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by Jerry Fruin and Dan Halbach

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BARGE MOVEMENTS ON THE UPPER MISSISSIPPI RIVER: TRENDS AND PROJECTIONS 1963-2002

by

Jerry Fruin and Dan Halbach

BACKGROUND

The volume of commodities moved by barge on the upper Mississippi River had nearly 50 years of uninterrupted growth after the completion of the locks and dams and the nine foot channel system in the 1930s. This upward trend accelerated after towboats were switched from steam to diesel electric power in 1950s. Figure 1 shows the yearly total tonnage of barge shipments and receipts in the Twin Cities area for the 30 years from 1963-1992. Note, however, that volumes peaked in 1983 and 1984 and were followed by unprecedented declines in the late 80s. Annual movements in 1985 and later were sometimes less than 2/3 that of the peak.

This abrupt decline has raised a number of important questions about the future of commercial navigation on the Upper Mississippi River. Is the decline permanent or an aberration? Has commercial navigation in the region lost its competitiveness with other modes of transportation? If so, can the factors changing navigation competitiveness be identified? Have there been structural changes in the economy which reduce the need for the commodities commonly shipped by barge? If so, are these one time changes or long-term trends?

The remainder of this paper will review recent trends and identify contributing and/or confounding factors that should help answer these questions. A number of graphs accompany the text to illustrate trends. It should be pointed out that the left hand scale of volumes is not

Figure 1

Twin Cities Waterborne Movement

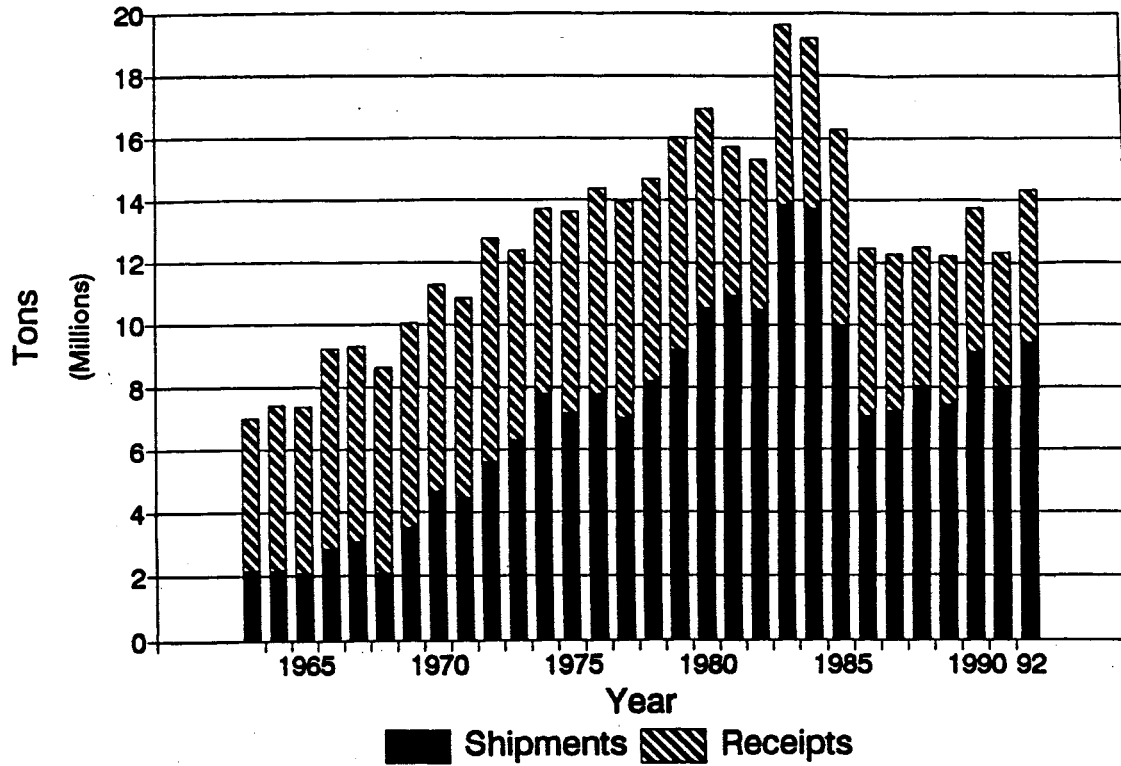
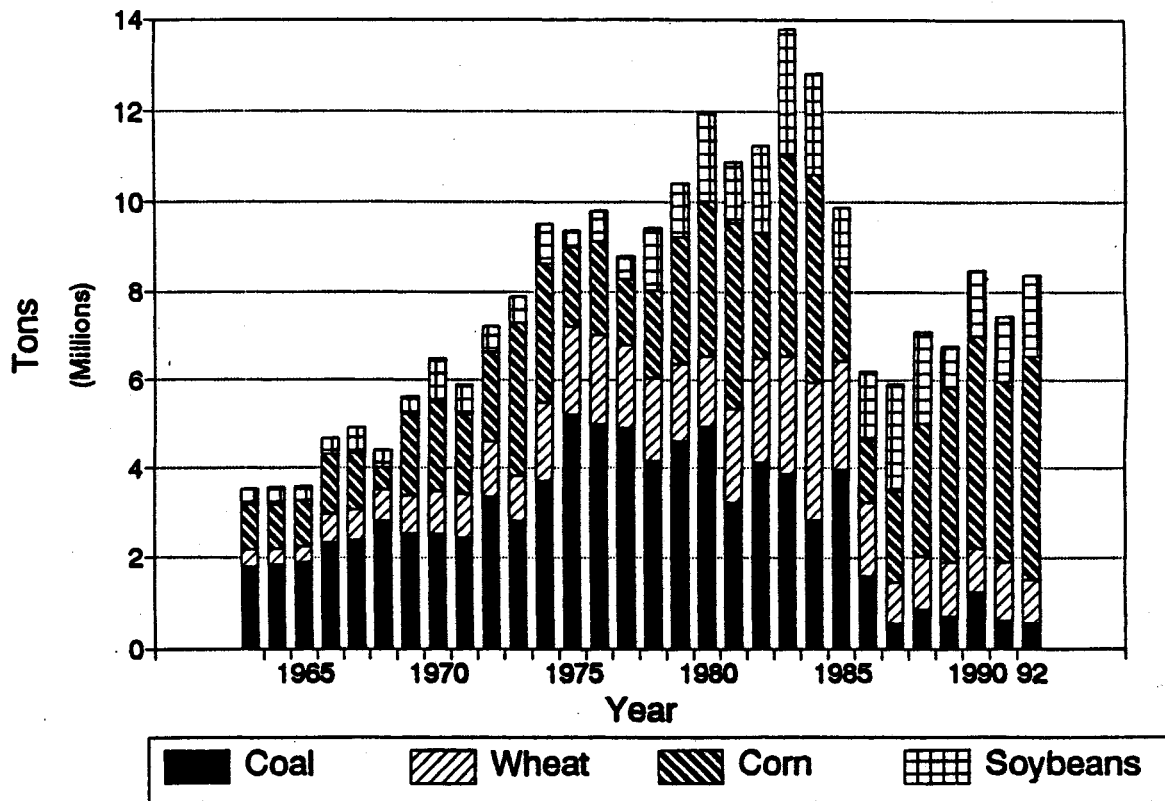


Figure 2

Twin Cities Waterborne Movement



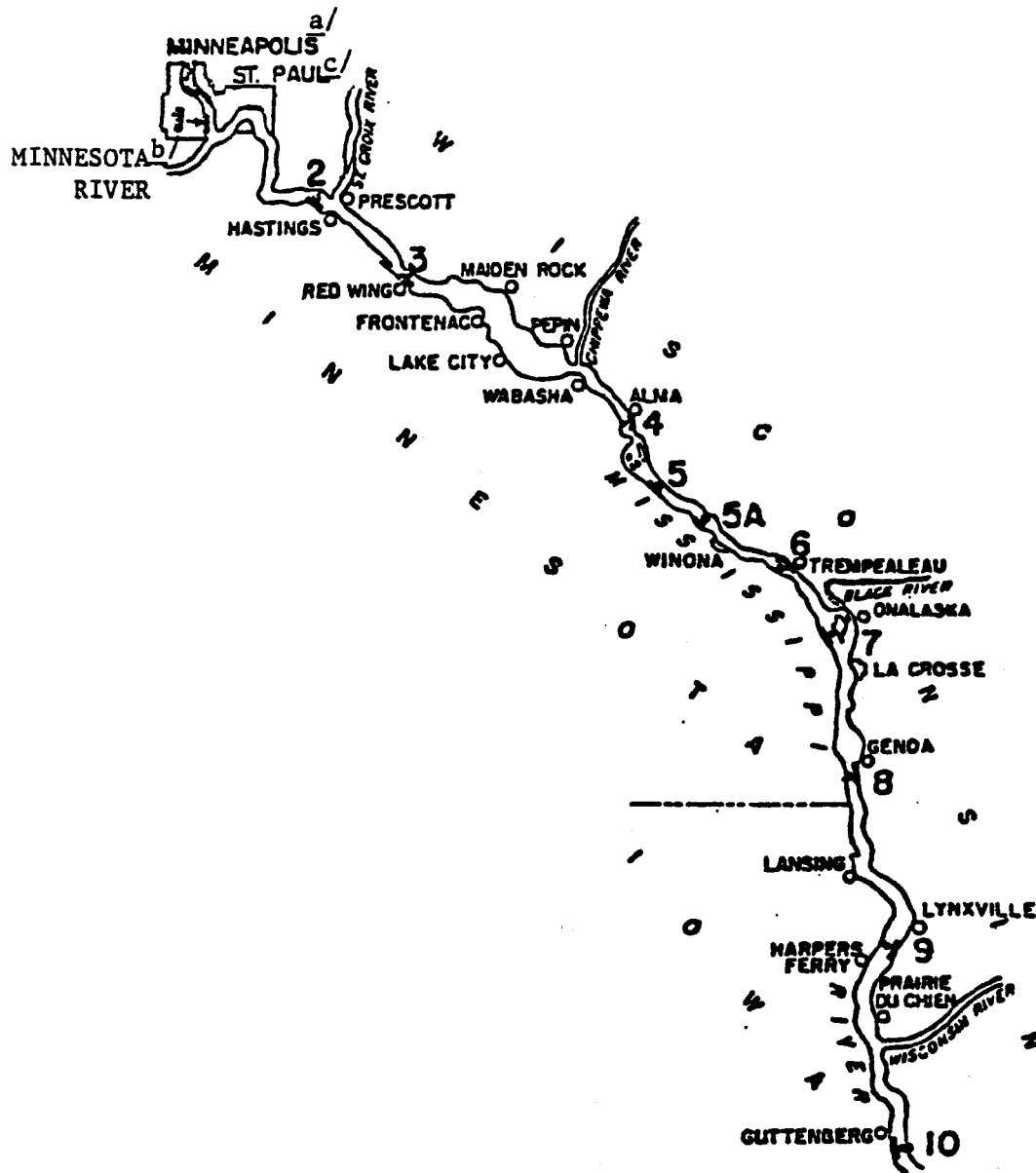
consistent between graphs. The reader should note the specific scale of each graph before making comparisons.

DATA SOURCE

The barge tonnages in this report were obtained from *Waterborne Commerce of the United States (WCUS)*. Waterborne commerce is compiled and published annually by the U.S. Army Corps of Engineers (COE) from reports provided by barge operators. These reports to the COE are required by law and include the points of loading and unloading and identify the type and volume of commodity moved. The individual movements reports are confidential and are summarized in WCUS by river reach or port area. We have compiled a unique series of barge shipment and receipt volumes by commodity groupings that are important to Minnesota and the Twin Cities. The complete data set with further explanatory information is found in the Appendix to this report.

The waterway system in the Twin Cities area is divided into four parts or ports for reporting purposes. The port of Minneapolis includes the terminals above Lock and Dam 1 (The Ford Dam) to the head of navigation on the Mississippi, at mile 857.5. The Minnesota River includes the terminals on the Minnesota River from the NSP Blackdog plant to the Peavey terminal at mile 21.8. The Port of St. Paul includes the terminals on the Mississippi River above mile 830 and below Lock and Dam 1. The fourth port is the St. Croix River to the head of navigation near the NSP Allen S. King plant at mile 21.6 (Figure 3). It should be noted that with the exception of the St. Croix River, terminals below Mississippi River mile 830.0 are not included. This means that volume data from some terminals in Pool 2 and ports such as Red Wing and Winona are not included in this data series. Consequently, data on some commodities such as sand and gravel, fertilizers, chemicals, petroleum products, grain, and coal are

Figure 3. Locations of Locks and Pools in the U.S. Army Corps of Engineers' St. Paul District



^{a/} Minneapolis encompasses Lock and Dam 1 upstream to the head of navigation, including the Upper and Lower St. Anthony Falls locks.

^{b/} Minnesota River is defined as a separate pool.

^{c/} St. Paul includes the area from river mile 830 upstream to Lock and Dam

understated for Minnesota or the region. Some of the major understatements will be pointed out and discussed in the commodity movement sections.

UNBALANCED GROWTH OF RECEIPTS AND SHIPMENTS

Figures 4 and 5 show Twin City area barge receipts and shipments from 1963-1992 separately. Note the different trends. Receipts were much more stable than shipments, gradually increasing to over 6 million tons in 1966 and being remarkably constant until after 1980. Total receipts then fell in 1981 to a level even lower than that of 1963. However, in Figure 1, this drop in the volume of receipts was masked by the continued increase in shipments through 1984. From 1987 through 1992 receipts have been relatively constant at about the same level as in 1963. On the other hand, shipments from Twin Cities ports fell dramatically from after the highs in 1983 and 1984 to a level that was still more than 3 times higher than that of the 1960s. Shipments declined abruptly to a 13 year low in 1986 but have generally been increasing since then.

The ratio of shipments to receipts of dry cargo is important in navigation economics because backhauls allow high utilization of equipment. Many of the costs of moving empties such as fuel and labor are nearly equal to those of moving cargo. This is especially important for dry cargo. Historically commodities such coal, fertilizer and salt were transported upstream to the Twin Cities and grain was transported downstream. These movements were much better balanced in the 60s and early 70s before the rapid expansion of U.S. grain exports. Currently there is a need to bring a substantial number of empty barges upstream for grain which is costly. However, this probably has little to do with the abrupt drop in volume after 1984 as the imbalance has existed for some time.

