



US Army Corps of Engineers

CHICAGO DISTRICT

Search Chicago District

ABOUT BUSINESS WITH US MISSIONS LOCATIONS CAREERS MEDIA LIBRARY CONTACT

HOME > MISSIONS > CIVIL WORKS PROJECTS > ANS PORTAL > BARRIER

Home

Asian carp

Background & Risks
ANS Brochure
Bighead Fact Sheet
Silver Fact Sheet
ANS of Concern Fact Sheets

Electric Barriers

Overview
Brochure

Monitoring

Overview
eDNA
Electro-fishing Fact Sheet
Telemetry Fact Sheet
DIDSON Fact Sheet

Studies

Efficacy
Electric Barriers Fish-barge Interaction

GLMRIS

FAQs

Press

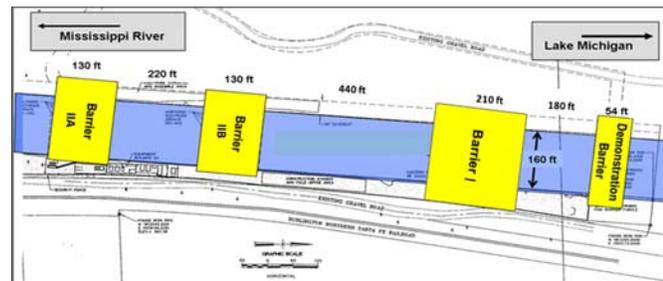
Contact Us

Electric Barriers

Overview:

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

The Electric Barriers are located near Romeoville, Ill., 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 basins that was completed in the early 20th century to address sanitation and flooding. Construction of the CSSC allowed the reversal of the flow direction in the Chicago River and accommodated increased shipping.



**Barrier I is in construction.*

The Electric Barriers are operated to deter the inter-basin establishment of Asian carp and other fish through an electric field in the water via the CSSC. The barriers are one control technology in a broad interagency Asian carp prevention effort. They 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 direct current pulse through the electrodes, creating an electric field in the water that discourages fish from crossing. Laboratory and tagged-fish study results show that the electric barriers are an effective fish deterrent. No Asian carp have been captured or observed above the barriers since the summer of 2010, in which a bighead carp of unknown origin was captured in Lake Calumet.

[Click here to view a 3D model of barriers site.](#)

[See photos from the Electric Dispersal Barrier on our Flickr page.](#)

Current Status:

There are three electric barriers. The Demonstration Barrier has been operational since 2002. Due to its original demonstration status, it was designed and built with materials that were not intended for long-term use. Significant repairs were successfully completed in October 2008. In 2013, construction began on a new electric barrier, authorized by Congress as an upgrade to the Demonstration Barrier. Each barrier built takes lessons learned from the previous ones to ensure the most effective deterrence tool possible.

Effective operation of the barriers is dependent on a proper combination of frequency, length (duration) and amplitude (voltage) of the DC pulses. The Demonstration Barrier operates at 1 volt/inch, 5 hertz (cycles per second), 4 ms (pulse duration in milliseconds). Barrier IIA was placed into full-time operation in 2009, and Barrier IIB was activated in April 2011. Barrier IIA and IIB operate at 2.3 volts/inch, 34 Hz, 2.2 ms.

The barriers are complex electrical and mechanical systems and must periodically be powered down for maintenance. Therefore, more than one barrier is needed so at least one can be active at any time.

Electric Barrier Parasitic Structures:

Parasitic structures are structural steel shapes and woven-wire rope placed strategically in the CSSC to limit the extent of the electric fields generated by the barriers to the areas designed for fish deterrence.

visited on 7/15/2014



Installation of parasitic structure

Through partnership with the U.S. Coast Guard and the Asian Carp Regional Coordinating Committee, the Corps remains committed to operating the barriers as safely as possible.

Occasionally, there are waterway restrictions within the CSSC due to maintenance operations of the barriers. View the U.S. Coast Guard waterway notices.



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