

Upper Mississippi/Illinois/Missouri Basin

The Upper Mississippi River, Illinois Waterway and Missouri River System contains over 2000 miles of navigable waterways. The Upper Mississippi River's 858 miles flow from Minneapolis to the junction point with the Ohio River. The Illinois Waterway extends for 291 miles from Lockport, Illinois to the junction at Upper Mississippi River mile 218, and also includes the Chicago Sanitary and Ship Canal, the Calumet-Sag Channel, the Calumet and Little Calumet Rivers and the South Branch of the Chicago River. The Missouri River flows from Montana to the junction at Upper Mississippi River Mile 195. In 2005, no commercial navigation took place above Missouri River mile 752. The basin also includes several navigable tributaries, including the Minnesota, Black, St. Croix, Gasconade and Kaskaskia Rivers.

In 2008, over 125 million tons of commodities moved on the waterways of this system. These commodities had a combined value of almost \$20 billion. Coal made up over 27% of this tonnage, followed by grain and aggregates with 26% and 17%, respectively.

An analysis of the Upper Mississippi River Basin waterborne commerce data shows that about 73.7 million tons of commodities were shipped on the river system out of the basin. Almost 43% of this tonnage consisted of corn, soybeans, wheat and other grains. Most of the grain (31.6 million tons) went to the New Orleans and Baton Rouge areas of the Lower Mississippi River for eventual export to the world's markets. The coal leaving the basin went mostly to 29 power plants in Alabama, Mississippi, Ohio, Louisiana, Kentucky, Tennessee, Indiana, Florida and West Virginia.



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Waterways Council, Inc. is the national public policy organization advocating a modern and well-maintained national system of ports and inland waterways.

Upper Mississippi Basin* – 2008 Waterborne Commerce					
(values in millions of \$)					
COMMODITY	TONNAGE				VALUE
	Shipped	Received	Within	TOTAL	
Coal	22,642,198	3,053,551	8,318,366	34,014,115	\$1,355
Petroleum	4,961,909	2,475,619	2,788,370	10,225,898	\$4,585
Crude Petroleum	723,805	0	1,393	725,198	\$72
Aggregates	7,000,328	1,458,325	12,259,996	20,718,649	\$853
Grain	31,606,966	276,005	421,137	32,304,108	\$4,790
Chemicals	1,597,057	6,933,173	288,718	8,818,948	\$3,630
Ores & Minerals	172,144	5,633,383	9,565	5,815,092	\$569
Iron & Steel	1,841,098	3,770,762	211,942	5,823,802	\$3,474
Other	3,237,538	1,927,280	1,597,286	6,762,104	\$3,583
TOTAL	73,783,043	25,528,098	25,896,773	125,207,914	\$22,910
<i>*Mississippi River (Minneapolis to Ohio River mouth), Illinois Waterway, Missouri River & all tributaries</i>					
<i>Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics</i>					

Docks in the basin received more than 25 million tons from outside the system. This tonnage was spread fairly evenly among several commodity groups, with chemicals being the largest. The main chemicals moved into the basin by barge were various types of fertilizers coming from chemical plants on the Lower Mississippi River. Almost all of the coal moving into the basin originates in the Ohio River Basin and moves to power plants and various industrial facilities.

Almost 26 million tons moved within the basin; over 47% of this amount consisted of sand and gravel and other aggregates. Over 5 million tons of the sand and gravel was dredged from various sites on the Missouri and Upper Mississippi Rivers.

Navigable waterways within the Upper Mississippi River Basin flow through or past 7 states: Minnesota, Wisconsin, Iowa, Illinois, Kansas, Missouri and Nebraska. Barge shipments that move on basin waterways originated or terminated in 14 other states: Alabama, Arkansas, Florida, Georgia, Indiana, Kentucky, Louisiana, Mississippi, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas and West Virginia.