Figure 4

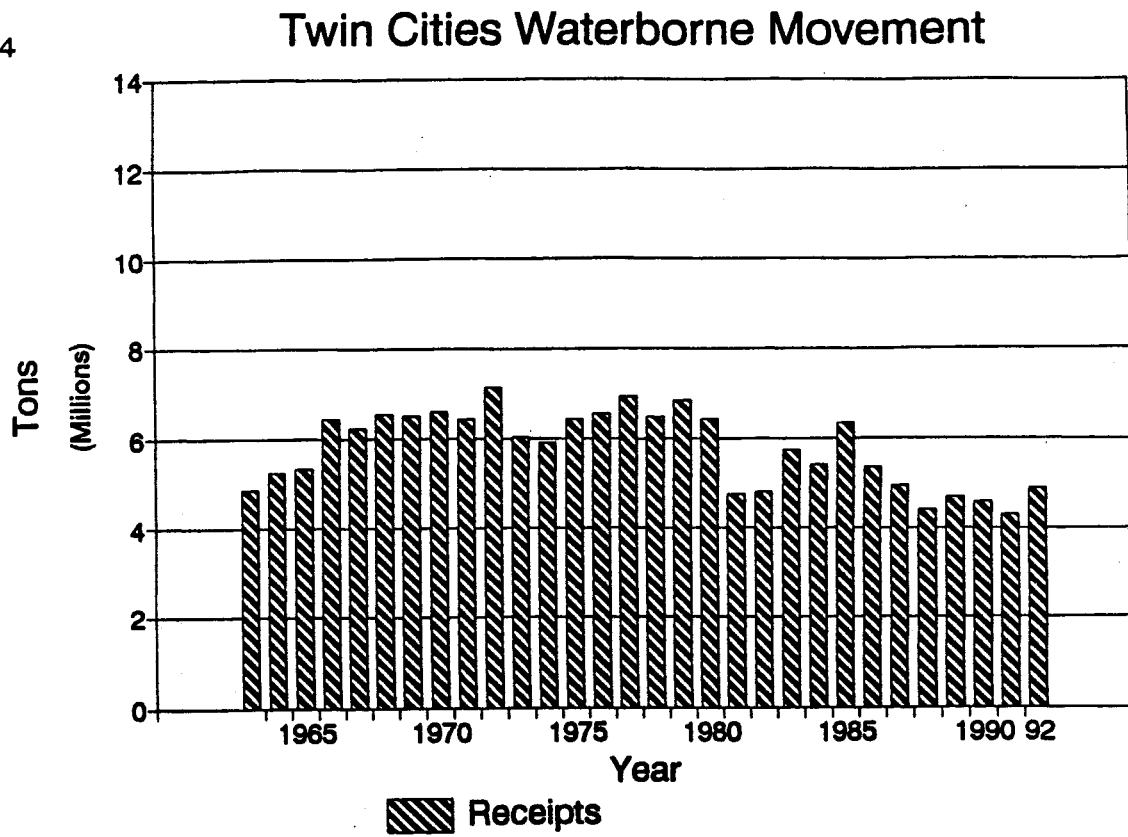
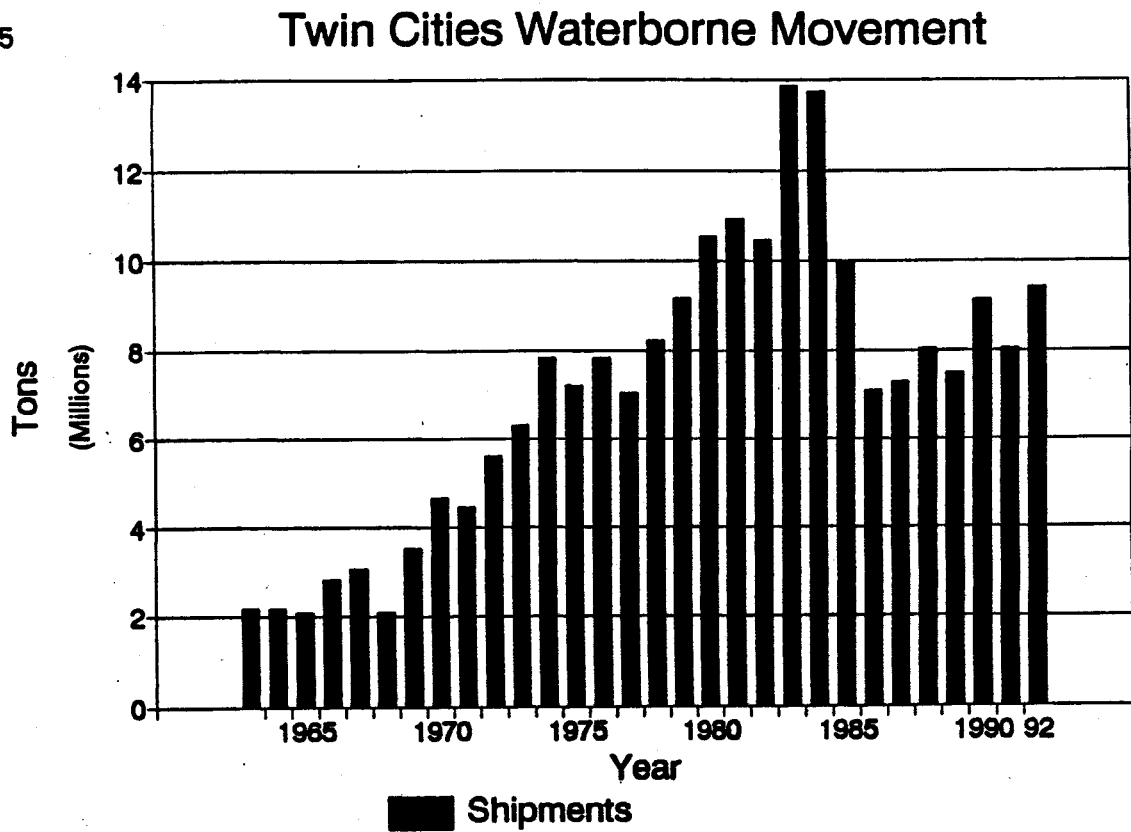


Figure 5



MAJOR COMMODITY MOVEMENTS

Unlike some types of commerce, changes in barge movement volumes tend to be "lumpy." Because of the types of commodities and their uses, once a major commodity flow is committed to water, it tends to continue to be moved by water, year after year. However, once the flow stops, it probably will not be restarted. For example, a power plant or refinery located on the river will use water transportation and will require approximately the same amount of coal or crude oil year after year until expanded or retired. At that time the volume of barge traffic to that location would permanently change.

Rather than just analyzing total volumes to determine trends, it is necessary to look at individual commodities and their origins and destinations. Figure 2 shows the movements of the four commodities (coal, corn, wheat and soybean) that had the largest volumes from 1963-1992. If we compare figures 1 and 2, it is apparent that the two graphs are quite similar. That is, if we can explain the volume changes in these commodities we can explain most of the changes in area barge volume.

Coal

Coal movement increased from less than 2 million tons in 1963 (when it was the most important commodity accounting for over 25% of total shipments and receipts) to over 5 million tons in 1975 when it accounted for over 38% of total Twin Cities barge movements (Figure 6). However, from 1987-1992 coal has averaged well under one million tons a year and in 1992 accounted for less than 4% of total volume.

Is this drop permanent and/or evidence of a structural change in our economy? Most definitely! The coal receipts in the 1960s were primarily shipments of relatively high sulfur coal from southern Illinois to local power plants. Due to environmental concerns over sulfur emissions and the increasing costs of southern Illinois coal, Northern States Power began to

Figure 6

TC Waterborne Coal Movement

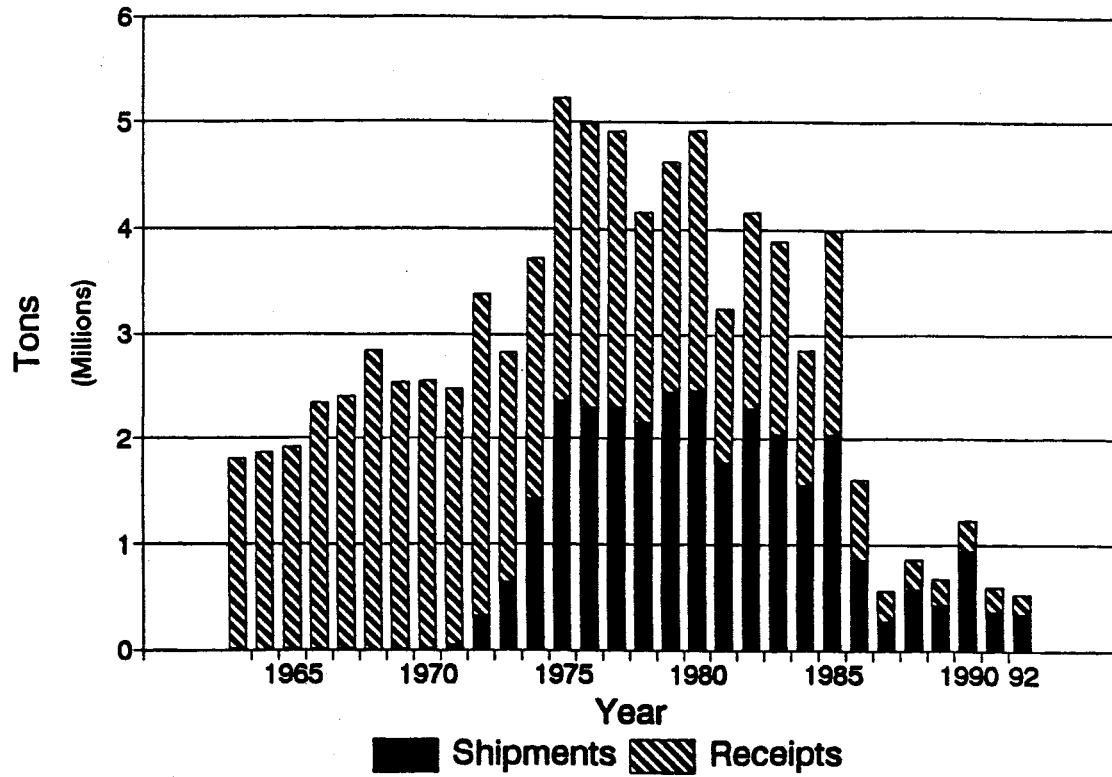
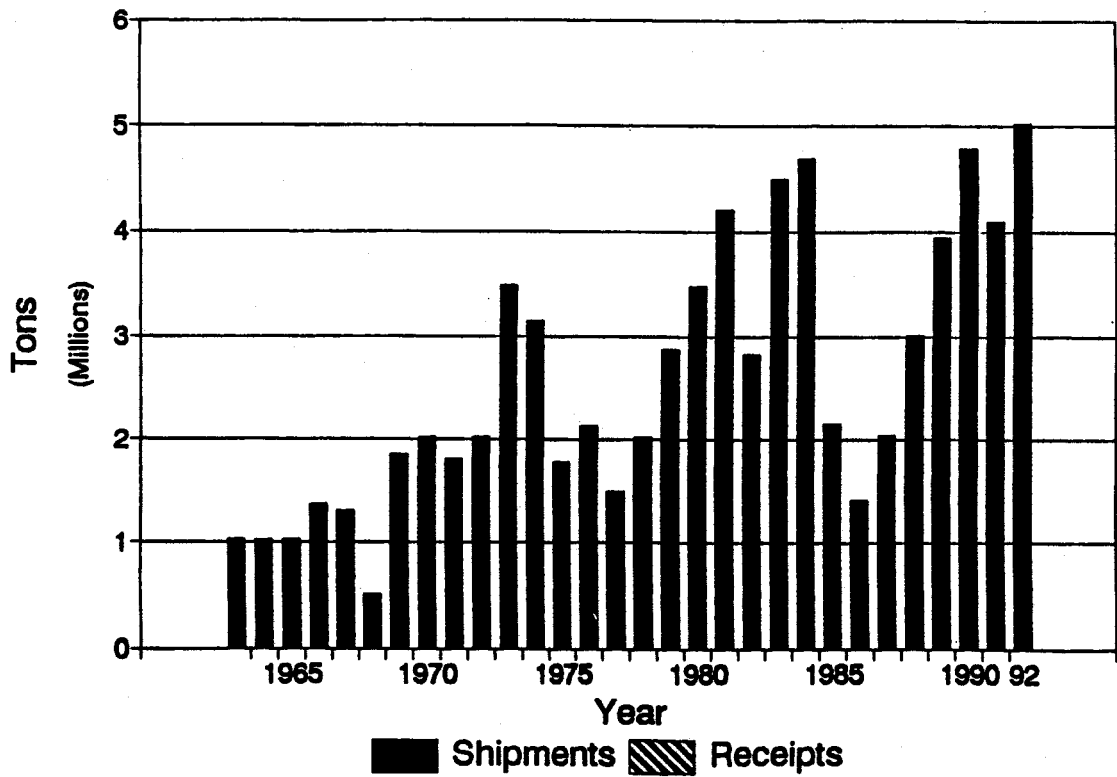


Figure 7

TC Waterborne Corn Movement



switch the fuel in their 4 Twin Cities River generating plants to western coal. Originally, the western coal came by unit train to the Twin Cities and was transferred to barges for the final delivery to power plants that could not unload unit trains. These shipments first show up on Figure 6 in 1972 and increase through 1975 when the shift to western coal was completed.

Note that the local movement of western coal from 1975 on, is included both as a receipt in the Twin Cities area and also as a shipment. For a number of years coal receipts and shipments averaged between 4 and 5 million tons a year which means about 2.5 million tons of coal was a local move. From a practical standpoint, water transportation of coal remained very important, but because of local logistics (to get access to the plants) the long haul transportation from the mines was done by rail.

The drop in coal traffic after 1985 is due to the completion of unit train handling equipment at all the Twin Cities NSP plants so that the western coal is generally not transhipped locally by barge. The coal that has been shipped by barge in recent years is western coal for a down river power plant that does not have adequate unit train handling facilities. Twin Cities receipts are of types of eastern coal that meet specific requirements of users.

Consequently, the apparent decline of 3 to 4 million tons of coal traffic is permanent. Future volumes will resemble the last few years and volumes will not return to their pre-1985 levels.

The shift from eastern to western coal also explains the growth and decline of volume of the St. Croix River (Figure 21). Receipts increased from virtually nil to over one million tons per year when NSP's King plant at Stillwater became operational. Receipts and total volume on the St. Croix fell to nearly zero after the King plant started to receive its western coal by rail.

Corn, Wheat and Soybeans

Figures 7, 8, and 9 show corn, wheat, and soybean volumes. The volume of corn increased (quite sporadically) to an all time high in 1992. The decline in the late 70s was due to the corn supply reduction after a severe drought. The causes of the decline in the 80s were more complex but corresponded to a decline in U.S. corn exports.

The volume of wheat shipments had an all time peak in 1984 before the drop in U.S. farm exports, but volumes did not recover through the 1990s. Wheat volumes have been relatively constant at one million tons a year, only about one-third that of 1984. Soybean shipments have not recovered to all time highs but resemble corn more than wheat.

Why the different trend patterns for wheat than for corn and soybeans? Has there been a permanent change? Yes. The diverging trends are the result of rail deregulation and associated adjustments in the rail industry structure and rate making.

The underlying situation for these three commodities is more complex than for coal. Virtually all of the grain shipped by barge from Minnesota is exported. Our export markets have been shifting westward to the Pacific Rim countries from the Atlantic. However, the shares of exports from Gulf ports served by the Mississippi River and the Pacific Northwest ports served by rail were relatively constant during 1982-1992.¹

Much of the wheat that previously was shipped by barge came from the Dakotas and Montana. Our study of the *1992 ICC Public Use Waybill Sample* was done to estimate the average 1992 rates for multiple car trains of wheat from Minot, North Dakota to key destination points. The rail rate from Minot to the Twin Cities was 73¢ per bushel. The rail rate from the Twin Cities to the Gulf was 24¢ for a total of 97¢. (The direct rail rate from Minot to the Gulf

¹USDA, *Grain Market News*, various issues.

