



Lock & Dam 1

(Minneapolis, Minnesota)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction:

1907-1917 (Original 6-foot Channel lock)
1930-1932 (9-foot Channel lock)

Congressional District: MN-4; MN-5

Description

Lock and Dam 1 is located at Mississippi River Mile 847.9, in Minneapolis, Minnesota, six miles downstream from the famous St. Anthony Falls and two miles upstream of Fort Snelling. The original Lock construction was completed in 1917, reconstructed in 1929 with the main lock completed in May 1932. It is the only twin lock in the St. Paul District.

The main lock is located along the right descending bank and consists of a lock chamber 56 feet wide by 400 feet long with an upper pool elevation of 725.1 feet, a tailwater elevation of 687.2 feet, and a maximum vertical lift of 37.9 feet. The abandoned auxiliary lock is immediately adjacent to the main lock but has only 7.5 feet of clearance over the downstream sill.

The dam consists of an Ambursen concrete overflow structure 574 feet long with a two-foot-high inflatable rubber dam along the top and a hydro power station located at the left descending bank abutment. Under a Federal Energy Regulatory Commission agreement, Brookfield Power Company operates the hydro power facility and rubber dam located at the dam's east end.

The site has a public observation deck and comfort station open from dawn to dusk each day from April to November.

History/Significance

Congress originally authorized the project in 1899 to improve navigation on the river between Minneapolis and St. Paul by providing a 4-1/2 foot channel depth. The project included two locks and dams, the present Lock and Dam No. 1 and another one upstream, completed in 1906. By 1907, Congress authorized the 6-foot channel on the Upper Mississippi River. In 1908, Congress authorized increasing the height of the dam at Lock and Dam No. 1 to allow hydro electrical power generation.

When the present lock and dam went into operation in 1917, the Corps completely abandoned the upstream lock and dam. By 1930, Congress realized the need for a deeper channel and authorized the present 9-foot channel. When completed in 1932, the second lock at Lock and Dam No. 1 provided nine feet of channel depth up to St. Anthony Falls. By the early 1980s, Lock and Dam No. 1 reached the end of its 50-year design life and underwent a major rehabilitation from 1978 to 1983 to carry on another 50 years into the future.

The lock and dam complex is also referred to as the Twin Cities (Ford) Lock and Dam.



U.S. ARMY CORPS OF ENGINEERS – ST. PAUL DISTRICT

180 5TH STREET EAST, SUITE 700, ST. PAUL, MN 55101-1678
Public Affairs Office, (651) 290-5807, www.mvp.usace.army.mil

Annual Tonnage (20-Year Historical)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
2016	-	2011	766,898	2006	1,307,590	2001	1,826,855
2015	309,710	2010	673,730	2005	1,159,856	2000	2,254,330
2014	713,384	2009	689,530	2004	1,510,540	1999	2,071,780
2013	827,430	2008	964,681	2003	1,983,170	1998	2,014,000
2012	818,730	2007	989,706	2002	2,044,395	1997	1,893,510

Commodity Tonnage (2016)

All Units (Ferried Autos, Passengers, Railway Cars)	-
Coal, Lignite, and Coal Coke	-
Petroleum and Petroleum Products	-
Chemicals and Related Products	-
Crude Materials, Inedible, Except Fuels	-
Primary Manufactured Goods	-
Food and Farm Products	-
Manufactured Equipment & Machinery	-
Waste Material	-
Unknown or Not Elsewhere Classified	-

Vessel & Lockage Data (2016)

Average Delay - Tows (Hours)	-	Non-Commercial Vessels	6
Average Processing Time (Hours)	-	Non-Commercial Flotillas	6
Barges Empty	8	Non-Commercial Lockages/Cuts	6
Barges Loaded	-	Percent Vessels Delayed (%)	-
Commercial Vessels	106	Recreational Vessels	1,938
Commercial Flotillas	103	Recreational Lockages	825
Commercial Lockages/Cuts	104	Total Vessels	2,050
Non-Vessel Lockages	-	Total Lockages/Cuts	935

The 9-foot Channel Navigation Project

The 9-foot Channel Navigation Project includes 37 lock and dam sites (42 locks) on 1,200 river miles in Illinois, Iowa, Minnesota, Missouri and Wisconsin. Constructed largely in the 1930s, it extends from Minneapolis-St. Paul on the Upper Mississippi River to its confluence with the Ohio River and up the Illinois Waterway to the T.J. O'Brien Lock in Chicago.

The maintenance needs of this aging infrastructure have surpassed annual operations and maintenance funding. This limited funding has adversely affected reliability of the system and has primarily resulted in a fix-as-fail strategy, with repairs sometimes requiring days, weeks or months. Depending on the nature of a failure and extent of repairs, shippers, manufacturers, consumers and commodity investors can experience major financial consequences. Additionally, today's 1,200'-long tows must split and lock through in two operations within the Project's 600' chambers. This procedure doubles and triples lockage times, increases costs and wear to lock machinery, and exposes deckhands to higher accident rates.

More than 580 facilities ship and receive commodities within the Project. Grains (corn and soybeans) dominate traffic; cement and concrete products are the second largest group. A modern 15-barge tow transports the equivalent of 1,050 semi-trucks (26,250 tons, 937,387 bushels of corn, or 240 rail cars). In 2015, the 9-foot channel project generated an estimated \$3 billion of transportation cost savings compared to its approximately \$246 million operation and maintenance cost.

UPDATE: April 2017