Problem
The project area was located in the Illinois Waterway, within the Illinois River. The primary project objective was to restore deep water fisheries habitat in the Lower Peoria Lake. However, with the adjacent navigation channel nearby, the project area also provided a beneficial use dredge disposal material for potential future channel maintenance work. The island disposal area also created a secondary vegetative habitat.

Solution
The solution was to construct a 21 acre island using Maccaferri’s MacTube® geotextile containers for stabilization of the island perimeter to create a beneficial use for the dredge disposal area. The 4800 foot island perimeter was designed using three rows of tubes on the bottom and topped with a fourth row, each filled to a six foot fill height. The general contractor, Midwest Foundation Corporation, utilized a mechanical dredge system with a clamshell to excavate the material along the riverbed, which was then placed into a screened hopper to filter the material. From the hopper, water was added to the material to create the slurry for tube filling. The deep water habitat holes were excavated first, providing volume for tube filling. Once the perimeter was formed, creating a dredge disposal area.

Client
U.S. ARMY CORPS OF ENGINEERS (ROCKISLAND DISTRICT)
Main Contractor
MIDWEST FOUNDATION CORP.
Designer
U.S. ARMY CORPS OF ENGINEERS (ROCKISLAND DISTRICT)
Products Used
MACTUBE® OS400
Date of Construction
MARCH 2009 – APRIL 2013 (ESTIMATED)
area, the contractor backfilled the island with the channel maintenance dredge material.

A secondary benefit to this project was the vegetation which began to establish immediately after installation of the tubes. This vegetation has since provided upland habitat for bird nesting, snakes, and other native wildlife.

**Technical Characteristics**

Maccaferri's MacTubes® were selected as a result of a geotextile container test which revealed the greatest strength properties. With dredging ratio of 65% solids, a ratio rarely achieved, the MacTubes® were able to successfully accommodate such stresses due to their seam strength and dewatering capabilities. Each tube was 100 feet in length with a 45’ circumference, which resulted in a total volume capacity of 420 Tons per tube. Maccaferri customized the MacTubes® for installation by placing extra anchor hooks to prevent movement of the tube while filling. An extra filling port was also fabricated for a faster fill rate and installation. The MacTubes® were placed three tubes wide with one tube stacked on top to achieve the design crest elevation for accommodation of the dredge volume. A total of 5,700 linear feet of channel was dredged and placed into the disposal area.

Maccaferri assisted in the design and provided technical support by preparing plan view and cross-sectional drawings, technical specifications, and installation guidelines. A proactive and synergistic team approach between the designer, the contractor, and the supplier created a seamless design package which resulted in a successful, environmentally friendly project.
Aerial View of island perimeter prior to backfilling

Aerial View from Google

Aerial View of island perimeter prior to backfilling