Figure 8

TC Waterborne Wheat Movement

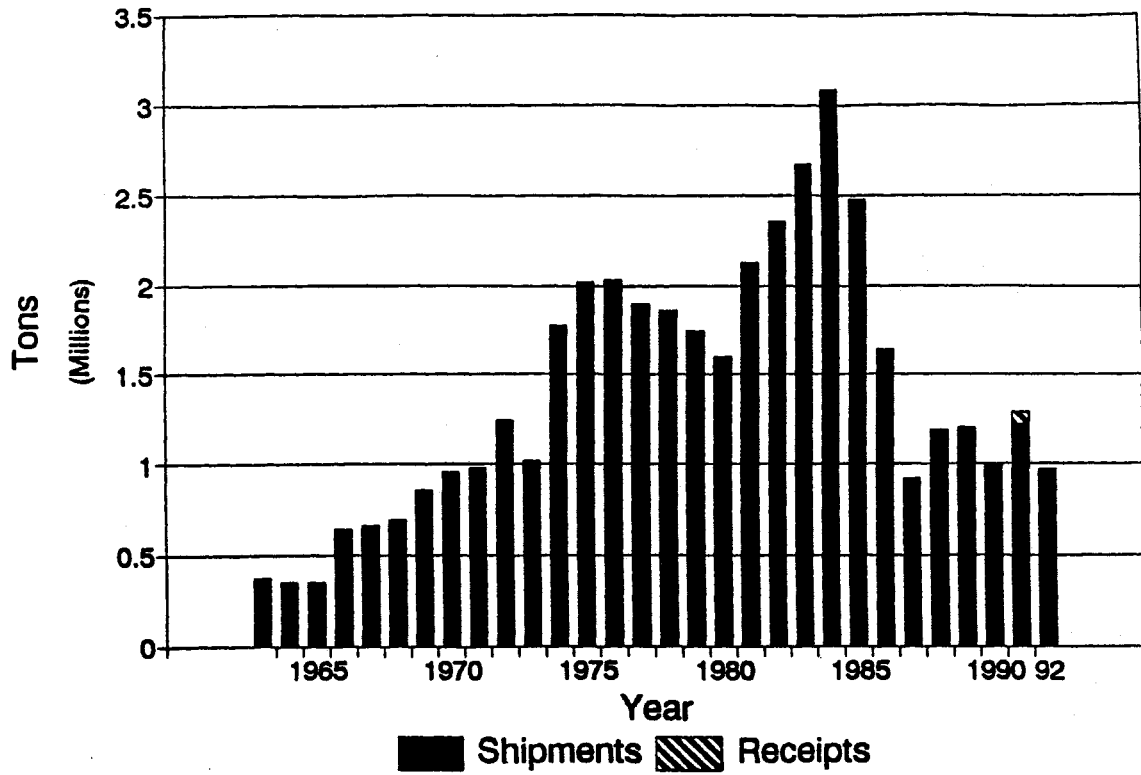
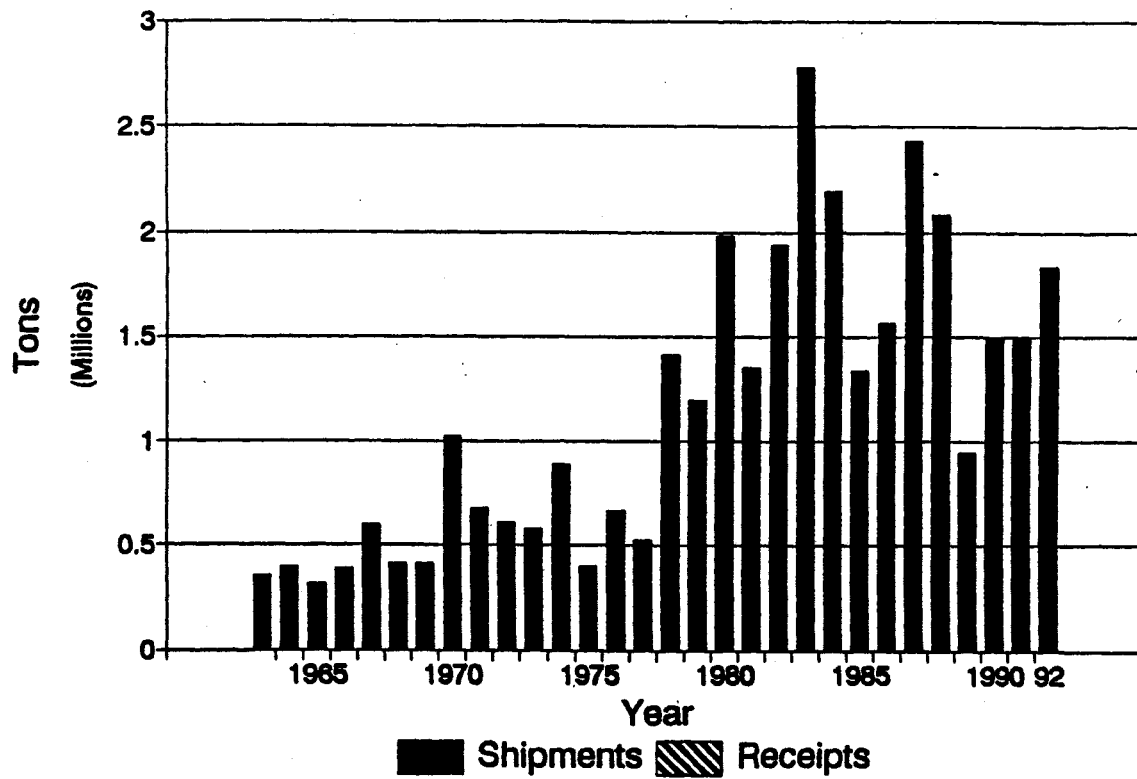


Figure 9

TC Waterborne Soybean Movement



was approximately the same.) Although highly variable, barge rates are seldom as low as 24¢ a bushel. Thirty cents a bushel is more typical. Consequently, once wheat from North Dakota is in a rail car on a railroad with connections to the Gulf, it would have been uneconomical for the shipper to transfer the wheat to a barge at the Twin Cities under the 1992 rail rate structure. The rail rate for the second (and longer leg) is lower than the barge rate. There would be a cost of several cents per bushel to transfer wheat from rail to barge. Much of the export wheat from the North Dakota and Montana that went by barge in the early 80s is now captive to the railroads. The wheat now being barged is wheat that is near enough to the Twin Cities to be trucked to river elevators.

Most of the corn (and beans) that are barged on the river are within trucking distance of the river. In addition, newly created short line railroads that don't go to the Gulf traverse the corn growing areas of southern Minnesota and South Dakota and have truck competitive rates to the river. Under the current regulatory environment, we can expect to see corn and soybean barge volumes respond primarily to area production and world demand while the more distant wheat will remain rail dependent.

OTHER COMMODITIES

Fertilizer

Fertilizer receipts have shown consistent growth interrupted only by the farm recession and farm program variations (Figure 10). Phosphate and nitrogen fertilizers are manufactured near the lower river and are ideally suited for barging. They provide an excellent backhaul for grain barges. We can expect fertilizer receipts to grow with variations depending on the state of the farm economy.

Figure 10

TC Waterborne Fertilizer Movement

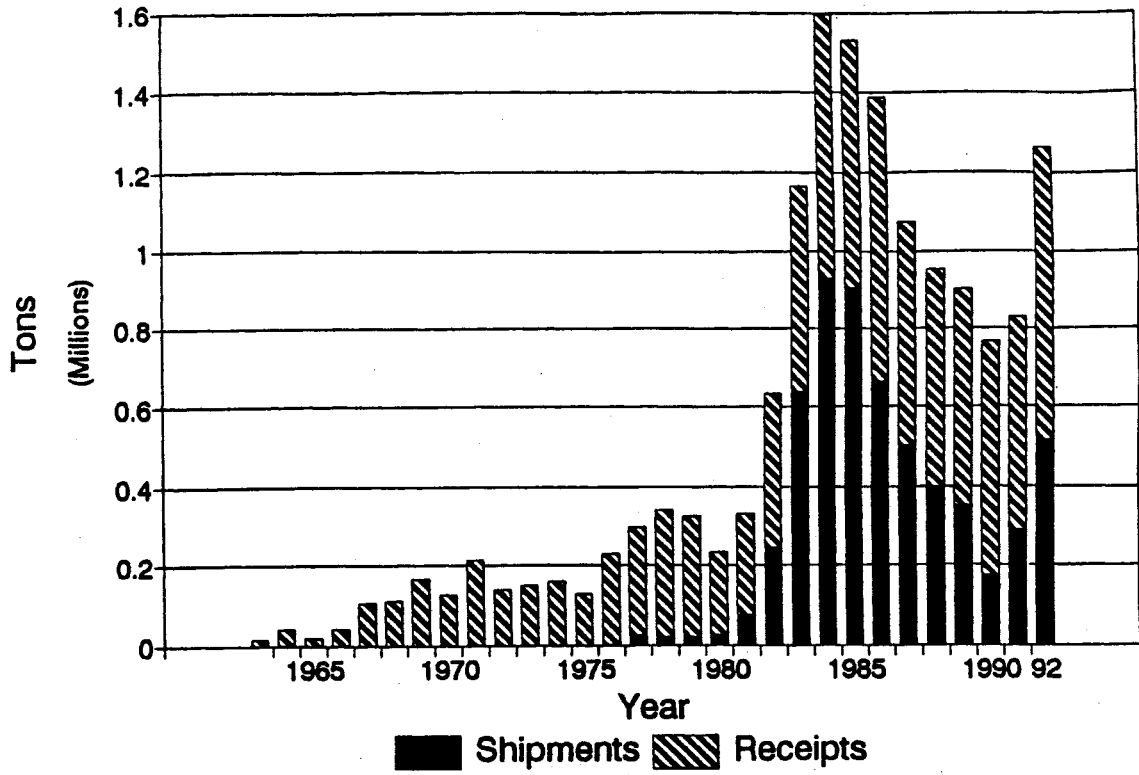
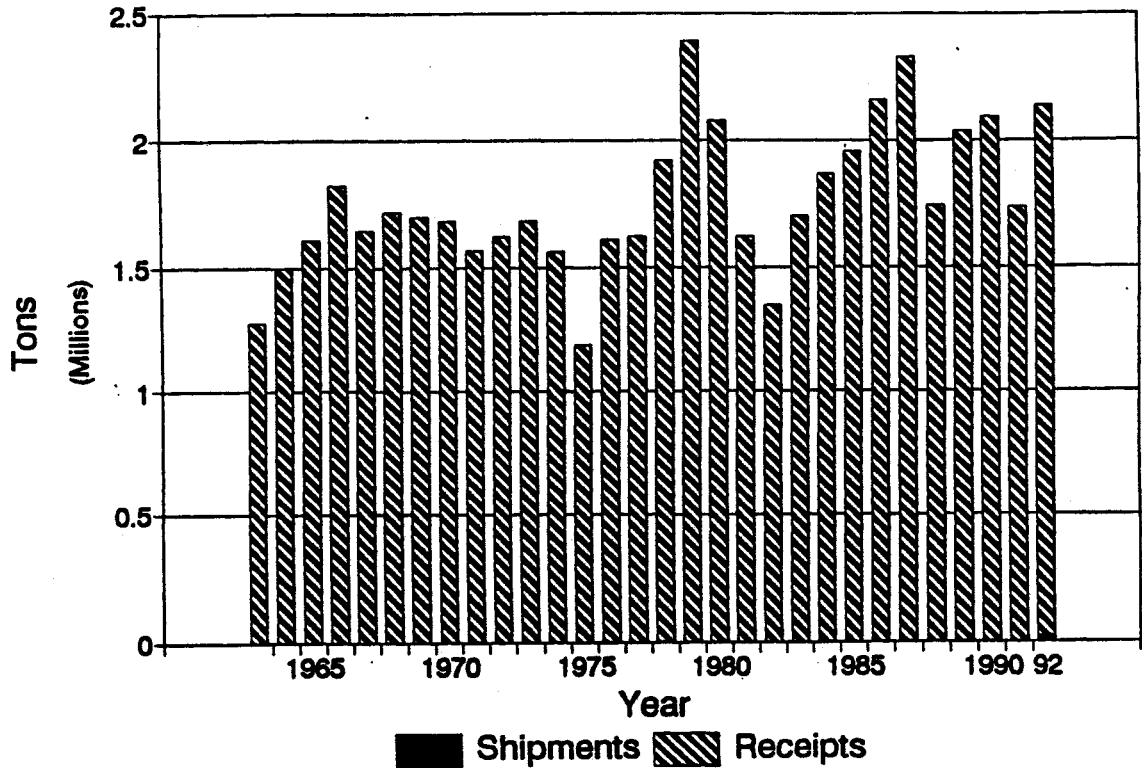


Figure 11

TC Waterborne Sand Gravel Rock Movement



Fertilizer shipments grew rapidly from 1980-85 and then dropped precipitously. Fertilizer shipments consist almost exclusively of Canadian potash. Canadian mines supply over 80% of U.S. requirements. The increase in barge shipments occurred as the use of Canadian potash expanded throughout the Midwest. The river was used to provide low cost transportation. However, after 1985 the rail rate structure and rail interline arrangements were adjusted so that much of the potash was shipped directly to distributors by rail and the transfer to barge in the Twin Cities declined. Existing institutions may also allow rail shippers to capture "phantom freight" that would not be available if barges were used. That is, the mining companies can price and ship FOB destination and bill their customers for freight at the single car tariff rate while paying at a unit train contract rate. Consequently, the future level of potash shipments is almost completely dependent on the rail rate structure and industry pricing practices.

Sand, Gravel, Rock

Figure 11 shows the annual receipts of sand, gravel and rock in the Twin Cities area. This is a local move from the Shiely gravel facilities at Grey Cloud Island at mile 826.6 to terminals in St. Paul and Minneapolis. Although a local move, only receipts are reported in WCUS because the shipments originate in Pool 2 below mile 830. This low cost movement is a very important factor in Twin Cities construction. Sand and gravel can be delivered to within a few miles of either downtown and avoid the cost of trucking a much longer distance through city congestion. It appears that this movement will continue until the sand and gravel supply at Grey Cloud Island is exhausted.

Figure 12

TC Waterborne Salt Movement

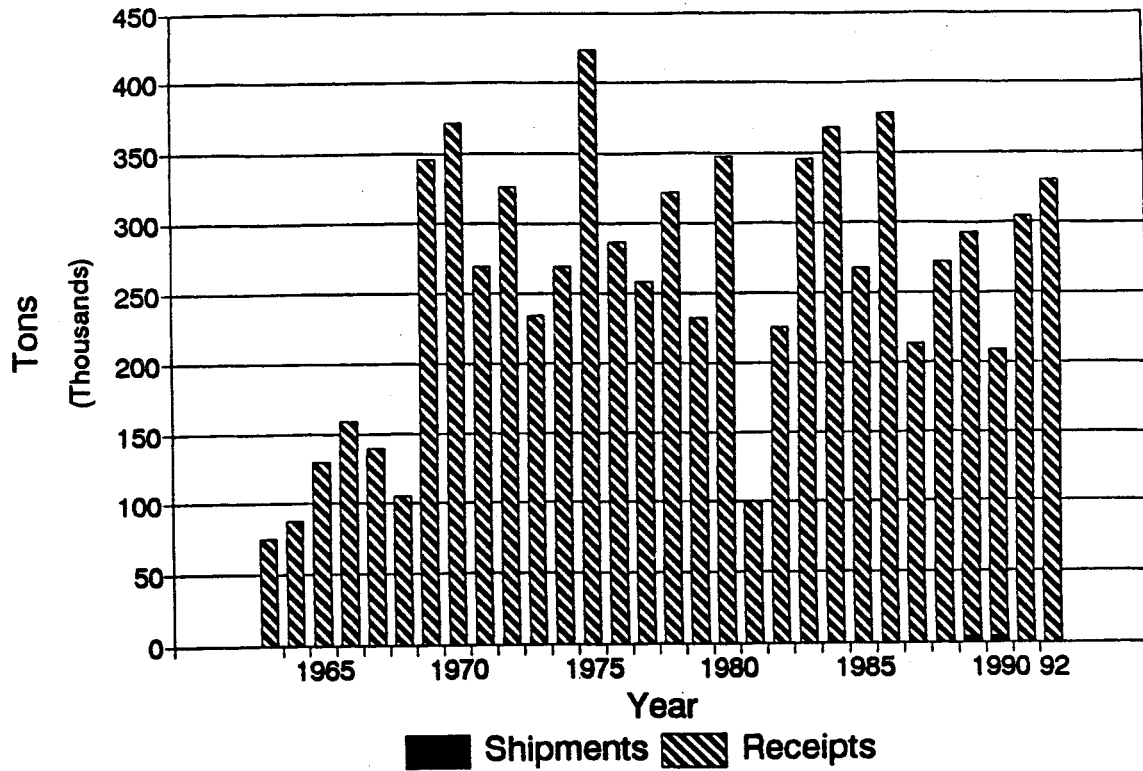
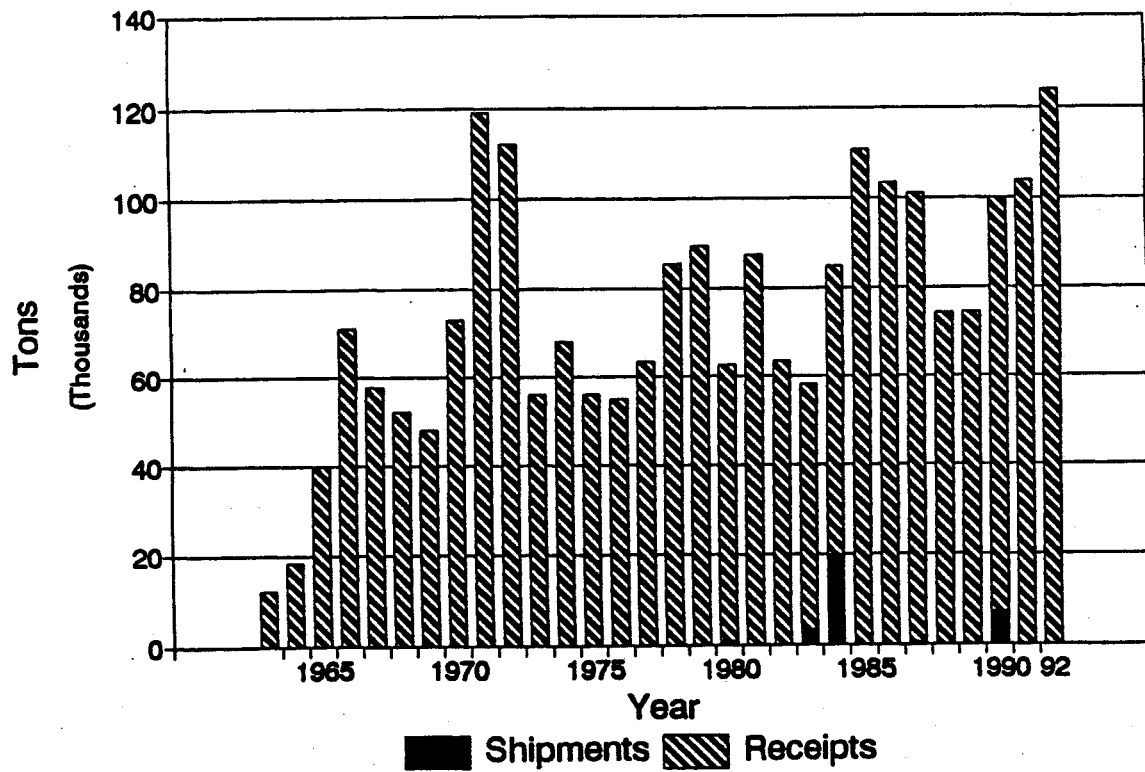


Figure 13

TC Waterborne Chemical Movement



Salt

Figure 12 shows salt receipts in the Twin Cities region. This product is used on roads and for industrial purposes. Volumes have been relatively consistent. This is a small but important backhaul for grain barges.

