History of navigation improvements

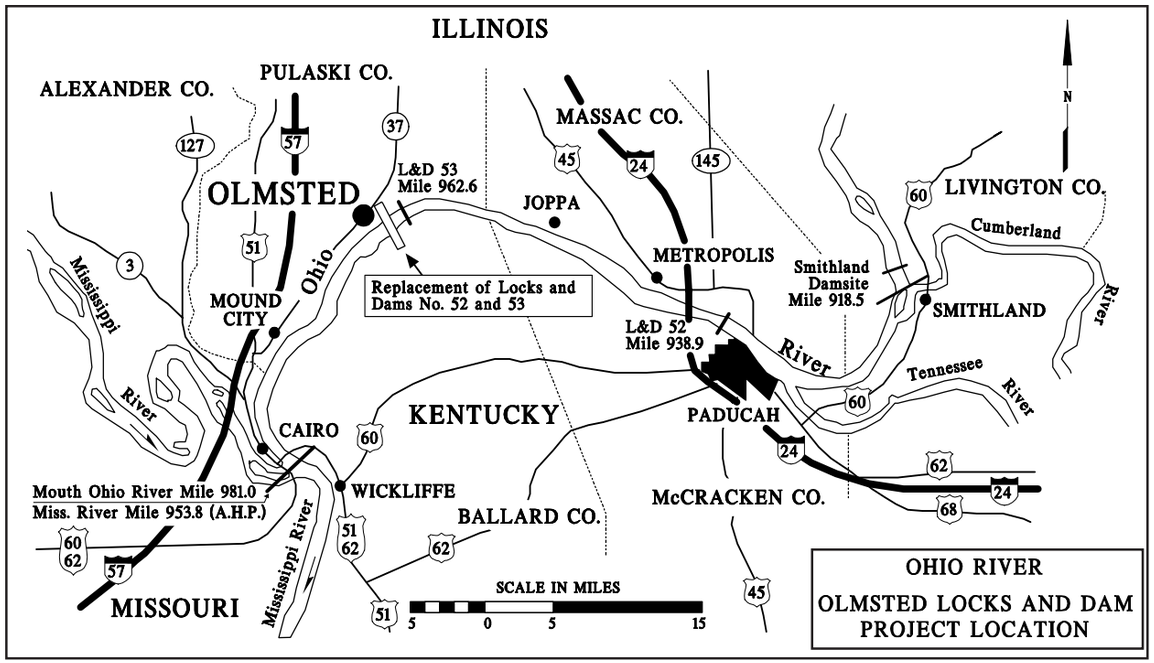
In 1885 the first Corps-built lock and movable dam project on the Ohio River was completed at Davis Island near Pittsburgh, Pa. In 1910, by passage of the Rivers and Harbors Act, Congress authorized the Corps of Engineers to upgrade, improve, and maintain locks and dams on the nation's navigable waterways. This general authority was used to construct a system of 51 locks and dams on the Ohio River plus improvements to Lock and Dam 41 at Louisville, Ky. That system was completed in 1929 at a cost of about $125 million. It provided a minimum 9-foot channel for year-round navigation. Locks and Dams 52 and 53 were the last two of these projects completed.

The original dams were made of wooden wickets that were manually raised to hold back water during periods of low flow and dropped to the river bottom during high water. The adjoining 600-foot locks were adequate until after World War II when longer tows came into use with diesel-powered towboats. These towboats, which were capable of pushing 25,000-ton loads, soon could not operate efficiently through a system designed for the less powerful steamboats. The system, completed in 1929, was obsolete and by the 1950s, the Corps of Engineers began replacing these structures with a new system of modern high-lift locks and dams. The new system featured 110-foot by 1,200-foot lock chambers and made water-borne transportation more efficient by creating longer pools with fewer lockages. For example, the Markland Locks and Dam project at river mile 531.5, replaced five of the older structures.

The first modern structure was Greenup Locks and Dam at Ohio River mile 341 with the locks becoming operational in 1959. It is important to note that these "modern" locks and dams are aging. As these projects age, necessary repairs become more frequent and more extensive and therefore, more costly.

Contrary to popular belief, these structures have no effect on flood levels. They neither reduce nor increase flood levels but are solely intended to create navigation pools to provide required navigable depths. Flood control is provided through a system of reservoirs on Ohio River tributaries and with levees and flood walls protecting urban and agricultural areas.

Water-borne transportation is the most economical mode for transporting bulk commodities such as coal, grain aggregates, petroleum products, and chemicals. The Ohio River navigation system saves American consumers millions of dollars each year, while helping to conserve energy resources.



