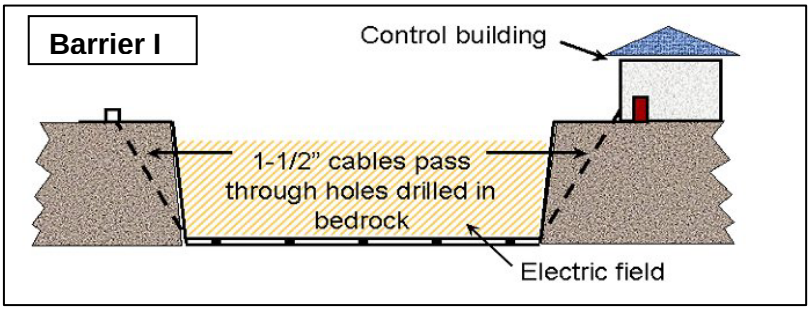
Chicago Sanitary & Ship Canal Dispersal Barrier System

Location and Purpose: The dispersal barriers are located in the Chicago Sanitary and Ship Canal (CSSC), which is a man-made waterway creating the only continuous connection between Lake Michigan and the Mississippi River basin. The dispersal barrier system was developed to prevent the spread of invasive fish species between these watersheds.



Project History: Operation of the first barrier (Barrier I) began in April 2002 by the Corps, demonstrating a new technology for preventing the spread of aquatic nuisance species.

Barrier I, which is located at river mile 296.5 in Romeoville, IL, is formed of steel cables (see diagram below right) that are secured to the bottom of the canal. A low-voltage, pulsing DC current is sent through the cables, creating an electric field in the water. The electric field is uncomfortable for fish and they do not swim across it.



In 2004, the Corps initiated construction of a permanent barrier (Barrier II) to prevent the migration of fish, including Asian carp, between the watersheds. Barrier II, which is located 800 to 1,300 feet downstream of Barrier I, also uses a pulsed electric field, but includes several design improvements identified during monitoring and testing of Barrier I.

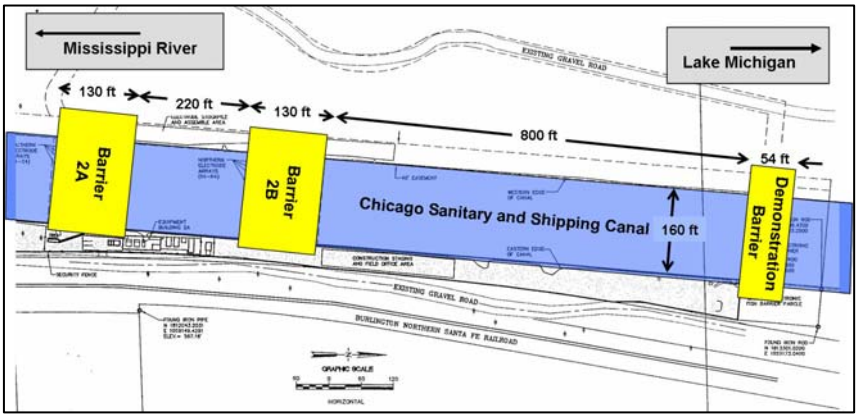
Barrier II is able to generate a more powerful electric field over a larger area and consists of two sets of electrical arrays and control houses, known as Barriers IIA and IIB. Each control house and set of arrays can be operated independently, but ultimately goal is to operate both concurrently.

In 2007, Congress authorized the Corps to complete Barrier II, to upgrade Barrier I and make it permanent, and to operate the barrier system at full federal cost.

Status: Barrier I and Barrier IIA are operating continuously. Barrier IIB is partially constructed.

Due to its original demonstration status, Barrier I was designed and built with materials that were not intended for long-term use. Significant repairs were successfully completed at Barrier I in October 2008. These repairs will allow Barrier I to remain in service for several more years until

Barrier IIB is completed and fully functional. Once Barrier II is fully operational, Barrier I will be taken off line and replaced with a more permanent facility.



Barrier IIA was activated in April 2009 at the same operational settings as Barrier I. Construction of Barrier IIB began in the Fall of 2009 and will be completed in 2010.

The Corps also directs a monitoring program to identify the location of Asian carp relative to the barriers. In the summer of 2009 the Corps contracted with the University of Notre Dame to deploy environmental DNA monitoring (eDNA), a new monitoring method developed at Notre Dame. This method does not rely on direct observation of Asian carp to evaluate their presence. The eDNA method has detected Silver and Bighead carp closer to the barriers than previously believed. The closest eDNA detection of Asian carp in the CSSC is approximately one mile downstream of the barriers. No positive detections in the CSSC have occurred upstream of the barriers.

A study by independent researchers indicated that operating parameters used at Barrier I may not be effective for deterring smaller fish so the Corps initiated a research program to identify the optimal operating settings for the dispersal barriers. Based on initial results from this research the operating settings at Barrier IIA were increased in August 2009 to an operational setting of 15 pulses per second with each pulse 6.5 milliseconds long and maximum in-water field strength of 2 Volts per inch to repelling both adult and juvenile fish. The operating settings at Barrier I were not adjusted because the equipment at Barrier I is unable to operate at the higher operating settings.

Studies: Two studies related to the CSSC Barriers were authorized by Congress in 2007. The first is an investigation of hazards that might compromise the effectiveness of the barriers, including potential bypassing of the barriers through the Des Plaines River or other waterways during flood flows. This study is part of the ongoing barriers project and was initiated in 2009. The second study is a comprehensive investigation of the feasibility of other approaches to prevent the inter-basin transfer of aquatic nuisance species between the Great Lakes and Mississippi River basins. The feasibility study is a separate project that was also initiated in 2009.

Maintenance: Performing scheduled maintenance is necessary to maintain reliability of the structures and minimize the risk of unplanned outages. During the first week of December 2009, the U.S. Army Corps of Engineers is planning to perform scheduled maintenance on Barrier IIA. During the maintenance shutdown, Barrier I will remain active. However, because of late summer detection of Asian carp near the barrier system and concern that Barrier I may not be effective in deterring juvenile fish, a fish toxicant called rotenone will be applied to the canal between the barrier and the Lockport Lock and Dam. This will allow for the removal of Asian carp and other fish to keep them from advancing past the barrier toward Lake Michigan. The Illinois Environmental Protection Agency will conduct water sampling to ensure that the waters of the state are protected.

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