Chemicals

Figure 13 shows the volume of bulk chemicals. It is one of the smallest categories in terms of volume but one of the highest value categories. Volume has essentially doubled since the first oil crisis in the 1970s. Quantities of chemicals are also received below mile 830 and not reported in WCUS.

Crude Petroleum and Petroleum Products

Figures 14 and 15 graph the volumes of crude petroleum and petroleum products, respectively. Crude petroleum is graphed separately here to illustrate the "lumpiness" of barge transportation. This movement occurred after the first oil shock when Canada sharply reduced exports of crude oil. Minnesota had received substantial quantities of crude by pipeline from Canada. Cut off from Canadian supplies, Minnesota refineries had to obtain oil from the south immediately and turned to the river. However, it is most cost effective to transport crude petroleum in properly sized pipelines. The pipelines from the south were soon expanded and shipments since 1978 have been minimal. (Crude petroleum is included with all other in the Appendix tables.)

Petroleum product volumes are shown in Figure 15. Much of this represents local moves. The importance of barge movements of petroleum product is understated because the Koch refinery is below river mile 830 and consequently its activities are not reported in WCUS.

Figure 14

TC Waterborne Crude Petrol Movement

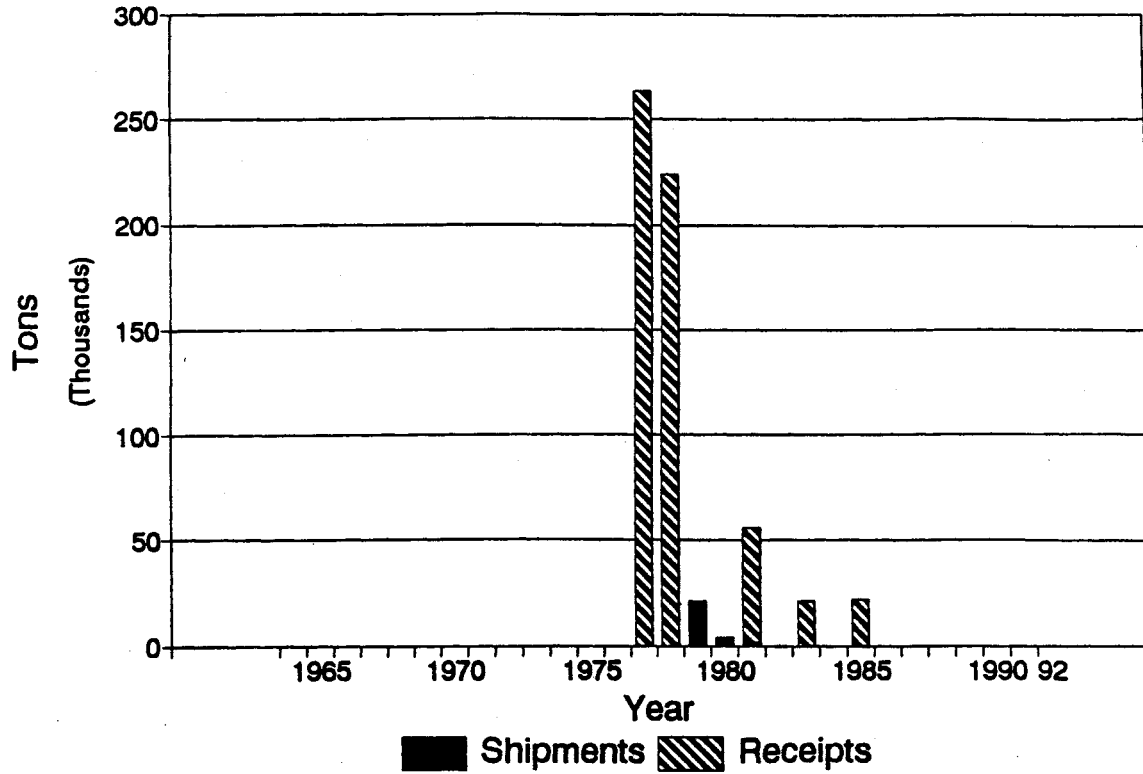
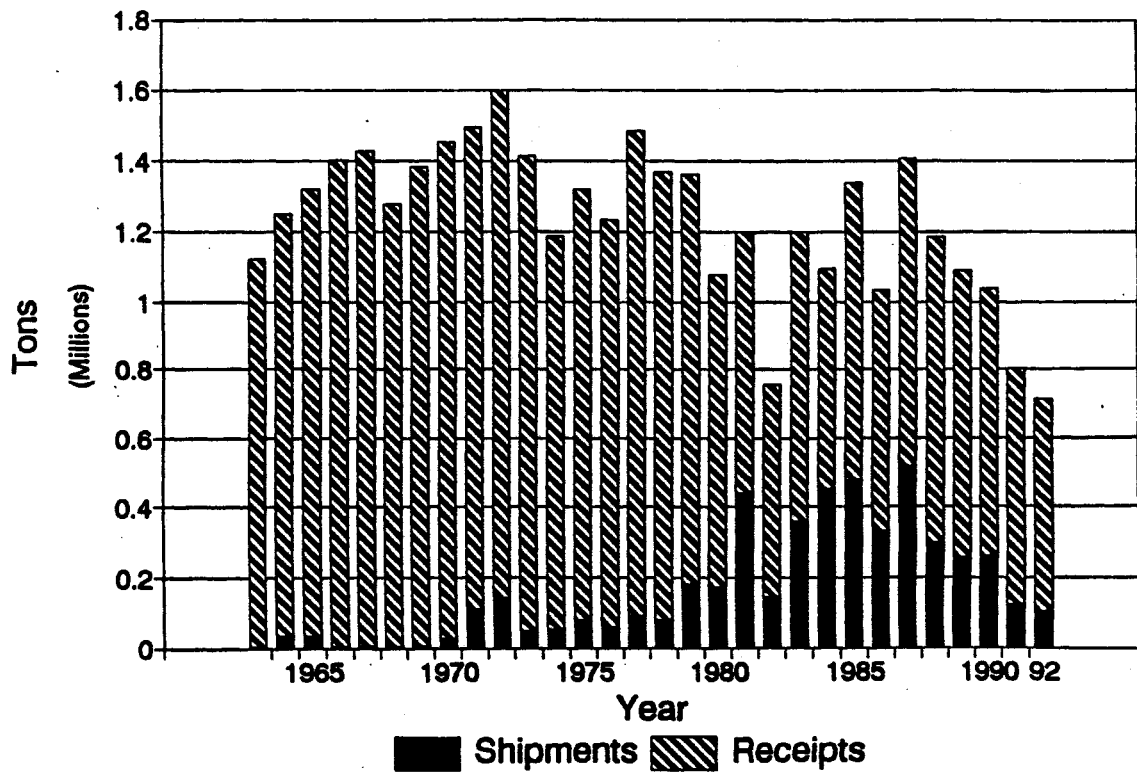


Figure 15

TC Waterborne Petrol Prod Movement



Farm Crops NEC and Other Ag Products

Farm Crops, not categorized elsewhere, and Other Ag Products are in Figures 16 and 17. The Appendix lists the commodities included in these categories. The surge in farm crops in the early seventies was primarily oats. Recent receipts have been oats and rice.

Other Ag Products include both animal feeds and food products. The decline after 1988 corresponds with the closing of a soybean crushing facility.

Cement

Cement (Figure 18) is an example of a commodity that has shown a sharp increase in water transportation. This is due to national and international trends toward restructuring and consolidation in the cement industry.

PORT GRAPHS

Figures 20-23 show the volume histories of each of the four port areas. Figure 20 shows that the Minnesota River volume (which is primarily grains) has increased since the agricultural recession of the mid-80's. (The dip in 1978-79 is apparently due to misreporting with part of the Minnesota River volumes being included in St. Paul.)

The influence of coal on the St Croix River volume (Figure 21) has been discussed in the Commodity section.

Minneapolis exhibited peak volumes in 1975 and 1976 due to shipments of western coal to local power plants. The last year of coal shipments through the Port of Minneapolis was 1980. Volumes have been relatively constant since then but were down in 1990 and 1991.

