# Navigation Dams

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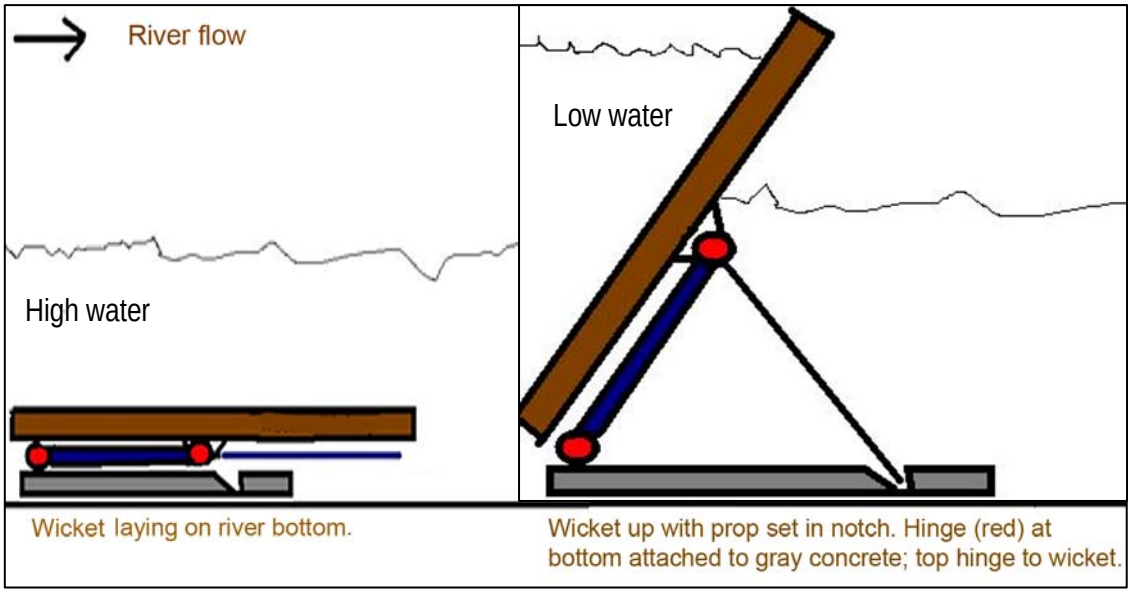
## Function of a dam

Navigable pools are like stair steps on the river which enable tows to move upstream or downstream. Dams are what harness the pools and overcome low water which impedes navigation. There are several types of dams such as fixed-crest or low-head dams. A movable crest dam can be raised or lowered depending on river flow conditions with tainter, wicket, roller or sluice gates. A navigable pass allows tows to move right over it during high water.

## Early dam construction

In early navigation history a movable dam was needed that could be raised in times of low water to create a pool and lowered when the flow permitted navigation. The dams had a series of chanoine wickets extending across the river. A system of 50 movable dams was built on the Ohio River between 1879 and 1929 - two remain in operation, Dams 52 and 53 - making the Ohio navigable for its entire length at all times. Each dam consisted of a row of 300 or more small pieces individually hinged to a foundation on the river bottom that together assembled a long dam perpendicular to the shore. The wickets are constructed of heavy timber roughly four feet wide and up to 20 feet long. Raising or lowering the wickets is done by a crew on a maneuver boat that moves along the upstream face of the dam. A steel hook or rod connects to the back of each wicket with the free end riding in a groove in the foundation. To raise them, a grapple hooks a wicket and pulls it up from the river bed. The bar slides up the groove into a niche, where it catches and supports the wicket upright against the flow of the river. A bear trap is comprised of several leaves or pieces, and it is part of an older type of dam.




## Dam evolution

As tows became longer after WWII, so did the locks to accommodate them. In the 1950s old structures were replaced with high-lift concrete and steel dams and longer locks making the locking process more efficient with no more double locking, a time consuming process.

## Louisville District dams

Six of eight Ohio River project dams are concrete fixed wier with tainter gates that raise and lower to control water flow. Dams 52 and 53 have a navigable pass, chanoine weir, bebout weir, and fixed weir. Dam 52 also has three bear traps with piers.