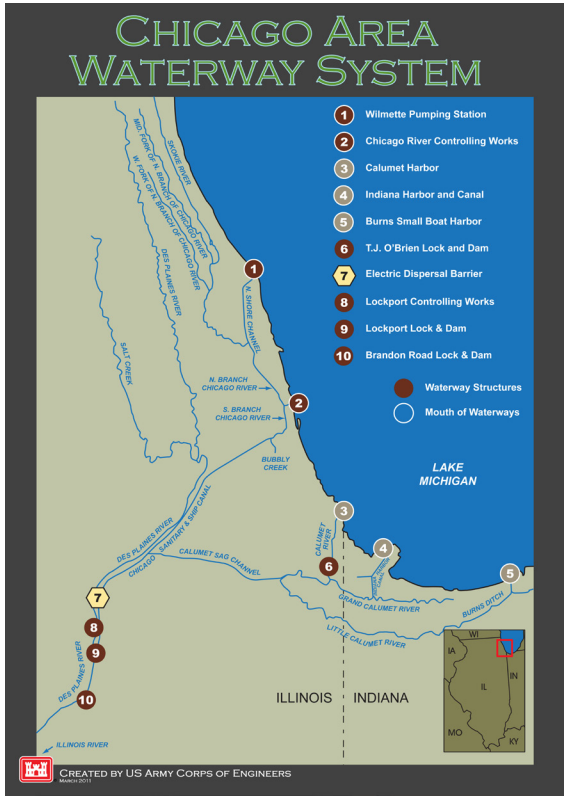
Location

The Chicago Area Waterway System (CAWS) is the only known continuous connection between the Great Lakes and Mississippi River basins and, as such, poses the greatest potential risk for the transfer of aquatic nuisance species.

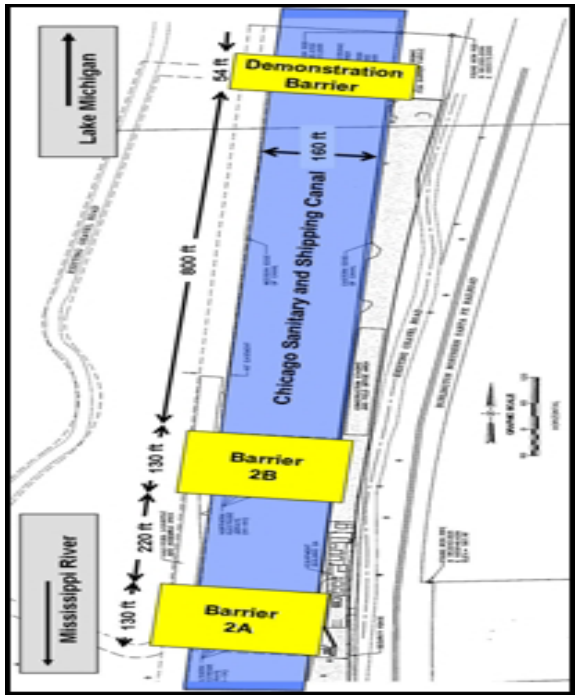


The Electric Dispersal Barriers are located near Romeoville, IL in the Chicago Sanitary and Ship Canal (CSSC) within the CAWS. The CSSC is a man-made hydrologic connection between the Great Lakes and Mississippi River basin that was completed early in the 20th century to carry sewage away from Chicago and to provide a navigation connection.

About the U.S. Army Corps of Engineers

The Corps mission is to provide vital public engineering services in peace and war to strengthen our nation's security, energize the economy and reduce risks from disasters. The Corps offers technical and construction support to more than 100 countries and maintains 926 coastal, Great Lakes and inland Harbors.

The Chicago District is responsible for water resources development in the Chicago metropolitan area, an area of about 5,000 square miles with a population of about eight million. The district is involved in a variety of projects stemming from its primary mission areas of flood risk management, shoreline protection, navigation, ecological restoration, emergency management and support for others.



For more information on the Chicago District, please visit www.lrc.usace.army.mil or call the public affairs office at 312-846-5330.

www.facebook.com/usacechicago
www.lrc.usace.army.mil
www.asiancarp.us

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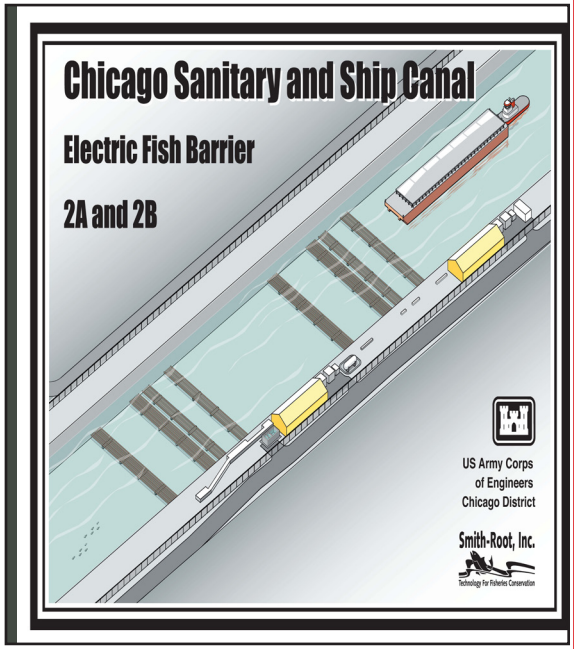