Figure 16

TC Waterborne Farm Crops NEC Movement

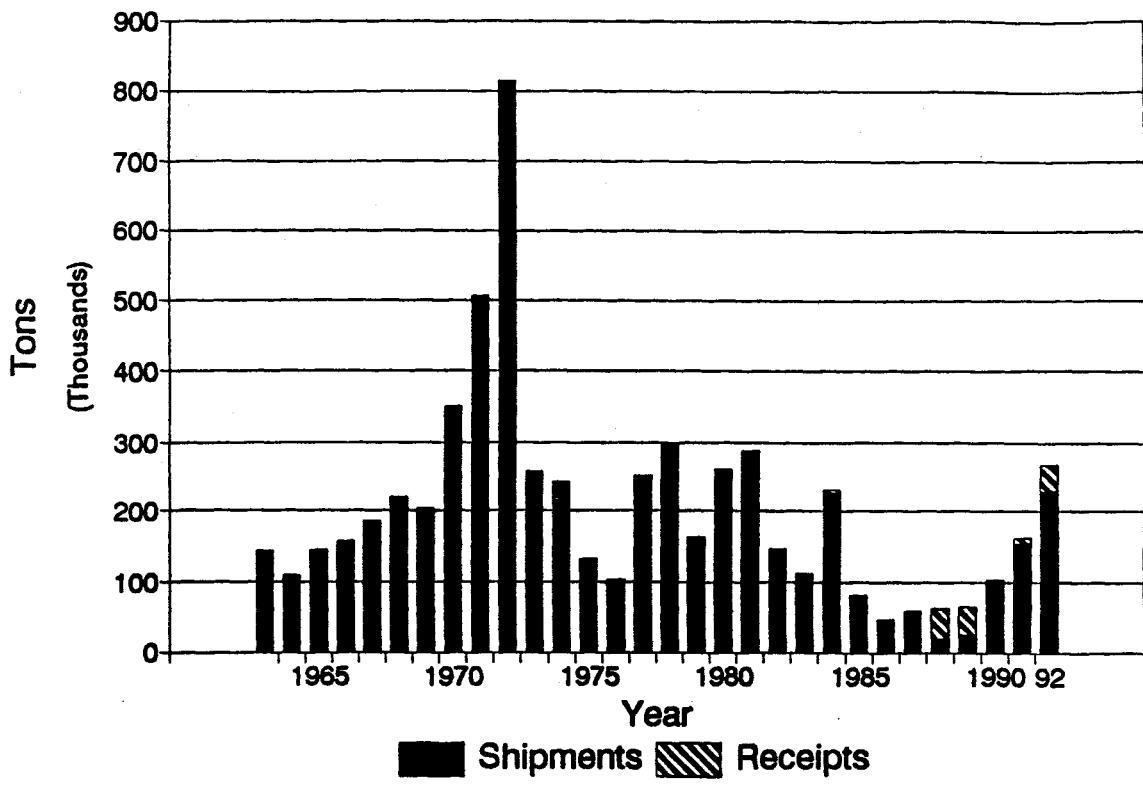


Figure 17

TC Waterborne Other Ag Prod Movement

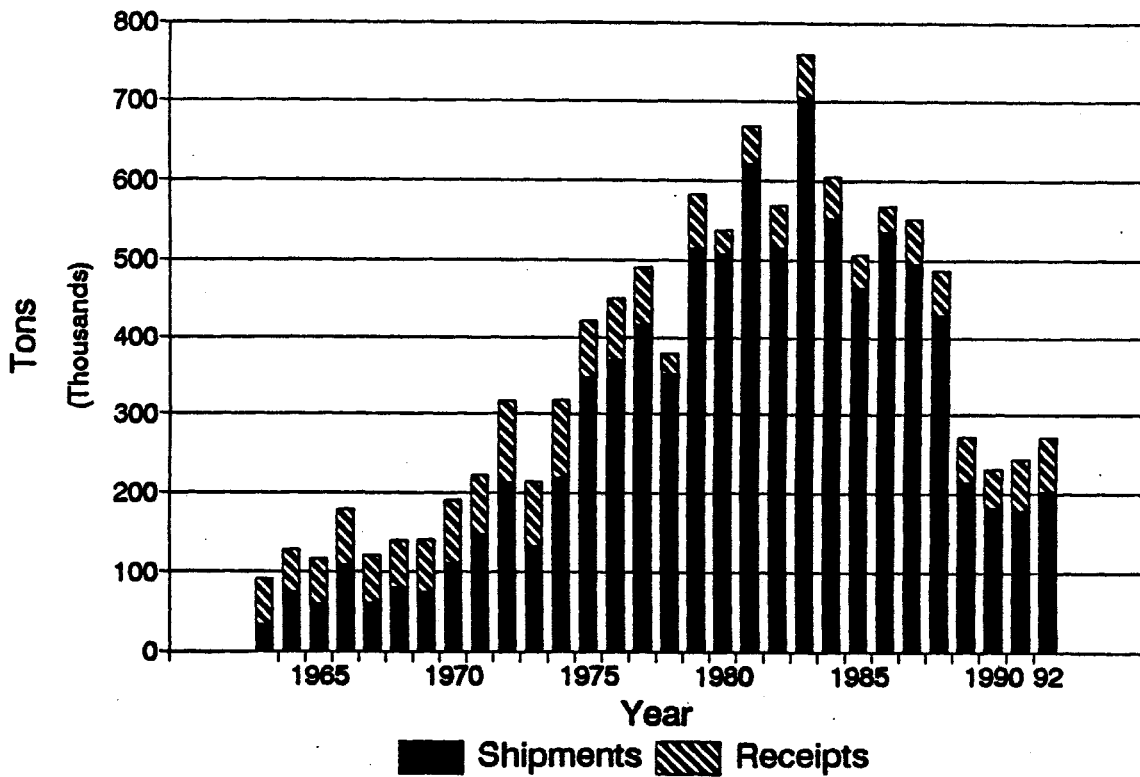


Figure 18

TC Waterborne Cement Movement

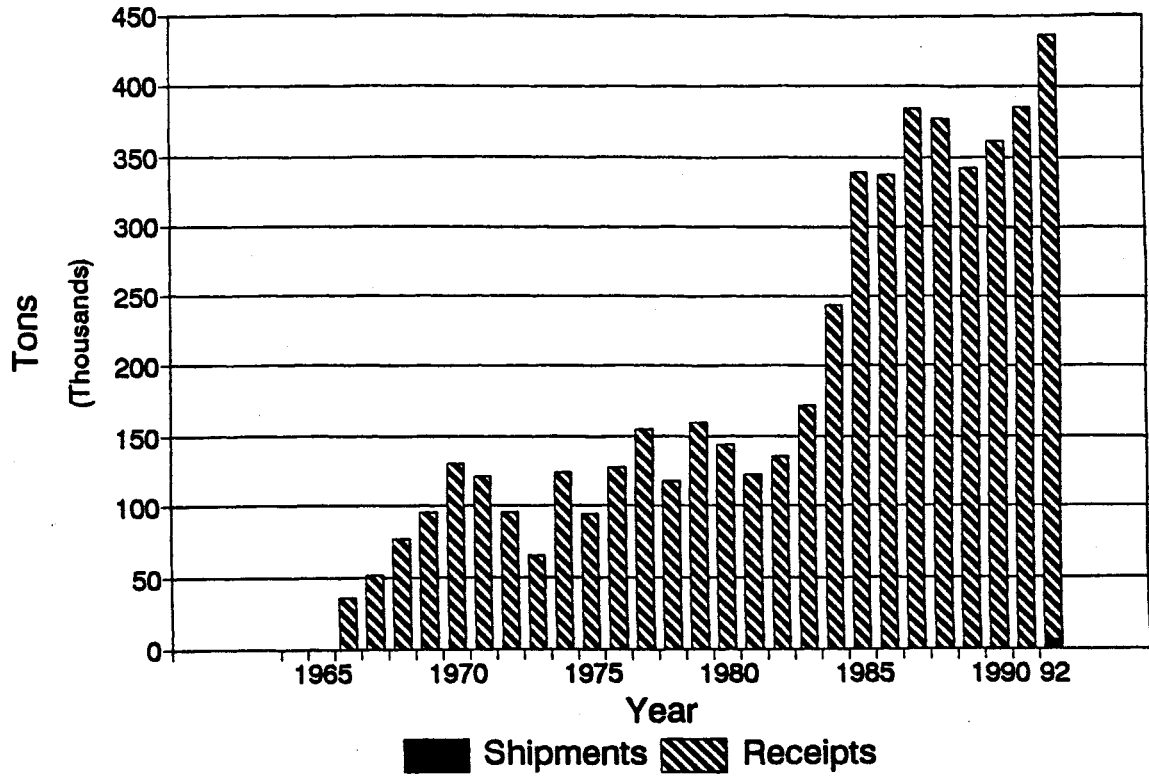
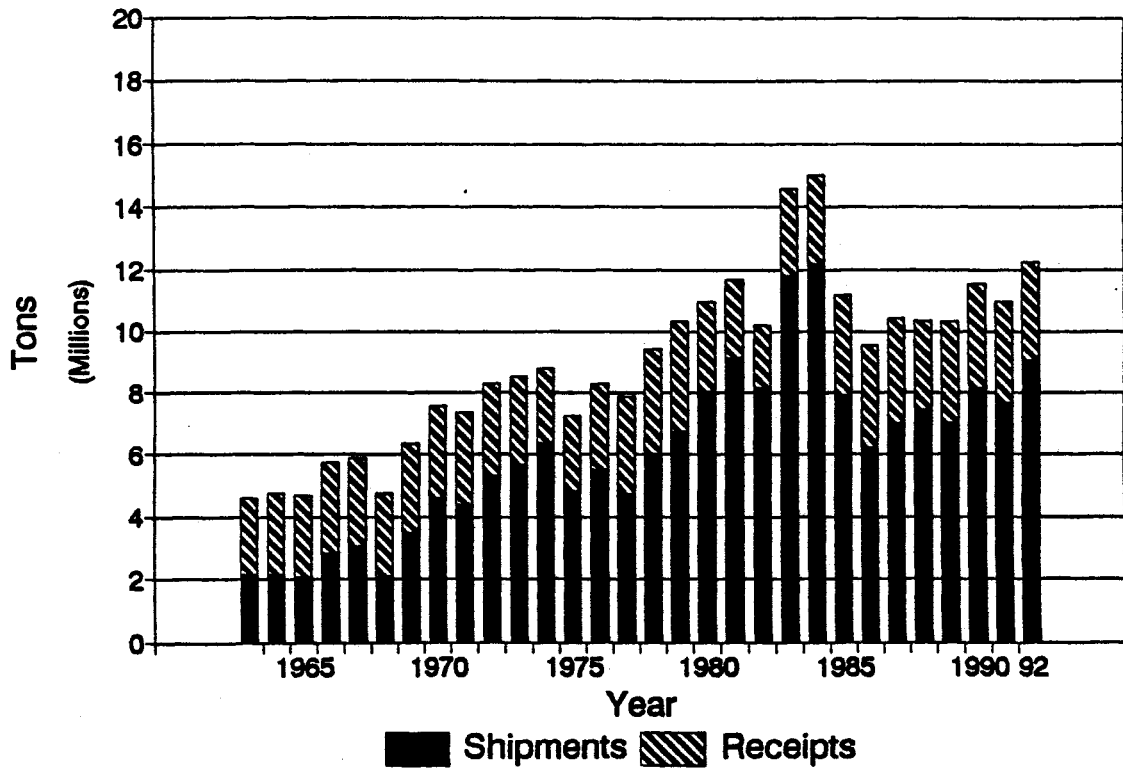


Figure 19

TC Waterborne Movement (All Less Coal)



CONCLUSION

Permanent reductions have occurred in the quantities of specific commodities moved to and from the Twin Cities area on the Upper Mississippi River. These are due both to changes in the source of supply (coal) and to increased competition from railroads after deregulation (wheat). However, other commodities have shown continued growth and reached all time highs in the 90s (corn, cement, chemicals and fertilizer receipts). In fact, ton-miles (as opposed to tons) and the volume of long-distance shipments of Twin Cities waterborne movements appear to have reached an all time high in 1992. Note that if coal is not included (Figure 19), 1992 had the third highest barge tonnage ever. Only volumes in the peak grain shipment years of 1983 and 1984 following the drought in the eastern corn belt were higher.

Rail deregulation and other changes in the economy have had little effect on the competitiveness of the barge industry for the movement of bulk commodities. Commercial navigation on the Mississippi River remains very important to the economy of Minnesota and will remain so for the foreseeable future.

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U.S. Department of the Army Corps of Engineers, New Orleans District, *Waterborne Commerce of the United States, Part 2*. New Orleans, LA. Years 1977-1992.

Figure 20

Minnesota River Waterborne Movement

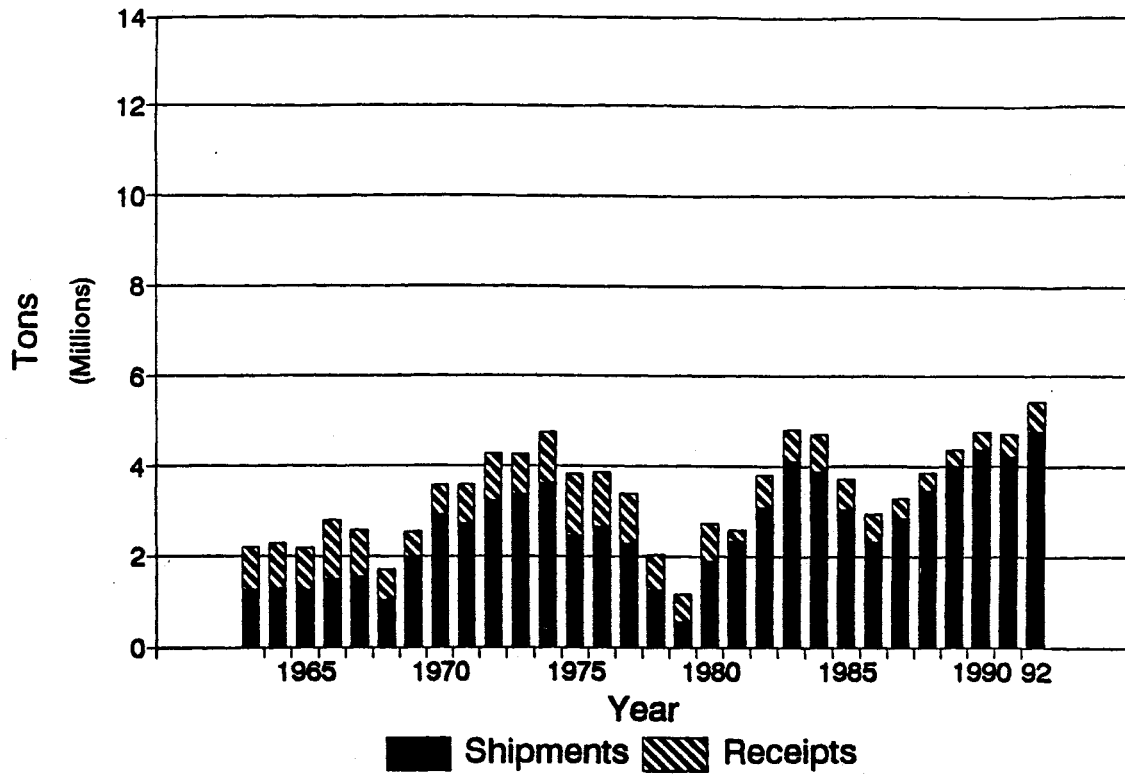


Figure 21

St. Croix River Waterborne Movement

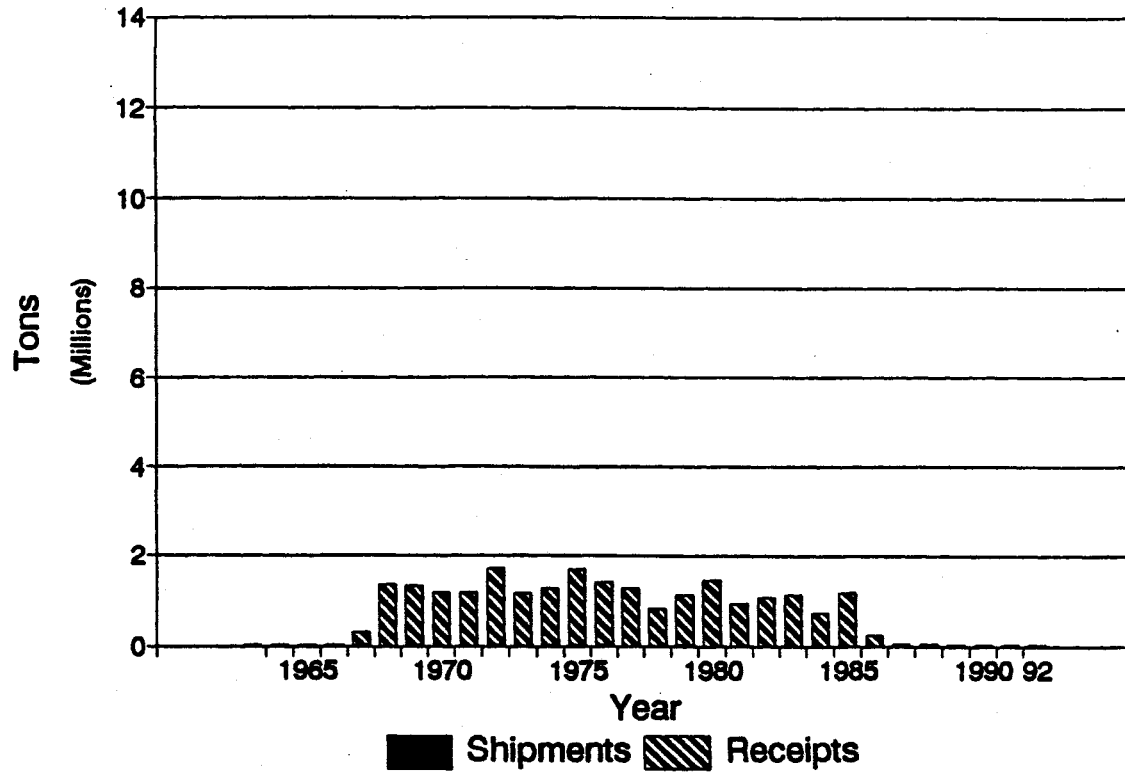


Figure 22

Minneapolis Waterborne Movement

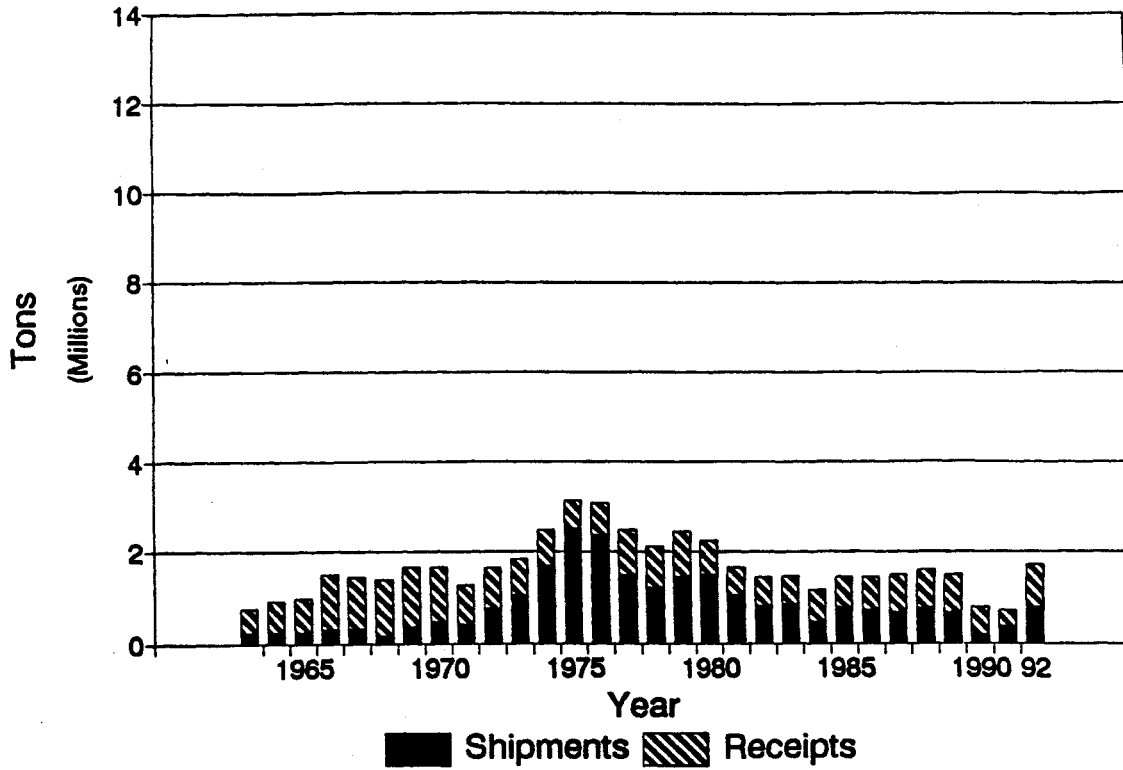
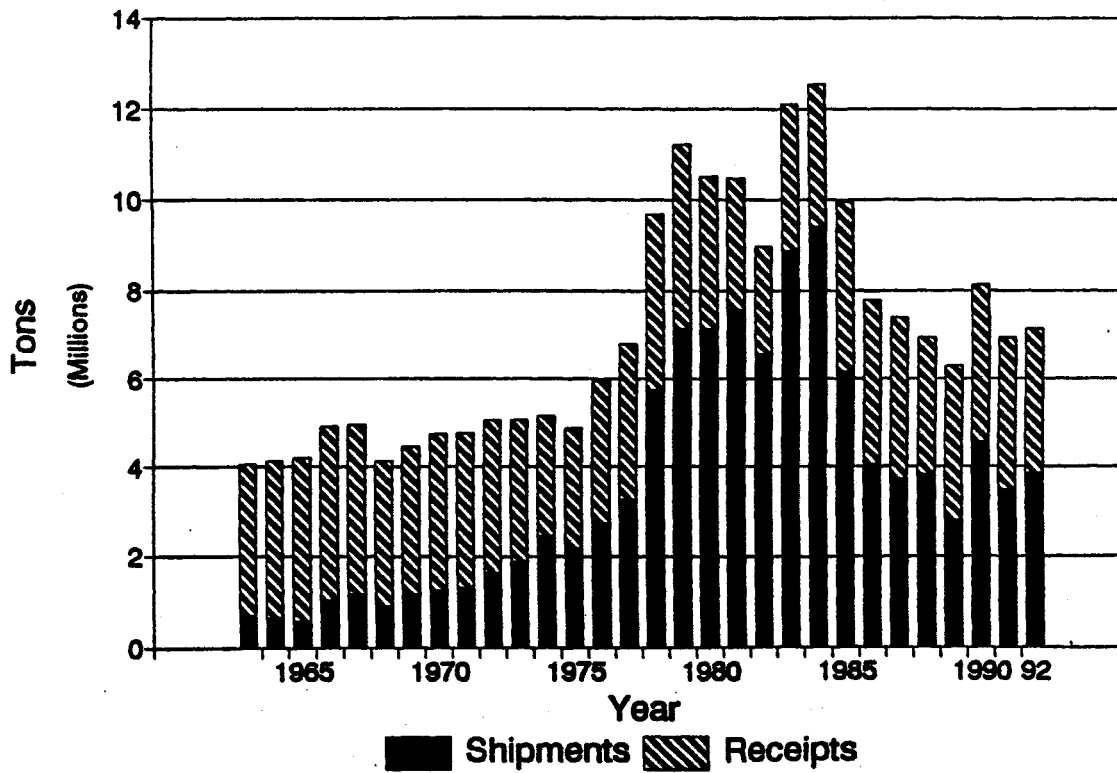


Figure 23

St. Paul Waterborne Movement



APPENDIX TO

**BARGE MOVEMENTS ON THE UPPER MISSISSIPPI RIVER:
TRENDS AND PROJECTIONS 1963-2002**

by Jerry Fruin and Dan Halbach

The tables and graphs in this Appendix are based on data published in Waterborne Commerce of the United States, Part 2, 1963-1992

NOTE: shipments and receipts in lower Pool 2 are not included in this Appendix. This is the river reach below St. Paul (mile 830) to Lock and Dam 2 which has approximately 5 shippers including the Koch refinery and the Shiely gravel pits on Grey Cloud Island.