The leading shipping state within the Upper Mississippi Basin was Illinois, with almost 84 million tons of commodities worth over \$8.9 billion. Illinois shipments included over 22.5 million tons of coal with the majority originating on the Upper Mississippi River Basin.

Over 20.4 million tons of grain coal enters the waterway at Illinois docks, with 11.1 million tons originating on the Illinois River and another 9.3 million tons loading onto barges on the Upper Mississippi River. Missouri was the next largest shipping state with over 16 million tons of aggregates, grains and other commodities. Louisiana was the leading shipping state into the Upper Mississippi Basin, with over 16 million tons of chemicals and other commodities worth over \$5 billion.

Upper Mississippi/Illinois/Missouri River Basin Commodities Shipped By Barge To and From States - 2008 (value in millions of dollars)							
Basin States							
Shipments By	Tons	Value	Top Commodity	Shipments To	Tons	Value	Top Commodity
Illinois	83,911,488	\$8,932	Coal	Illinois	19,607,332	\$4,639	Chemicals
Missouri	16,157,303	\$2,172	Aggregates	Missouri	5,816,106	\$1,386	Coal
Iowa	6,708,227	\$1,113	Grain	Wisconsin	3,732,470	\$178	Coal
Minnesota	3,011,083	\$630	Grain	Iowa	3,383,257	\$1,151	Chemicals
Wisconsin	690,618	\$126	Grain	Minnesota	2,858,914	\$762	Coal
Non-Basin States							
Shipments By	Tons	Value	Top Commodity	Shipments To	Tons	Value	Top Commodity
Louisiana	16,781,608	\$5,358	Chemicals	Louisiana	58,320,503	\$7,514	Grain
Indiana	2,139,464	\$217	Aggregates	Indiana	14,803,703	\$603	Coal
Texas	1,376,214	\$695	Chemicals	Tennessee	12,955,752	\$810	Coal

Illinois was the leading Upper Mississippi River Basin state in receipts of waterborne barge traffic, with 19.6 million tons with a value of over \$6.2 billion. The leading commodities received at Illinois docks were chemicals. Next in receipts is Missouri, with over 5.8 million tons. Among non-basin states, Louisiana led in receipts of Upper Mississippi River Basin commodities, with over 58 million tons worth \$7.5 billion. Almost all of this tonnage was grain headed for the world markets.

There are over 582 manufacturing facilities, terminals, and docks in the Upper Mississippi River Basin that shipped and received tonnage in 2008. The Port of Metropolitan St. Louis includes 71 miles on both banks of the Mississippi River. The port moved almost 30 million tons of commodities in 2008, making it the largest port in the basin and the third largest inland port in the United States. Coal was the largest commodity moved in and out of the port, with 11.9 million tons loaded and unloaded. Other statistically-defined port areas in the basin include Kansas City MO and Minneapolis and St. Paul MN.

Upper Mississippi River Basin Major Ports - 2008 (values in millions of dollars)							
Port	River Miles	Tons Shipped	Tons Received	Tons Within Port	Total Tons	Value	Top Commodity
St. Louis MO	71	22,573,534	5,186,601	1,751,708	29,511,914	\$4,422	Coal
St, Paul MN	18	1,115,963	2,307,967	0	3,423,948	\$942	Grain
Kansas City MO	21	0	638,848	2,689,621	3,328,490	\$140	Aggregates
Minneapolis MN	8	51,847	657,100	0	711,955	\$83	Aggregates
<i>* insufficient barge operators to release this tonnage – included in “Tons Received”</i>							

Of the 125 million tons moving in the Upper Mississippi River Basin, almost 105 million tons moved on the Upper Mississippi River. This tonnage was worth \$18.4 billion. Of the 54.9 million tons shipped out of the basin, 81% was destined for the Lower Mississippi River and 15% moved to the Ohio River and its tributaries.