Statistical information

Dam

Type	Tainter gates and wickets
Dam Length	2,596 feet
Type of Fixed Weir	Sheet pile cells
Number of Navigable Pass Gates	140
Navigable Pass Length	1,400
Wicket Gate Length	28 feet each
Wicket Gate Width	10 feet each
Number of Tainter Gates	5
Tainter Gate Height	41 feet each
Tainter Gate Width	110 feet each

Locks

Location	Along Illinois bank
Number of Chambers	Two
Size	110 feet by 1,200 feet
Elevation of Lock Wall Top	310 feet
Lock Sill Elevation	261 feet
Type of Lock Gates	Mitering
Height of Lock Gates	62 feet
Length of Lock Gates	49 feet

For more information

Write:

Department of the Army
U.S. Army Engineer District, Louisville
ATTN: CELRL-PA
P.O. Box 59
Louisville, Kentucky 40201-0059

Call:

1-800-527-INFO (4636)

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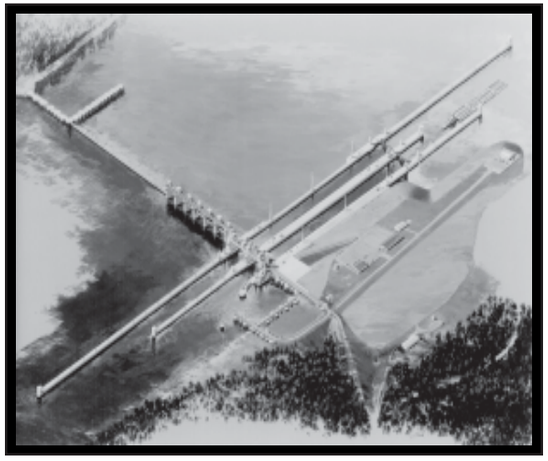
OLMSTED LOCKS & DAM

OHIO RIVER

UNDER CONSTRUCTION



US Army Corps of Engineers
Louisville District

Meeting tomorrow's challenges today

The continuing growth in demand for water-borne commerce on the Ohio River requires periodic improvements in the waterways transportation infrastructure. Locks and Dams No. 52 and 53 located on the Ohio River between Paducah, Ky., and Cairo, Ill., were completed in 1929. Temporary 1,200-foot long lock chambers were added later. The antiquated design and age of these structures make it impossible to meet current traffic demands without significant delays.

In 2004, 95 million tons of goods were shipped through Lock 52 and 85 million tons through Lock 53. The U.S. Army Corps of Engineers and the navigation industry, in a continuing effort to provide for the nation's future navigation needs, will replace these aged facilities with one of the largest civil works projects undertaken by the Corps.

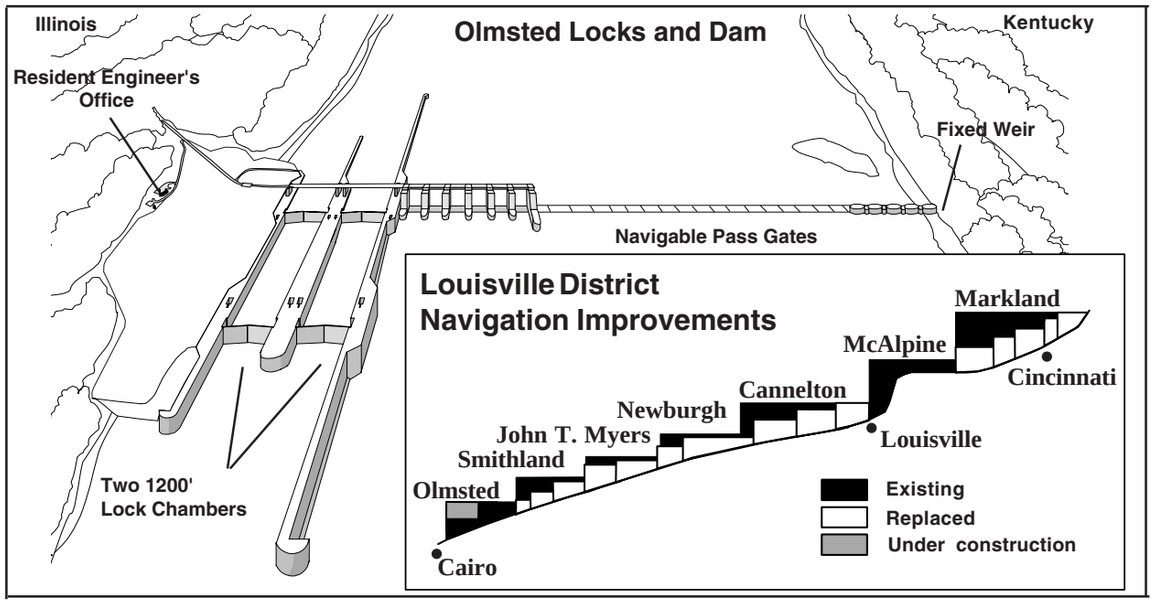
This new locks and dam project will be constructed near the community of Olmsted, Ill. at River Mile 964.4. Construction of the Olmsted Locks and Dam Project was authorized by the U. S. Congress on Nov. 17, 1988, by passage of the Water Resources Development Act of 1988 (Public Law 100-676).