EXPLANATION OF THE 1963-92 TWIN CITIES AREA
WATERBORNE MOVEMENTS TABLES

1. The areas included are:

- a. The Minnesota River from its mouth to mile 21.8 near Shakopee, Minnesota.
- b. The St. Croix River from its mouth to mile 24.5 near Stillwater.
- c. The Minneapolis Upper and Lower Harbors above mile 852.6 on the Mississippi River.
- d. St. Paul includes the Mississippi River above mile 830.0 (Ashland Petroleum) to the mouth of the Minnesota River.

The area between Lock and Dam 2 near Hastings and mile 830 is not included. This range has approximately 5 shippers including the Koch refinery and the Shiely gravel pits at Grey Cloud Island.

The terminals at Red Wing and Winona are not included.

2. Commodity or commodity groups included are:

GROUP	WCUS CODE	COMMODITIES
1 Corn		
	0103	Corn
2 Wheat		
	0107	Wheat
3 Soybeans		
	0111	Soybeans
4 Grains, oilseeds and farm crops NEC		
	0102	Barley
	0104	Oats
	0105	Rice
	0106	Sorghum grains
	0119	Oilseeds NEC (sunflowers)
	0122	Hay and fodder
	0129	Field crops NEC
	0191	Misc. farm products
5 Coal and lignite		
	1121	Coal and lignite
6 Cement and concrete		
	3241	Building cement
7 Sand, gravel, crushed rock		
	1442	Sand, gravel, crushed rock
8 Nonmetallic minerals NEC		
	1499	Nonmetallic minerals NEC (salt)

9	Agricultural products (2034-2091)	
	2034	Vegetables and prep
	2041	Wheat flour and semolina
	2042	Prepared animal feeds
	2049	Grain mill products NEC
	2061	Sugar
	2062	Molasses
	2091	Vegetable oils, margarine, shortening
10	Limestone and fertilizer	
	1411	Limestone
	1471	Phosphate rock
	2871	Nitrogenous chemical fertilizers
	2872	Potassic chemical fertilizers
	2873	Phosphatic chemical fertilizers
	2879	Fertilizers and materials NEC
11	Petroleum products (2911-2920)	
	2911	Gasoline
	2912	Jet fuel
	2913	Kerosine
	2914	Distillate fuel oil
	2915	Residual fuel oil
	2916	Lubricating oils and greases
	2917	Naphtha, petroleum solvents
	2918	Asphalt, tar and pitches
	2919	Coke, petroleum coke
12	Chemicals (28xx but not fertilizers)	
	2810	Sodium hydroxide - consistent receipts
	2811	Crude tar, oil, gas products
	2813	Alcohols
	2817	Benzene and toluene
	2819	Basic chemicals NEC
	2891	Miscellaneous chemical products
13	Other	
	0931	Marine shells, unmanufactured
	1061	Manganese ores, concentrates
	1311	Crude petroleum
	2211	Basic textile products
	24xx	Wood and products
	26xx	Wood pulp and products
	33xx	Iron and steel products
	34xx	Fabricated metal products
	4011	Iron and steel scrap

3. Notes on product categories:

- Group 4. Note that oat shipments have declined (and will not come back). Receipts in recent years were oats! There were large sunflower seed shipments in early eighties. These may come back. Hay and fodder had only 1 shipment in the past 10 years.
- Group 5. Note decrease in coal movements from almost 5 million tons in 19980 to less than 700,000 tons in 1989. Many of the 1980 movements are local and hence counted twice, once as shipments and once as receipts.
- Group 7. Sand, gravel and crushed rock. Virtually all of these movements originate at Grey Cloud Island. Because Grey Cloud Island is below mile 830.0, so only the receipts are counted in area movements.
- Group 8. Nonmetallic mineral consists primarily of salt.
- Group 9. Ag products. Sugar consisted of receipts in the early 80's but none since. Molasses has had relatively consistent receipts. The sharp decline in 1989 is due to reduced animal feed shipments.
- Group 10. Limestone and fertilizer. The shipments are primarily potash from Canada and did not exist in 1980 and peaked in 1984-85. Limestone receipts have increased.
- Group 11. Generally the only out of area shipment is petroleum coke.
- Group 12. Chemicals. Most important are sodium hydroxide and alcohols. The shipments in 1983 and 84 were code 2811--crude tar, oil and gas products.

Table 1

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

	CORN			TOTAL RECEIPTS			TOTAL SHIPMENTS			TOTAL
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS	
1963	0	0	0	0	713551	0	80494	244020	1038065	1038065
1964	0	0	0	0	741803	0	104869	173019	1019711	1019711
1965	0	0	0	0	717714	0	119941	197915	1035570	1035570
1966	0	0	0	0	863711	0	71593	432541	1367845	1367845
1967	0	0	0	0	790800	0	106285	398537	1298622	1298622
1968	0	0	0	0	277857	0	28449	204147	510453	510453
1969	0	0	0	0	1175110	0	126649	550729	1852488	1852488
1970	0	0	0	0	1458103	0	113208	449875	2021186	2021186
1971	0	0	0	0	1358380	0	67178	371274	1796832	1796832
1972	0	0	0	0	1557881	0	90239	380288	2028388	2028388
1973	0	0	0	0	2367091	0	165619	953342	3486052	3486052
1974	0	0	0	0	1860129	0	87354	1196223	3143706	3143706
1975	0	0	0	0	1029678	0	77885	672831	1780174	1780174
1976	0	0	0	0	1177703	0	82976	871347	2132026	2132026
1977	0	0	0	0	866534	0	35438	582034	1484008	1484008
1978	0	0	0	0	527428	0	145852	1346039	2019319	2019319
1979	0	0	0	0	218508	0	499095	2182761	2878362	2878362
1980	0	0	2984	0	639390	2984	534875	2104010	3478275	3481259
1981	0	0	0	5884	1259676	5884	432167	2519849	4211492	4217358
1982	0	0	0	0	1372970	0	180288	1273808	2827046	2827046
1983	4415	0	0	0	2081122	4415	159519	2256922	4499563	4503978
1984	0	0	0	1546	1910845	1546	96633	2686946	4694324	4695870
1985	0	0	0	2965	1217993	2965	37726	898386	2155105	2158070
1986	2884	0	0	4448	823462	7332	7506	579398	1410366	1417698
1987	1507	0	0	3125	1220610	4632	41010	777536	2039156	2043788
1988	0	0	0	0	1718886	0	92567	1197826	3009279	3009279
1989	0	0	1342	0	2715396	1342	70151	1151872	3937419	3938761
1990	2000	1000	0	0	3038000	3000	10000	1752000	4800000	4803000
1991	0	0	1000	2000	2845000	3000	83000	1370000	4098000	4101000
1992	0	0	0	8000	3107000	8000	308000	1618000	5034000	5042000

Source: Waterborne Commerce of the United States, Part 2.

Table 2

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

SOYBEANS	TOTAL RECEIPTS					TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	0	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	0	0	0	0	0	197967	0	44320	106398	350685
1964	0	0	0	0	0	267390	0	28320	95590	391300
1965	0	0	0	0	0	235978	0	30555	48436	314969
1966	0	0	0	0	0	241263	0	57412	88174	386869
1967	0	0	0	0	0	338939	0	68204	190289	598432
1968	0	0	0	0	0	273286	0	10613	126951	410850
1969	0	0	0	0	0	314260	0	16234	79715	410209
1970	0	0	0	0	0	762070	0	77077	164829	1023976
1971	0	0	0	0	0	542967	0	32968	101173	677108
1972	0	0	0	0	0	490946	0	17248	102289	610483
1973	0	0	0	0	0	386960	0	23018	165522	578500
1974	0	0	0	0	0	527572	0	25018	333533	886123
1975	0	0	0	0	0	225954	0	1416	170078	397448
1976	0	0	0	0	0	341106	0	37123	287149	665380
1977	0	0	0	1563	1563	174716	0	23164	322414	520296
1978	0	0	0	0	0	254562	0	80995	1080847	1416204
1979	0	0	0	3027	3027	75279	0	160155	960024	1195458
1980	0	0	0	1483	1483	487919	0	128586	1368286	1984773
1981	1655	0	0	1336	2991	458585	0	104373	793087	1356025
1982	0	0	0	3063	3063	773534	0	171716	997201	1942453
1983	0	0	0	0	0	1170776	0	193818	1421147	2785741
1984	0	0	0	1591	1591	1039235	0	86994	1066056	2194287
1985	0	0	1450	1529	2979	737310	0	43271	554717	1335298
1986	1520	0	0	1600	3120	740312	0	32361	796864	1569557
1987	1351	0	0	2516	3669	1157767	0	54145	1222483	2434395
1988	0	0	0	2440	2440	1181277	0	42909	862495	2086681
1989	0	0	0	0	0	573625	0	11725	355847	941197
1990	1000	0	0	0	1000	866000	0	6000	640000	1502000
1991	0	0	0	0	0	942000	0	48000	499000	1489000
1992	1000	0	0	0	1000	1063000	0	141000	605000	1839000

Source: Waterborne Commerce of the United States, Part 2.

Table 3

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

Year	WHEAT				TOTAL RECEIPTS				Mpls	St. Croix	Mn River	St. Croix	Mpls	St. Paul	TOTAL SHIPMENTS	TOTAL
	Mn River	St. Croix	Mpls	St. Paul	St. Paul	St. Croix	Mn River	St. Croix								
1963	0	0	0	0	0	0	131371	0	0	46290	196099	373760	373760	373760	373760	
1964	0	0	0	0	0	0	140615	0	0	50611	161890	353316	353316	353316	353316	
1965	0	0	0	0	0	0	151715	0	0	32913	170129	354757	354757	354757	354757	
1966	0	0	0	0	0	0	204285	0	0	86879	352824	643988	643988	643988	643988	
1967	0	0	0	0	0	0	256156	0	0	76585	332486	665207	665207	665207	665207	
1968	0	0	0	0	0	0	244158	0	0	68218	383169	695545	695545	695545	695545	
1969	0	0	0	0	0	0	331688	0	0	144204	386435	862327	862327	862327	862327	
1970	0	0	0	0	0	0	400021	0	0	184557	374350	958928	958928	958928	958928	
1971	0	0	0	0	0	0	465993	0	0	152156	363951	982100	982100	982100	982100	
1972	0	0	0	0	0	0	623120	0	0	105458	513161	1241739	1241739	1241739	1241739	
1973	0	0	0	0	0	0	432629	0	0	154304	437217	1024150	1024150	1024150	1024150	
1974	0	0	0	0	0	0	1000040	0	0	228141	547622	1775803	1775803	1775803	1775803	
1975	0	0	0	0	0	0	1013515	0	0	358908	646170	2018593	2018593	2018593	2018593	
1976	0	0	0	0	0	0	983770	0	0	252134	789223	2035127	2035127	2035127	2035127	
1977	0	0	0	520	520	0	1014493	0	0	215191	668171	1897655	1897655	1897655	1897655	
1978	0	0	0	0	0	0	459047	0	0	218222	1184628	1861897	1861897	1861897	1861897	
1979	0	0	0	2789	2789	0	246819	1311	0	163061	1330330	1741541	1741541	1741541	1741541	
1980	2780	0	0	3604	6384	0	495214	0	0	93135	1014999	1603348	1603348	1603348	1603348	
1981	1318	0	0	3028	4346	0	527082	0	0	191894	1411168	2130144	2130144	2130144	2130144	
1982	4496	0	0	0	4496	0	630945	0	0	251471	1273290	2355708	2355708	2355708	2355708	
1983	3054	0	0	0	3054	0	702173	0	0	146703	1819484	2686360	2686360	2686360	2686360	
1984	0	0	0	2699	2699	0	791674	0	0	160530	2130440	3082644	3082644	3082644	3082644	
1985	0	0	0	0	0	0	902161	0	0	79494	1494405	2476060	2476060	2476060	2476060	
1986	0	0	0	1442	1442	0	673477	0	0	93360	875497	1642334	1642334	1642334	1642334	
1987	0	0	0	0	0	0	428944	0	0	44502	453069	926535	926535	926535	926535	
1988	0	0	0	0	0	0	471637	0	0	74439	638768	1184844	1184844	1184844	1184844	
1989	0	0	0	0	0	0	684264	0	0	61910	455595	1201769	1201769	1201769	1201769	
1990	0	5000	0	0	5000	0	394000	0	0	26000	572000	992000	992000	992000	992000	
1991	27000	0	14000	24000	65000	0	523000	0	0	68000	634000	1225000	1225000	1225000	1225000	
1992	0	0	0	11000	11000	0	409000	0	0	80000	475000	963000	963000	963000	963000	

Source: Waterborne Commerce of the United States, Part 2.

Table 4

Twin Cities Area Waterborne Movements 1963 - 1982 in Short Tons

Year	FARM CROPS - NEC				TOTAL RECEIPTS				TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	0	0	0	0	0	0	0	0	87952	0	19537	36358	143847
1964	0	0	0	0	0	0	0	0	82953	0	3053	22212	108218
1965	0	0	0	0	0	0	0	0	115138	0	3164	28876	145178
1966	0	0	0	0	0	0	0	0	89510	0	14475	54676	158661
1967	0	0	0	0	0	0	0	0	103793	0	19272	63205	186270
1968	0	0	0	0	0	0	0	0	148193	0	23613	48710	220516
1969	0	0	0	0	0	0	0	0	117011	0	51608	35940	204559
1970	0	0	0	0	0	0	0	0	221104	0	54146	76314	351564
1971	0	0	0	0	0	0	0	0	290017	0	69275	147171	508463
1972	0	0	0	0	0	0	0	0	510349	0	153757	150568	814674
1973	0	0	0	0	0	0	0	0	124410	0	50051	83951	258412
1974	0	0	0	0	0	0	0	0	144067	0	27738	71212	243017
1975	0	0	0	0	0	0	0	0	48100	0	29680	55221	133311
1976	0	0	0	0	0	0	0	0	41638	0	40030	21726	103392
1977	0	0	0	0	0	0	0	0	77236	0	64966	110513	252737
1978	0	0	0	0	0	0	0	0	14663	0	87580	197733	300206
1979	0	0	0	0	0	0	0	0	5079	0	37638	121485	164202
1980	0	0	0	0	0	0	0	0	24200	0	26325	210174	260699
1981	700	0	0	0	0	0	0	0	41780	0	60376	186810	286966
1982	0	0	0	0	0	0	0	700	53452	0	26393	66840	146685
1983	0	0	0	0	0	0	0	0	54804	0	10652	46885	112351
1984	4669	0	0	1504	0	0	0	6193	30683	0	11092	184070	232038
1985	0	0	0	0	0	0	0	0	42460	0	1240	38640	82340
1986	0	0	0	0	0	0	0	0	5457	0	6961	35072	47490
1987	0	0	0	0	0	0	0	0	7030	0	21375	31107	59512
1988	0	0	20420	24452	0	0	0	44872	5458	0	8164	6495	64989
1989	2661	0	0	37709	0	0	0	40370	0	0	11253	13809	65432
1990	3000	0	1000	0	0	0	0	4000	21000	0	16000	63000	104000
1991	0	0	3000	6000	0	0	0	9000	78000	0	4000	73000	164000
1992	0	0	2000	37000	0	0	0	39000	99000	0	62000	69000	269000

Source: Waterborne Commerce of the United States, Part 2.