Upper Mississippi River Only* – 2008 Waterborne Commerce						
(values in millions of \$)						
COMMODITY	TONNAGE					VALUE
	Shipped	Received	Within	Through	TOTAL	
Coal	20,261,778	2,833,862	4,518,597	713,812	28,328,049	\$1,142
Petroleum	1,863,381	1,472,403	398,480	3,987,155	7,721,419	\$1,324
Crude Petroleum	725,198	0	0	0	725,198	\$72
Aggregates	6,992,622	164,805	4,003,741	204,345	11,365,513	\$616
Grain	20,159,999	207,305	346,232	11,745,967	32,459,503	\$4,826
Chemicals	799,794	3,634,666	69,956	4,232,961	8,737,377	\$3,670
Ores & Minerals	163,176	2,175,297	3,800	2,537,474	4,879,747	\$484
Iron & Steel	858,200	417,511	29744	3,651,399	4,956,854	\$3,299
Other	3,119,464	649,733	1,030,174	712,021	5,511,392	\$3,045
TOTAL	54,943,612	11,555,582	10,400,724	27,785,134	104,685,052	\$18,479
<i>* Minneapolis, MN to Ohio River mouth</i>						
<i>** Insufficient barge operators to release this tonnage – included in "Other"</i>						
<i>Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics</i>						

The Illinois Waterway carried 45.6 million tons worth \$8.8 billion. The waterway's traffic is dominated by the grain discussed earlier in this profile. Coal was the second largest commodity group.

Illinois Waterway* – 2008 Waterborne Commerce

(values in millions of \$)

COMMODITY	TONNAGE					VALUE
	Shipped	Received	Within	Through	TOTAL	
Coal	3,239,738	1,104,022	291,403	371,957	7,629,753	\$325
Petroleum	3,669,683	1,487,653	1,818,735	236,927	7,212,998	\$864
Crude Petroleum	0	1,393	0	0	1,393	\$0
Aggregates	53,471	1,363,501	2,751,756	0	4,168,728	\$145
Grain	11,129,856	124,328	19,277	43,343	11,316,804	\$1,463
Chemicals	877,483	3,356,558	138,542	37,140	4,409,723	\$1,780
Ores & Minerals	11,883	3,461,001	2,850	79,344	3,555,078	\$428
Iron & Steel	1,092,776	3,463,129	72,320	113,009	4,741,234	\$2,748
Other Commodities	394,871	1,531,408	191,895	496,712	2,614,886	\$1,091
TOTAL	20,469,761	15,892,993	7,909,411	1,378,432	45,650,597	\$8,844

* Illinois River, Chicago Sanitary/Ship Canal, Chicago River S. Branch, Calumet-Sag Channel, Calumet River

** Insufficient barge operators to release this tonnage – included in "Other Commodities"

Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics

Due to the propriety nature of commodity tonnage and the lack of sufficient number of barge operators, the itemization of specific commodity movements and associated tonnage of Missouri River traffic cannot be reported in detail, as other waterways in the Upper Mississippi River Basin. Aggregates accounted for 99% of Missouri River traffic, with other commodities consisting of petroleum products, cements and concrete products.

There are 38 active navigation locks and dams in the Upper Mississippi River Basin operated by the Corps of Engineers (see map). There are 29 active projects on the Upper Mississippi River, Six of these projects feature two lock chambers. The southernmost projects, Locks and Dam 27 and Melvin Price Locks and Dam have 110' x 1200' main chambers and 110' x 600' auxiliary chambers. Locks and Dam 15 has a 110' x 600' main chamber and a 110' x 360' auxiliary chamber. Locks and Dam 14 has a 110' x 600' main chamber and a 80' x 320' auxiliary that is over 80 years old and is used almost exclusively for locking recreational craft on a seasonal basis. The other dual-chamber projects are Locks and Dam 1, which has two 56' x 400' chambers and Locks and Dam 2 with a 110' x 500' chamber and an inoperable auxiliary chamber. Lock and Dam 19 has a single 110' x 1200' chamber, and the remaining Mississippi River locks have single 110' x 600' lock chambers.