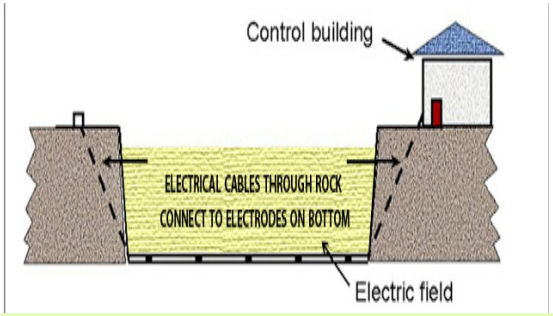
US Army Corps of Engineers®

The Electric Dispersal Barriers

Overview

The Electric Dispersal Barriers are designed to prevent interbasin transfer of fish between the Mississippi River and Great Lakes basins via the Chicago Sanitary and Ship Canal (CSSC).

The barriers, located approximately 25 miles from Lake Michigan and within a 1,500-foot section of the CSSC, are formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected to a raceway, consisting of electrical connections to a control building. Equipment in the control building generates a DC pulse through the electrodes, creating an electric field in the water that discourages fish from crossing.



At Barriers IIA and IIB, the electric field covers 130 feet of the canal upstream to downstream. At Barrier I, the electric field covers 54 feet of the canal upstream to downstream.

There are three electrical barriers: Barriers I, IIA and IIB.

Barrier I has been operational since 2002. Barrier IIA was placed into full-time operation in 2009 and Barrier IIB was placed into full-time operation in 2011.

Barrier I (Demonstration): Operates at 1 volt/inch, 5 hertz (cycles per second), 4 ms (pulse duration in milliseconds)
-Upgrade to a permanent barrier authorized

Barrier IIA (Placed in warm standby): Operates at 2.3 volts/inch, 30 hertz, 2.5 ms
-Located 1,150 feet downstream of Barrier I

Barrier IIB: Operates at 2.3 volts/inch, 30 hertz, 2.5 ms

Effectiveness

To ensure the barriers' success, Congress (Water Resources Development Act of 2007) directed the Corps to study a range of factors that could potentially reduce the effectiveness of the barriers through analyzing various technical, environmental and biological factors.

The first report the Corps completed under this authority identified areas of potential bypass of fish through neighboring waterways upstream of the electric barriers during flooding and recommended construction of a barricade along the Des Plaines River, which was completed in October 2010, along with a stone blockage in the I&M Canal, completed in June 2010.

Completed concrete barriers prevented overtopping in the July 24-25 flood event of 2010 along the Des Plaines River.

These measures prevent Asian carp being swept from the Des Plaines River and I&M Canal into the CSSC during heavy rains.

The Des Plaines River barricade extends approximately 13 miles from Romeoville, Ill. to Willow Springs, Ill. It consists of concrete barriers and a specially-fabricated wire mesh that allows water to flow through the fence but prevents the passage of fish.

This project was funded by the Great Lakes Restoration Initiative.

Other interim reports involve studying the optimum operating parameters for the dispersal barriers and how technologies such as bubbles, lights and sounds can inhibit Asian carp movement.

www.lrc.usace.army.mil/AsianCarp/efficacy.htm

Quick Facts

In October 1996, The National Invasive Species Act passes and amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, including directing the Corps to construct a Demonstration Barrier on the CSSC.

This technology has been used in other places, but typically in smaller, shallower waterways. The CSSC barriers are in waters generally 20 to 25 feet deep and approximately 160 feet wide. To our knowledge, our barriers are the largest of their kind in the world and the only on a highly-trafficked, commercially-navigable waterway.

The barriers do not block the flow of water or the movement of vessels. Therefore, the canal can continue to serve intended purposes for wastewater and storm water management and navigation.

Upon construction completion, each barrier undergoes ongoing comprehensive safety and operational testing.

Past and ongoing field testing of the efficacy of the barriers gives high confidence in the effectiveness.

Since 2003, the Corps has been participating in telemetry studies that use transmitters to track whether tagged surrogate fish are able to cross the barriers.

-For current sampling summary results, visit the Asian Carp Regional Coordinating Committee website at www.asiancarp.us.

-For current environmental DNA results, visit the Chicago District website at www.lrc.usace.army.mil.

The barrier electric field can be characterized by the equipment parameters of frequency, length (duration) and amplitude (voltage) of the DC pulses. Effective operation is dependent on a proper combination of these parameters.

Multiple barriers are needed to provide redundancy. The barriers are complex electrical and mechanical systems and must periodically be powered down for maintenance. More than one barrier is needed so that at least one barrier can be active when another barrier, or barriers, is off-line for maintenance.

Parasitic structures, made of structural steel shapes and woven-wire rope, limit the extent of the electric fields generated by the dispersal barriers to the areas designed for fish deterrence.