The cost of this project is being equally shared by congressional appropriation and the navigation industry. Industry pays a tax on diesel fuel which goes to the Inland Waterways Trust Fund. The trust fund then pays 50 percent of the project cost which is estimated to be over $1.4 billion.

This strategic reach of the Ohio River provides a connection between the Ohio, Tennessee, Cumberland, and Mississippi rivers. The area has been described as the "hub" of the Ohio and Mississippi rivers waterway system. Barge traffic moving between the Mississippi River system and the Ohio, Tennessee, and Cumberland rivers must pass through this stretch of river. More tonnage passes this point than any other place in America's inland navigation system. This is a critical reach of water from a commercial navigation perspective.

The Olmsted project will consist of two 110-foot by 1,200-foot lock chambers located along the Illinois shoreline. The dam will consist of tainter gates, a navigable pass section and a fixed weir.

In a raised position the wickets will maintain the required navigable depths from the Olmsted project upstream to Smithland Locks and Dam. When river flows are sufficient, the wickets can be lowered to lay flat on the river bottom and allow traffic to navigate over the dam without passing through the locks. This reduces delays experienced by locking through the system.



How navigation locks work

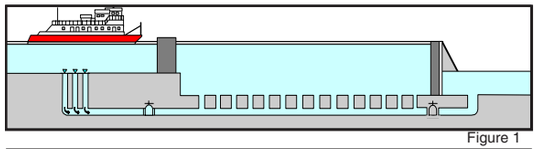


Figure 1

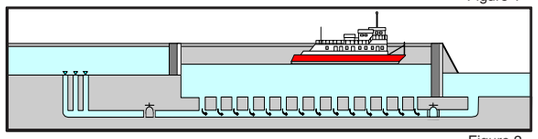


Figure 2

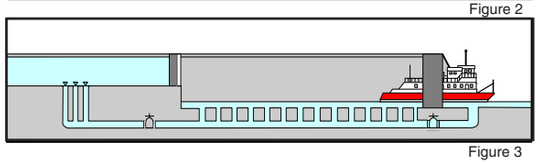


Figure 3

Figure 1 shows a tow entering a lock chamber from the upper level. The lower lock gates are closed, the drain valve is closed, and the filling valve is open. The lock has filled to the level of the upper pool and the upper lock gates have been opened to allow the towboat to enter the lock.

Figure 2 shows the towboat in the lock. The upper lock gates have been closed, and the filling valve is closed. The drain valve is open, allowing water to drain into the lower river pool. The towboat is lowered as the water level lowers.

Figure 3 shows the water in the lock has reached the level of the lower river pool. The lower lock gates have been opened to allow the towboat to exit the lock.

For an upbound tow, the process is reversed.

Benefits

The Corps of Engineers estimates that this project will produce average annual economic benefits to the nation of more than $530 million. Operation and maintenance costs will be reduced. The new locks will operate more efficiently and will pass tows with fewer delays. Delays ultimately raise the price of commodities which move on the waterways. Total lockage time will be reduced from five hours through Locks and Dams 52 and 53 to less than an hour in the new project. The Corps estimates lockage wait times of 150 hours per tow by the year 2005 at Lock and Dam 52 without the new locks.

Construction stages

The project will be constructed using several construction contracts with completion scheduled for the year 2014. The current plan calls for the following contracts:

(1) Access Road/Resident Engineer's Office — The construction of the road and the office was the first construction contract for the project. The contract was awarded November 1992, and construction completed June 1994.

(2) Lock Cofferdam — This cofferdam was used to construct the locks and make connection to the Illinois shore. The contract was awarded in May 1993, and construction was completed in December 1995, at a cost of approximately $58 million.

(3) Prototype at Smithland Locks and Dam — The prototype facility was constructed to verify the design of the dam and aid in the selection of materials. Construction began in 1994, and work was completed in December 1995. The Corps conducted tests at this facility.

(4) Locks — The construction contract for the twin 1,200-foot lock chambers was awarded in December 1995 and completed in March 2002 for $271.5 million.

(5) Bulkheads --- The construction contract to fabricate the operation and maintenance bulkhead was awarded in September 2001 for $24.2 million. The installation of the operating bulkheads was completed in July 2005.

(6) Lock Approach Walls — The Corps awarded the contract for the approach walls in September 1999 for $98,980,610. The approach wall work was completed in March 2004.

(7) Boat Ramp Relocation — The Village of Olmsted boat ramp will be relocated downstream of its current location. The construction contract for the new ramp was awarded in June 2001 and was completed in October 2002.

(8) Buildings and Grounds — Operational buildings will be constructed on the service mound adjacent to the locks.

(9) Dam — The dam was designed by Sverdrup/Gerwick JV. The construction contract for tainter gates and navigable pass dam was awarded in January 2004 to Washington Group Alberici. The construction of the dam is scheduled for completion in 2014.

(10) Demolition of Locks and Dams 52 and 53 — When all the features of the Olmsted Locks and Dam are constructed, Locks and Dams 52 and 53 will be removed.