Major rehabilitation is underway at several Upper Mississippi River projects. At Lock and Dam 3, which is 56 miles downstream of Minneapolis, the system of spot dikes that maintains the navigation pool is deteriorating at an accelerating rate. Periodic maintenance has prevented failure so far. If high water erodes the dikes, the resulting loss of the navigation pool would curtail navigation and cause

severe environmental damage and economic problems. This rehabilitation effort addresses the spot dike problems on the Wisconsin side of the river only. Wave action from high water in the spring of 2001 caused widespread erosion, and the Corps of Engineers had to complete \$2.3 million of emergency repair work, consisting of rock placement on the upstream slope of selected reaches of embankments at Locks and Dams 2, 5 and 8.

Major rehabilitation work is also underway at Lock and Dam 12. This project has been in operation for 63 years. The original electrical system is not up to code and is becoming a safety concern. The mechanical system is also experiencing fatigue that threatens to reduce lock efficiency, shut down the lock and/or result in uncontrolled flow through the gate opening.

Major rehabilitation is ending at Lock and Dam 24, located near Clarksville, Illinois. This project has been in operation for over 60 years. Some components of the facility have suffered wear and tear that can not be repaired by ordinary maintenance. The major rehabilitation will address various structural, electrical and mechanical components of the lock and dam. The rehabilitation of the major electrical and mechanical equipment that operates the lock is complete. The main lock miter gates have been replaced along with their electrical controllers. The Illinois abutment of the dam has been rehabilitated. All of the deteriorated lock wall concrete was successfully removed and replaced. A contract to rehabilitate the 15 large dam gates and award was awarded in September 2004 and is currently in progress. New bulkheads for the dam will be designed in FY 2006 with construction scheduled for FY 2007, dependent on funding.

The Illinois Waterway system has eight single chamber lock and dam projects. The seven projects on the main part of the waterway have single 110' x 600' lock chambers and are over 60 years old. Thomas J. O'Brien Locks and Dam on the Calumet River has a 110' x 1000' chamber. Most barges moving to and from Lake Michigan use the O'Brien Lock. There is one lock on the Kaskaskia River; it is located just less than a mile from the junction with the Upper Mississippi River and has one 600' x 84' chamber.

The [Upper Mississippi River - Illinois Waterway System Navigation Study](#) addresses the need for navigation improvements on this system. The system's principle problem is delays to commercial navigation traffic due to limited lockage capacity and increasing traffic.

Feasibility Report was completed in September 2004 and the Chief's Report was delivered to the ASA(CW) in December of 2004. ASA(CW) has asked for delivery of a reevaluation of the recommended plan, using NETS models, by 30 September 2007.

The Corps Recommended Plan detailed in the Sept 2004 Final Integrated Feasibility Report and Programmatic Environmental Impact Statement and summarized in the Dec 2004 Chiefs Report, calls for the authorization and immediate implementation of non-structural and small-scale measures to address the existing congestion on the system. The Recommended Plan would also provide for the initiation of engineering and design of five new locks on the Upper Mississippi River and two new locks on the Illinois River. While this design moves forward the Corps would continue to monitor the system for traffic and delay trends, domestic and global market conditions and the status of research on improvements of our economic models and evaluation methodologies. The plan calls for a notification report to Congress prior to award of construction contracts that present the results of this monitoring before construction of the new locks is

initiated. The plan also calls for the authorization of the first increment of ecosystem restoration measures including fish passage, water level management, and backwater habitat restoration.