Table 5

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

	COAL					TOTAL					TOTAL				
	Mn River	St. Croix	Mpls	St. Paul	RECEIPTS	Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS	St. Paul	Mpls	St. Paul	SHIPMENTS	TOTAL
1963	739062	17839	133315	906736	1797052	0	0	0	1415	1415	0	0	1415	1798467	
1964	806431	715	153590	902520	1863256	0	0	0	0	0	0	0	0	1863256	
1965	665839	2796	218608	1025199	1912542	0	0	0	4085	4085	0	0	4085	1916627	
1966	938175	2606	464240	936344	2341367	0	0	1359	9060	10419	0	0	10419	2351786	
1967	684004	313067	483110	925550	2405731	0	305	0	0	305	0	0	305	2406036	
1968	440377	1343257	492967	559022	2635623	0	0	0	0	0	0	0	0	2635623	
1969	248573	1313309	542805	433606	2538283	0	5986	0	0	5986	0	0	5986	2544289	
1970	375034	1195494	414928	566279	2551725	0	0	0	10872	10872	0	0	10872	2562597	
1971	543155	1193802	176637	519599	2432283	0	0	0	44925	44925	0	0	44925	2478218	
1972	723965	1730675	156334	444279	3055253	0	4067	253477	63033	320577	0	0	320577	3375830	
1973	638577	1143814	103035	309961	2192407	0	0	556424	87066	643490	0	0	643490	2835897	
1974	756839	1281466	7277	256677	2302479	5896	8286	1304360	109562	1428104	0	0	1428104	3730583	
1975	906050	1687634	26350	248746	2870780	49134	1494	1935331	373203	2359162	0	0	2359162	5229942	
1976	772940	1418151	66495	434915	2692501	30653	1338	1730042	545231	2307264	0	0	2307264	4999765	
1977	822141	1268955	135976	396492	2623464	21917	0	960350	1323003	2305270	0	0	2305270	4928734	
1978	579536	822297	80587	528795	2011215	0	0	537043	1617856	2154899	0	0	2154899	4186114	
1979	512565	1140243	33366	509006	2194180	0	0	436284	2012156	2448440	0	0	2448440	4642620	
1980	509435	1426654	105793	434725	2476607	0	0	482013	1981113	2463126	0	0	2463126	4939733	
1981	59601	935872	89915	397824	1463212	0	0	0	1765709	1765709	0	0	1765709	3248921	
1982	348635	1064305	111597	348914	1873751	0	0	0	2285823	2285823	0	0	2285823	4159574	
1983	212641	1136456	58776	446251	1854124	1540	0	0	2049417	2050957	0	0	2050957	3905081	
1984	244769	724190	3191	327037	1299207	1640	0	0	1552885	1554325	0	0	1554325	2853532	
1985	227254	1189639	10456	530749	1958098	0	0	466385	1565865	2032250	0	0	2032250	3990348	
1986	49036	222113	56614	436572	766335	0	0	416857	428439	845296	0	0	845296	1611631	
1987	19667	0	63621	212932	296220	0	0	253301	17786	271087	0	0	271087	567307	
1988	0	21374	59361	202503	283238	0	0	396442	189651	588093	0	0	588093	869331	
1989	0	0	75961	175617	251478	0	0	360701	77302	438003	0	0	438003	669481	
1990	2000	0	79000	206000	287000	3000	0	0	941000	944000	0	0	944000	1231000	
1991	0	0	102000	141000	243000	0	0	0	374000	374000	0	0	374000	617000	
1992	0	0	95000	97000	192000	0	0	0	352000	352000	0	0	352000	544000	

Source: Waterborne Commerce of the United States, Part 2.

Table 6

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

	CEMENT				TOTAL				TOTAL SHIPMENTS				TOTAL	
	Mn River	St. Croix	Mpls	St. Paul	RECEIPTS	Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS	St. Paul	Mpls		St. Croix
1963	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	36466	36466	0	0	0	0	0	0	0	0	36466
1967	0	0	5655	46152	51807	0	0	0	0	0	0	0	0	51807
1968	0	0	17091	59913	77004	0	0	0	0	0	0	0	0	77004
1969	0	0	25712	70273	95985	0	0	0	0	0	0	0	0	95985
1970	0	0	69146	61324	130470	0	0	0	0	0	0	0	0	130470
1971	0	0	64146	56982	121128	0	0	0	0	0	0	0	0	121128
1972	0	0	71935	24148	96083	0	0	0	0	0	0	0	0	96083
1973	0	0	59194	6108	65302	0	0	0	0	0	0	0	0	65302
1974	0	0	101853	22759	124612	0	0	0	0	0	0	0	0	124612
1975	0	0	94755	0	94755	0	0	0	0	0	0	0	0	94755
1976	0	0	128082	0	128082	0	0	0	0	0	0	0	0	128082
1977	0	0	155080	0	155080	0	0	0	0	0	0	0	0	155080
1978	0	0	115921	1415	117336	0	0	0	0	0	0	0	0	117336
1979	0	0	159340	928	160268	0	0	0	0	0	0	0	0	160268
1980	0	0	144592	0	144592	0	0	0	0	0	0	0	0	144592
1981	0	0	120619	1941	122560	0	0	0	0	0	0	0	0	122560
1982	0	0	134695	1500	136195	0	0	0	0	0	0	0	0	136195
1983	0	0	171845	0	171845	0	0	0	0	0	0	0	0	171845
1984	33844	0	188261	21000	243105	0	0	0	0	0	0	0	0	243105
1985	36399	0	200766	102126	339291	0	0	0	0	0	0	0	0	339291
1986	16000	0	190651	131286	337937	0	0	0	0	0	0	0	0	337937
1987	0	0	246358	138500	384858	0	0	0	0	0	0	0	0	384858
1988	0	0	254609	122953	377562	0	0	0	0	0	0	0	0	377562
1989	0	0	232813	109186	341999	0	0	0	0	0	0	0	0	341999
1990	0	0	173000	189000	362000	0	0	0	0	0	0	0	0	362000
1991	0	0	152000	233000	385000	0	0	0	0	0	0	0	0	385000
1992	0	0	142000	288000	430000	0	0	0	0	0	6000	0	0	436000

Source: Waterborne Commerce of the United States, Part 2.

Table 7

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

	SAND, GRAVEL, ROCK			TOTAL			TOTAL			TOTAL		
	Mn River	St. Croix	Mpls	St. Paul	RECEIPTS	Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS	TOTAL	
1963	0	0	185149	1088251	1273400	0	0	0	0	0	1273400	
1964	0	0	342181	1157839	1500030	0	0	0	0	0	1500030	
1965	0	0	335422	1271286	1606720	0	0	0	0	0	1606720	
1966	0	0	507369	1318319	1825888	0	0	0	0	0	1825888	
1967	0	0	433157	1206736	1639883	0	0	0	0	0	1639883	
1968	0	0	527349	1192258	1719807	0	0	0	0	0	1719807	
1969	5320	0	501866	1191497	1698683	0	0	0	0	0	1698683	
1970	0	0	413651	1266630	1680281	0	0	0	0	0	1680281	
1971	0	0	402007	1164347	1566354	0	0	0	0	0	1566354	
1972	0	0	461450	1159068	1620518	0	0	0	0	0	1620518	
1973	0	0	434167	1247955	1682122	0	0	0	0	0	1682122	
1974	0	0	506675	1046389	1559064	0	0	0	0	0	1559064	
1975	0	0	267658	915683	1183341	0	0	0	0	0	1183341	
1976	0	0	335346	1270283	1605628	0	0	0	0	0	1605628	
1977	0	0	466615	1156023	1622638	0	0	0	0	0	1622638	
1978	0	0	490601	1428897	1919698	0	0	0	0	0	1919698	
1979	0	0	546344	1843190	2389534	0	0	0	0	0	2389534	
1980	3021	0	425445	1644970	2073436	0	0	0	0	0	2073436	
1981	0	0	325166	1296080	1621246	0	0	0	0	0	1621246	
1982	1486	0	306867	1038653	1347008	0	0	0	0	0	1347008	
1983	1518	0	336576	1368848	1704742	0	0	0	0	0	1704742	
1984	1505	0	420040	1451385	1872630	0	0	0	0	0	1872630	
1985	5822	0	366183	1567843	1959948	0	0	0	0	0	1959948	
1986	0	0	419630	1736510	2156140	0	0	0	0	0	2156140	
1987	4732	0	426580	1881283	2322595	0	0	0	0	0	2322595	
1988	0	0	420479	1323686	1744165	0	0	0	0	0	1744165	
1989	0	0	450608	1582155	2032763	0	0	0	0	0	2032763	
1990	18000	0	264000	1807000	2089000	0	0	0	0	0	2089000	
1991	6000	0	10000	1721000	1737000	0	0	0	0	0	1737000	
1992	56000	0	632000	1432000	2120000	16000	0	0	0	16000	2136000	

Source: Waterborne Commerce of the United States, Part 2.

Table 8

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

Year	SALT				TOTAL RECEIPTS				TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	59574	0	628	14416	0	0	0	0	0	0	0	0	74618
1964	61024	0	10005	16717	0	0	0	0	0	0	0	0	87746
1965	61263	0	8138	39854	0	0	0	0	0	0	0	0	129255
1966	103921	0	18286	36036	0	0	0	0	0	0	0	0	159223
1967	126168	0	13336	0	0	0	0	0	0	0	0	0	139504
1968	44596	0	27609	32744	0	0	0	0	0	0	0	0	104949
1969	136914	0	63226	123414	0	0	0	0	0	0	0	0	345554
1970	152761	0	61644	137490	0	0	0	0	0	0	0	0	372095
1971	118768	0	11143	136655	0	0	0	0	0	0	0	0	268766
1972	135833	0	59144	130747	0	0	0	0	0	0	0	0	325724
1973	70190	0	93745	70151	0	0	0	0	0	0	0	0	234086
1974	117137	0	113686	37799	0	0	0	0	0	0	0	0	268612
1975	206779	0	140705	75331	0	0	0	0	0	0	0	0	422815
1976	207640	0	3476	75505	0	0	0	0	0	0	0	0	286621
1977	72536	0	59617	125908	0	0	0	0	0	0	0	0	257962
1978	71142	0	57741	193614	0	0	0	0	0	0	0	0	322497
1979	7022	0	39249	165646	0	0	0	0	0	0	0	0	231917
1980	166621	10903	13350	156422	0	0	0	0	0	0	0	0	347396
1981	0	1600	10524	87982	0	0	0	0	0	0	0	0	100106
1982	61927	0	14507	149643	0	0	0	0	0	0	0	0	226077
1983	107041	0	8952	229899	0	0	0	0	0	0	0	0	345662
1984	118567	0	9392	239557	0	0	0	0	0	0	0	0	367516
1985	39315	0	13920	213645	0	0	0	0	0	0	0	0	266980
1986	137951	0	15969	224025	0	0	0	0	0	0	0	0	377845
1987	84643	0	33156	96251	0	0	0	0	0	0	0	0	214050
1988	106075	0	44037	116186	0	0	0	0	0	0	0	0	271298
1989	56558	0	65042	168423	0	0	0	0	0	0	0	0	290023
1990	77000	0	44000	86000	1684	0	0	0	0	0	0	0	207000
1991	164000	0	29000	111000	0	0	0	0	0	0	0	0	304000
1992	147000	0	25000	159000	0	0	0	0	0	0	0	0	330000

Source: Waterborne Commerce of the United States, Part 2.

Table 9

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

Year	OTHER AG PRODUCTS				TOTAL RECEIPTS				TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	30270	0	700	26800	57770	0	9698	21382	0	2557	21382	33638	91408
1964	26596	0	1560	25186	55342	0	33112	40509	0	1100	40509	74721	130063
1965	25319	0	0	32586	57865	0	20431	25870	0	12573	25870	58874	116759
1966	30866	0	0	37835	68901	0	27053	46926	0	36684	46926	110673	179574
1967	27267	0	1195	32716	61178	0	26319	15681	0	19253	15681	61253	122431
1968	23526	0	0	36881	60507	0	36554	19779	0	23046	19779	79379	139896
1969	17797	0	0	49874	67671	0	31363	27069	0	14964	27069	73396	141067
1970	21350	0	0	57186	78536	0	37302	59339	0	15144	59339	111785	190321
1971	22756	0	0	53229	75865	0	54876	78787	0	13748	78787	147421	223406
1972	35188	0	0	69847	105035	0	56230	82392	0	45263	111024	212517	317552
1973	27169	0	0	55223	82392	0	54419	39790	0	38647	39790	132856	215248
1974	32217	0	0	67942	100159	0	100422	93806	0	25705	93806	219933	320092
1975	27681	0	0	46571	74452	0	80482	158242	0	109604	158242	347328	421780
1976	26652	0	0	54517	81169	0	76392	143328	0	150324	143328	370044	451213
1977	31868	0	0	41113	72981	0	133270	136282	0	149111	136282	418663	491844
1978	6700	0	0	20239	26939	0	22828	211927	0	118370	211927	353125	380064
1979	16330	0	0	50853	69183	0	22697	348948	0	141580	348948	513425	582808
1980	3084	0	0	26638	29722	0	39416	263790	0	184428	263790	507634	537356
1981	2798	0	3483	42088	48368	0	42312	403657	0	174834	403657	620803	669172
1982	2878	0	3767	49617	56282	0	64658	341629	0	107024	341629	513311	569593
1983	12904	0	2952	36905	54761	0	106362	464644	0	130677	464644	704883	759644
1984	18659	0	0	34616	53475	0	102088	414356	0	37019	414356	553463	608938
1985	13153	0	1458	29210	43621	0	116705	307468	0	40053	307468	464226	508047
1986	2721	0	0	29675	32596	0	70642	393787	0	70695	393787	535124	567720
1987	14482	2731	0	40280	57493	0	53738	371688	0	68731	371688	494137	551630
1988	12054	0	0	46530	58564	0	78118	312168	0	38705	312168	428991	487575
1989	11562	4200	1573	39797	57152	0	20764	169033	0	25012	169033	214809	271961
1990	10000	1000	0	39000	50000	0	41000	134000	0	7000	134000	182000	232000
1991	17000	0	0	49000	66000	0	36000	130000	0	12000	130000	178000	244000
1992	19000	0	0	51000	70000	0	37000	114000	0	52000	114000	203000	273000

Source: Waterborne Commerce of the United States, Part 2.

