Upper St. Anthony Falls

(Minneapolis, Minnesota)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

Construction: Lock: 1959-1963; Dam: 1951

Congressional District: MN-5

Description

Upper St. Anthony Falls (USAF) Lock and Dam is located at Mississippi River Mile 853.9, in Minneapolis, Minnesota, and is the northern most lock.

USAF Lock is located near the right descending bank and consists of a single lock chamber 56 feet wide by 400 feet long. The upper pool elevation is 799.2 feet, tailwater elevation is 750.1 feet, and the vertical lift is 49.1 feet. In addition to four lock miter gates, there is an upstream lock Tainter gate for passing flow through the lock chamber during high water. There is no auxiliary lock or provisions for one.

On the left descending bank there is a horseshoe dam with a chord dam downstream of the horseshoe and a concrete overflow spillway owned by Xcel Energy Center that ties into the Lock. On the right descending bank the Corps has a short non-overflow concrete dam between the Lock and the bank.

Dam tours can be scheduled for the Upper Saint Anthony Falls Visitor Center in downtown Minneapolis. The Visitor Center, which sits atop the central control station, offers dam tours May 1 to Oct. 1. Tours are offered year round, but are subject to availability Oct. 2 to April 30.

History/Significance

The lock was put into operation in September 1963. In 1937, Congress authorized a 4.6 mile extension of the 9-foot channel at its upstream end and two additional complexes were built in Minneapolis: the Lower St. Anthony Falls Lock and Dam, and the Upper St. Anthony Falls Lock and Dam. The construction of these complexes, also known as the Upper Minneapolis Harbor Development, extended the 9-foot channel over the St. Anthony Falls. Below the St. Anthony Falls, the narrow gorge of the Upper Mississippi River only allowed for a relatively small river terminal. By extending the 9-foot channel, the Upper Mississippi Harbor Development project permitted the construction of larger and more suitable river terminal sites above the falls.

St. Anthony Falls has a fall of 74 feet, and had historically been used to furnish waterpower for sawmills and flour mills in the area. To ascend the falls the Corps needed a 25-foot lift at the lower lock, and a 49.1-foot lift at the upper lock. The Lower St. Anthony Falls Lock and Dam project also replaced the original Northern States Power Company Dam, which had been built in 1897.

The Upper St. Anthony Falls Lock and Dam fixed concrete dam was built in 1951, when an existing timber dam was destroyed by flood. The timber dam had been constructed in the 1870s in an effort to protect the St. Anthony Falls

from upstream progression. Since the concrete dam was in place, the Corps only needed to construct a navigation lock. But, with a rise of 49.1 feet, the lock was the highest lift on the river and an engineering challenge costing more than $18 million to build.

Annual Tonnage (20-Year Historical)

Year	Tons	Year	Tons	Year	Tons	Year	Tons
1992	584,600	1997	1,908,860	2002	2,042,700	2007	998,770
1993	1,424,100	1998	2,011,000	2003	1,942,747	2008	942,300
1994	1,640,050	1999	2,062,800	2004	1,494,539	2009	686,470
1995	1,730,288	2000	2,238,564	2005	1,154,000	2010	663,935
1996	1,798,780	2001	1,826,375	2006	1,315,770	2011	764,951

Commodity Tonnage & Lockages (2011)

Coal	88,200
Petroleum	8
Chemicals	52,400
Crude Materials	595,500
Manufactured Goods	21,000
Farm Products	0
Manufactured Machinery	7,843
Waste Material	0
Unknown	0

Subtotals:	Grain	0
	Steel	19,500
Lockages:	Commercial Boats:	1,487
	Recreation Boats:	2,079
	Light Boats:	99
	Other Boats:	44
	Total Boats:	3,709
	Total Cuts:	2,392

The 9-Foot Channel Project

Upper St. Anthony Falls is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated $1 billion of transportation cost savings compared with the operation and maintenance costs of approximately $115 million.