UPPER MISSISSIPPI RIVER BASIN LOCKS AND DAMS								
Upper Mississippi River								
Lock	Mile	Main Chamber		Auxiliary Chamber		2008 Tonnage (ktons)		
		Year Open	Size	Year Open	Size	Upbound	Downbound	Total
Upper St. Anthony Falls	853.9	1963	400 x 56	-	-	878	64	942
Lower St. Anthony Falls	853.3	1959	400 x 56			871	59	930
Locks & Dam 1	847.6	1930	400 x 56	1932	400 x 56	881	84	965
Locks & Dam 2	815	1930	500 x 110	1948	600 x 110	2,962	1,767	4,729
Lock & Dam 3	796.9	1938	600 x 110	-	-	2,966	1,766	4,732
Lock & Dam 4	752.8	1935	600 x 110	-	-	3,110	2,204	5,314
Lock & Dam 5	738.1	1935	600 x 110	-	-	3,522	2,220	5,742
Lock & Dam 5A	728.5	1936	600 x 110	-	-	3,506	2,214	5,720
Lock & Dam 6	714	1936	600 x 110	-	-	4,046	3,195	7,241
Lock & Dam 7	702	1937	600 x 110	-	-	4,056	3,203	7,259
Lock & Dam 8	679	1937	600 x 110	-	-	4,405	3,524	7,929
Lock & Dam 9	647	1938	600 x 110	-	-	6,874	3,495	10,369
Lock & Dam 10	615	1936	600 x 110	-	-	7,044	4,808	11,852
Lock & Dam 11	583	1937	600 x 110	-	-	7,598	4,830	12,428
Lock & Dam 12	556	1938	600 x 110	-	-	7,601	5,698	13,299
Lock & Dam 13	523	1938	600 x 110	-	-	7,590	6,005	13,595
Locks & Dam 14	493	1939	600 x 110	1922	320 x 80	8,339	7,273	15,612
Locks & Dam 15	482.9	1934	600 x 110	1934	360 x 110	8,598	7,038	15,636
Lock & Dam 16	457.2	1934	600 x 110	-	-	8,695	7,800	16,495
Lock & Dam 17	437.1	1939	600 x 110	-	-	9,175	8,164	17,339
Lock & Dam 18	410.5	1937	600 x 110	-	-	8,276	9,385	17,661
Lock & Dam 19	364.2	1957	1200 x 110	-	-	8,188	11,087	19,275
Lock & Dam 20	343.2	1936	600 x 110	-	-	8,363	11,717	20,080
Lock & Dam 21	324.9	1938	600 x 110	-	-	8,933	13,007	21,940

Lock & Dam 22	301.2	1938	600 x 110	-	-	8,807	13,458	22,265
Lock & Dam 24	273.4	1940	600 x 110	-	-	9,068	14,056	23,124
Lock & Dam 25	241.4	1939	600 x 110	-	-	9,160	14,085	23,245
Melvin Price	200.8	1990	1200 x 110	1994	600 x 110	23,910	32,386	56,296
Locks and Dam 27	185.5	1953	1200 x 110	1953	600 x 110	23,444	35,101	58,545

UPPER MISSISSIPPI RIVER BASIN LOCKS AND DAMS

Illinois Waterway

Lock	Mile	Main Chamber		Auxiliary Chamber		2008 Tonnage (ktons)			
		Year Open	Size	Year Open	Size	Upbound	Downbound	Total	
Thomas J. O' Brien	326.5	1960	1100 x 110	-	-	4039	2783		6,822
Lockport	291.1	1933	600 x 110	-	-	8,257	4,204		12,461
Brandon Road	286	1933	600 x 110	-	-	8,454	4,212		12,666
Dresden Island	271.5	1933	600 x 110	-	-	9,320	5,868		15,188
Marseilles	244.6	1933	600 x 110	-	-	9,206	6,451		15,657
Starved Rock	231	1933	600 x 110	-	-	9,691	7,348		17,039
Peoria	157.7	1938	600 x 110	-	-	11,877	11,606		23,483
Lagrange	80.2	1939	600 x 110	-	-	11,703	14,987		26,690
Kaskaskia River									
Kaskaskia	0.8	1973	600 x 84	-	-	71	568		639