Table 10

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

Year	FERTILIZER					TOTAL RECEIPTS					TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	St. Paul	St. Paul	TOTAL
1963	14150	0	0	2073	0	0	2073	18223	0	0	0	0	0	0	18223
1964	37921	0	0	1312	0	0	1312	39233	0	0	0	0	0	0	39233
1965	17726	0	0	0	0	0	0	17726	0	0	0	0	0	0	17726
1966	34280	0	0	6351	0	0	6351	40631	0	0	0	0	0	0	40631
1967	60431	0	4344	42085	0	0	42085	108960	0	0	0	0	0	0	108960
1968	63348	0	0	50117	0	0	50117	113465	0	0	0	0	0	0	113465
1969	80663	0	0	63338	0	0	63338	164021	0	0	0	0	0	0	164021
1970	68774	0	1171	55320	0	0	55320	125265	0	0	0	0	0	0	125265
1971	111686	0	2813	98159	0	0	98159	212660	0	0	0	0	0	0	212660
1972	94257	0	3885	39025	0	0	39025	137267	0	0	0	0	0	0	137267
1973	86917	0	3938	58365	0	0	58365	149220	0	0	0	0	0	0	149220
1974	119926	0	8733	28944	0	0	28944	157503	0	0	0	0	0	0	157503
1975	108843	0	2502	17283	0	0	17283	128638	0	0	0	0	0	0	128638
1976	128350	0	12851	86901	0	0	86901	228802	0	0	0	0	0	0	228802
1977	145335	0	10131	118746	0	0	118746	274212	0	0	3063	20651	23714	0	287928
1978	103406	0	14510	203430	0	0	203430	321348	0	0	0	21857	21857	0	343205
1979	78363	0	6243	220262	0	0	220262	305868	1563	0	14866	4623	20852	0	326720
1980	113204	0	8053	87576	0	0	87576	208633	0	0	25961	0	25961	0	234794
1981	106385	0	15645	136613	0	0	136613	258643	4775	0	39861	29753	74189	0	332832
1982	220635	0	8967	161401	0	0	161401	390903	0	0	41014	206621	247635	0	638538
1983	310639	0	6083	208862	0	0	208862	525614	0	0	185745	455967	641712	0	1167326
1984	372960	16533	15513	263643	0	0	263643	699849	2906	0	77261	848468	928635	0	1597284
1985	309296	4518	6004	309020	0	0	309020	625638	0	0	108381	795394	904775	0	1530613
1986	397944	17064	3102	302763	0	0	302763	720693	0	0	63158	603290	666448	0	1387341
1987	223449	33702	25810	289739	0	0	289739	572700	1505	0	160408	342479	504393	0	1077093
1988	221757	22563	15070	295675	0	0	295675	555265	4639	0	83908	311494	400041	0	955306
1989	265593	18100	6090	243438	0	0	243438	553211	1397	0	93073	254207	348677	0	901888
1990	254000	6000	11000	323000	0	0	323000	594000	0	0	59000	116000	175000	0	769000
1991	271000	11000	0	260000	0	0	260000	542000	0	0	39000	250000	289000	0	831000
1992	424000	11000	4000	309000	0	0	309000	747000	5000	0	87000	425000	517000	0	1264000

Source: Waterborne Commerce of the United States, Part 2.

Table 11

Twin Cities Area Waterborne Movements 1963 - 1992 In Short Tons

Year	PETROL PRODUCTS				TOTAL RECEIPTS				TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	22622	0	120382	979966	0	0	0	0	0	0	1391	1391	1124361
1964	21618	0	125689	1071293	0	0	0	0	0	0	34961	34961	1253561
1965	34951	0	116458	1135938	0	0	0	0	0	0	35985	35985	1323332
1966	62561	0	126720	1213672	0	0	0	0	0	0	2744	2744	1405927
1967	72673	0	97150	1254489	0	0	0	0	0	0	4319	4319	1428631
1968	46624	0	75258	1156733	0	0	0	0	0	0	2637	2637	1281452
1969	30463	0	96282	1250184	0	0	0	0	0	0	4281	4281	1384210
1970	26690	0	172664	1229304	0	0	0	0	0	0	26769	26769	1455827
1971	29660	0	105961	1248451	0	0	0	0	0	0	112779	112779	1496871
1972	31294	0	69596	1360334	0	0	0	0	0	0	139778	139778	1600002
1973	23218	0	43848	1300342	0	0	0	0	0	2860	44840	47700	1415109
1974	44993	0	44448	1045024	0	0	0	0	0	0	53904	53904	1188369
1975	48043	0	58608	1138789	0	0	0	0	0	0	77892	77892	1323330
1976	21277	0	90041	1062694	0	0	0	0	0	0	62051	62051	1236053
1977	25033	0	103573	1270460	0	0	0	0	0	0	89130	89130	1488196
1978	17737	0	93938	1179232	0	0	0	0	0	0	78377	78377	1369284
1979	0	0	118416	1066695	0	0	0	0	0	0	190878	190878	1365079
1980	8634	0	36400	863296	0	0	0	0	0	0	174218	174218	1082750
1981	0	0	22839	737840	0	0	0	0	0	0	428440	428440	1201398
1982	65943	0	2487	546609	0	0	0	0	0	11179	11179	440619	1201398
1983	55694	0	24901	761150	0	0	0	0	0	24920	24920	143152	758191
1984	16300	0	42600	580443	0	0	0	0	0	12147	349631	361778	1203523
1985	42297	0	19784	802097	0	0	0	0	0	0	452848	452848	1095191
1986	29659	0	0	677087	6068	0	0	0	0	1612	471618	479298	1343476
1987	70678	0	1629	818065	5651	0	0	0	0	30001	296388	332240	1038986
1988	46843	0	32235	806131	0	0	0	0	0	1629	516887	518316	1409678
1989	6197	0	1764	825764	0	0	0	0	0	3670	293143	297013	1184222
1990	12000	0	18000	750000	0	0	0	0	0	0	257327	257327	1091052
1991	0	0	0	662000	12000	0	0	0	0	0	251000	263000	1043000
1992	17000	0	0	596000	6000	0	0	0	0	43000	75000	124000	806000
		0	0		0	0	0	0	0	0	104000	104000	717000

Source: Waterborne Commerce of the United States, Part 2.

Table 12

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

CHEMICAL	TOTAL RECEIPTS				TOTAL SHIPMENTS				
	Mn River	St. Croix	Mpls	St. Paul	Mn River	St. Croix	Mpls	St. Paul	TOTAL
1963	3828	0	6334	1825	0	0	0	0	11987
1964	4219	0	5518	8544	0	0	0	0	18281
1965	18577	0	3969	17480	0	0	0	0	40046
1966	23348	0	6947	41030	0	0	0	0	71225
1967	5802	0	7379	44874	0	0	0	0	57855
1968	7176	0	7484	37585	0	0	0	0	52245
1969	1333	0	5421	41338	0	0	0	0	48092
1970	0	0	7847	65088	0	0	0	0	72833
1971	0	0	7871	111134	0	0	0	0	119005
1972	1443	0	6598	104228	0	0	0	0	112269
1973	0	0	1398	54685	0	0	0	0	56031
1974	0	0	0	69033	0	0	0	0	68033
1975	0	0	0	55896	0	0	0	0	55896
1976	0	0	3043	51789	0	0	0	0	54832
1977	0	0	0	63381	0	0	0	0	63381
1978	0	0	12254	73253	0	0	0	0	85507
1979	0	0	12223	77275	0	0	0	0	88498
1980	0	0	5289	56768	0	0	0	0	62055
1981	8403	0	7399	71681	0	0	0	576	87433
1982	0	0	11575	51825	0	0	0	0	63400
1983	0	0	2844	52282	0	0	0	0	58498
1984	0	0	9754	55531	0	0	0	3372	85226
1985	1408	0	8780	100460	0	0	0	19941	110846
1986	0	0	6639	96558	0	0	0	0	103497
1987	0	0	0	100802	0	0	0	0	103497
1988	3855	0	0	70283	0	0	0	519	101321
1989	0	0	0	74500	0	0	0	0	74138
1990	0	0	2000	91000	0	0	0	0	74500
1991	1000	0	5000	96000	0	0	1000	6000	100000
1992	0	0	6000	118000	0	0	0	0	104000
									124000

Source: Waterborne Commerce of the United States, Part 2.

Table 13

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

Year	ALL OTHER			TOTAL RECEIPTS			Mn River	St. Croix	Mpls	TOTAL SHIPMENTS			TOTAL
	Mn River	St. Croix	Mpls	St. Paul	St. Croix	Mpls				St. Paul	St. Croix	Mpls	
1963	97422	0	72330	356075	525827	119746	0	53890	76725	250361	776188		
1964	63402	0	70233	349250	482885	39247	0	49284	104396	192927	675812		
1965	80234	0	85627	114829	280690	34232	0	35168	81072	150472	431162		
1966	132059	0	78606	271290	481955	63901	0	41340	53932	159173	641128		
1967	57773	0	68989	223808	350570	25758	60	46323	179789	251930	602500		
1968	66302	0	100541	146395	313238	49258	0	5310	117574	172142	485380		
1969	43271	0	66205	79177	188653	49987	0	9773	67993	127753	316406		
1970	28361	0	54586	76569	159516	29973	0	32548	82368	144889	304405		
1971	73033	0	90801	74153	237987	14839	0	69586	108158	192583	430570		
1972	55032	0	77791	98621	231444	105	0	100048	166203	268356	499800		
1973	49896	0	67988	88405	206289	19495	0	51609	80472	151576	357865		
1974	62187	0	37430	107646	207263	7205	0	9020	52085	68310	275573		
1975	75711	0	60628	228379	364718	23040	0	22282	37184	82506	447224		
1976	61769	0	73744	177551	313064	17401	0	80999	43421	141821	454885		
1977	17391	0	88119	368616	474126	1489	0	33438	14638	49565	523691		
1978	19283	0	74762	306650	400695	1503	0	11669	4598	17770	418465		
1979	12863	0	84598	143363	240624	0	0	3700	22782	26482	267106		
1980	20526	0	47113	99796	167435	0	0	11333	16046	27379	194814		
1981	78334	0	45015	151745	275094	0	0	20277	20566	40843	315937		
1982	19889	0	37600	69616	127105	0	0	797	5891	6688	133793		
1983	32545	0	19105	136427	188077	0	0	0	25871	25871	213948		
1984	17888	0	19874	166344	204106	0	0	1378	32026	33404	237510		
1985	21532	0	16563	141011	179106	0	0	3929	33557	37486	216592		
1986	15485	0	43399	100753	159637	0	0	2741	47630	50371	210008		
1987	13375	0	49954	76687	140016	6177	0	14119	15063	35359	175375		
1988	14983	0	23685	108616	147284	0	0	17500	20449	37949	185233		
1989	11531	0	19037	224162	254730	0	0	34677	72449	107126	361856		
1990	12000	0	20000	100000	132000	0	0	61000	101000	162000	294000		
1991	13000	0	34000	124000	171000	0	0	48000	85000	133000	304000		
1992	13000	0	42000	177000	232000	0	0	63000	100000	163000	395000		

Source: Waterborne Commerce of the United States, Part 2.

Table 14

Twin Cities Area Waterborne Movements 1963 - 1982 in Short Tons

	TOTAL RECEIPTS					TOTAL SHIPMENTS					TOTAL
	Mn River	St. Paul	Mpls	St. Croix	Mn River	St. Paul	Mpls	St. Croix	St. Paul	SHIPMENTS	
1963	968928	17939	518638	3376142	4879847	1260286	0	247088	685788	2183162	7073009
1964	1023211	715	708796	3532861	5285373	1305320	0	237257	632577	2175154	7440527
1965	924009	2796	768242	3637164	5332211	1275208	0	234314	590368	2089890	7432101
1966	1325340	2806	1203048	3897843	6428639	1489743	0	308752	1040877	2840372	9268011
1967	1033918	313067	1114315	3776410	6237710	1541765	365	338902	1185306	3086338	9304048
1968	681949	1343257	1248299	3271748	6552553	1028306	0	159249	903167	2091722	8646975
1969	566354	1313309	1324517	3322701	6528881	2018419	5986	363432	1152162	3541009	10087890
1970	673170	1195484	1216037	3515188	6599879	2828573	0	476890	1244716	4649869	11249848
1971	899080	1193802	861899	3464909	6419270	2727072	0	404911	1328228	4460211	10879481
1972	1077012	1730875	905833	3430287	7143817	3238631	4067	765490	1628324	5636512	12780329
1973	895968	1143614	807251	3188225	6035258	3388004	0	1042532	1892200	6322736	12357994
1974	1133299	1281496	823102	2663303	5921190	3645331	8286	1707336	2457947	7818900	13740090
1975	1373307	1687634	653204	2728888	6440633	2469903	1494	2534196	2190821	7196414	13637247
1976	1219628	1418151	712878	3214045	6584702	2678663	1338	2373628	2763476	7817105	14381807
1977	1114304	1268855	1018311	3542543	6845013	2288657	0	1483831	3257748	7041236	13986249
1978	797806	822297	940514	3835525	6496142	1280261	0	1210160	5733233	8223654	14719796
1979	629843	1140243	999779	4101024	6870889	568143	1311	1456199	7144087	9169740	18040729
1980	827705	1437457	789019	3375278	6429459	1886139	0	1488656	7153194	10525989	16955448
1981	259194	937472	640705	2833972	4771343	2334210	0	1034761	7559819	10828790	15700133
1982	728089	1064305	632082	2420861	4843337	3095559	0	803605	6569335	10468499	15311836
1983	740451	1136456	632044	3240234	5749186	4119777	0	839461	8885350	13854588	19603773
1984	832201	740723	706625	3147286	5428845	3879071	0	472907	9387738	13739716	19168561
1985	666474	1194157	665364	3797655	6353660	3022697	0	763091	6181050	9966838	16320488
1986	653200	239177	736204	3744938	5373620	2319201	0	723660	4056365	7099226	12472746
1987	433884	36433	847108	3670172	4987597	2875771	0	659221	3748417	7283409	12271006
1988	406567	43837	888896	3123655	4446055	3460015	0	758504	3832489	9051008	12497063
1989	374122	22300	854120	3480751	4731293	3997130	0	688502	2808084	7474716	12208008
1990	391000	13000	612000	3591000	4607000	4365000	0	189000	4576000	9130000	13737000
1991	499000	11000	350000	3451000	4311000	4228000	0	345000	3490000	8063000	12374000
1992	677000	11000	948000	3281000	4917000	4766000	0	794000	3668000	8427000	14344000

Source: Waterborne Commerce of the United States, Part 2.

Table 15

Twin Cities Area Waterborne Movements 1963 - 1992 in Short Tons

	ALL COMMODITIES LESS COAL						TOTAL						TOTAL					
	Mn River	St. Croix	Mpls	St. Paul	RECEIPTS		Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS		Mn River	St. Croix	Mpls	St. Paul	SHIPMENTS	TOTAL
1963	227866	0	385523	2469406	3082795		1260286	0	247088	684373		2191747						5274542
1964	216780	0	555196	2630141	3402117		1305320	0	237257	632577		2175154						5577271
1965	258070	0	549634	2611965	3419669		1275208	0	234314	586283		2095805						5515474
1966	387165	0	738608	2961299	4087272		1489743	0	308393	1031817		2829953						6917225
1967	349914	0	631205	2850860	3831979		1541765	60	338902	1185306		3066033						6898012
1968	251572	0	755332	2712726	3719630		1029306	0	159249	903167		2091722						5811352
1969	317781	0	781712	2889095	3988588		2019419	0	363432	1152162		3535013						7523601
1970	298136	0	801109	2948909	4048154		2928573	0	476680	1233844		4639097						8687251
1971	355905	0	684762	2945310	3985977		2727072	0	404911	1283303		4415286						8401263
1972	353047	0	749499	2986018	4088564		3238631	0	512013	1565291		5315935						9404499
1973	257391	0	704216	2881244	3842851		3388004	0	486108	1805134		5679246						9522097
1974	376460	0	815825	2426426	3618711		3639435	0	402976	2348385		6390796						10009507
1975	467257	0	624854	2477942	3570053		2420769	0	598865	1817618		4837252						8407305
1976	446688	0	646383	2779130	3872201		2648010	0	643586	2218245		5509841						9382042
1977	292163	0	883335	3146051	4321549		2267740	0	533481	1934745		4735966						9057515
1978	218270	0	859927	3406730	4484927		1280261	0	673117	4115377		6068755						10553682
1979	117378	0	966413	3593018	4676809		568143	1311	1019915	5131931		6721300						11398109
1980	318270	10803	683226	2940553	3952852		1886139	0	1004643	5172081		8062863						12015715
1981	199593	1600	550790	2536148	3288131		2334210	0	1034761	5794110		9163081						12451212
1982	377154	0	520485	2071947	2969586		3095559	0	803605	4283512		8182676						11152262
1983	527810	0	573288	2793983	3895061		4118237	0	839461	6845933		11803631						15698692
1984	587412	16533	705434	2820259	4129638		3877431	0	472907	7835053		12185391						16315029
1985	469220	4518	654908	3266906	4395552		3022697	0	316706	4595185		7934588						12330140
1986	604164	17064	679590	3306367	4607185		2319201	0	306803	3627926		6253930						10861115
1987	414217	38433	783487	3457240	4691377		2875771	0	405920	3730631		7012322						11703699
1988	408567	22563	810535	2921152	4162817		3460015	0	362062	3642838		7464915						11627732
1989	374122	22300	778259	3305134	4479815		3997130	0	307801	2731782		7036713						11516528
1990	389000	13000	533000	3385000	4320000		4362000	0	189000	3635000		8186000						12506000
1991	499000	11000	248000	3310000	4068000		4228000	0	345000	3116000		7689000						11757000
1992	677000	11000	853000	3184000	4725000		4765000	0	794000	3516000		9075000						13800000

Source: Waterborne Commerce of the United States, Part 2.

