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"Waterborne Transportation Benefits Received by Iowa Corn Farmers From the Mississippi River"

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Waterborne Transportation Benefits Received by Iowa Corn Farmers From the Mississippi River

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INTRODUCTION

The Army Corps of Engineers now spends about $350 million annually for shallow draft navigation projects and maintenance operations. This sizeable federal expenditure has helped to provide the low cost water transportation rates found on the inland waterways. However, the question of who benefits from these comparatively low water charges has been presented.

Recently, considerable controversy has arisen concerning the rebuilding of the existing Locks and Dam No. 26 on the Mississippi River at Alton, Illinois. Corps of Engineers studies state the need for a new dam on two counts: (1) the existing locks and dam have a history of structural deficiencies, and (2) maximum capacity constraint is approaching rapidly. Maximum capacity of approximately 73 million tons is expected to be reached in 1982. Locks and Dam No. 26 has a history of under seepage, deflection and settlement and is losing foundation material. The Army Corps of Engineers estimated that rehabilitating the existing locks and dam would take about 11 years and cost some $100 million[1/].

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On August 6, 1974, environmentalists and a group of 21 midwestern railroads filed a lawsuit in Federal District Court halting reconstruction on Locks and Dam No. 26. Currently, action concerning reconstruction of this lock and dam is pending court and congressional action.

Numerous analysts are currently identifying the many benefits attributable to water transportation on the Mississippi. This paper, however, is only concerned with those benefits received by Iowa corn farmers from low cost water transportation on the Mississippi River. Transportation savings are determined by comparing all-rail rates with rail barge combinations rates from similar originations to export destinations. It is assumed that the lower cost water transportation is reflected back to farmers in terms of higher prices received.

Looking at traffic along the Upper Mississippi one sees that nearly 58 million tons moved in 1973. Of this total, agricultural and related products accounted for about 29 million tons or one-half the total tonnage moving on the Upper Mississippi River during this year2/.

A large part of the 29 million tons of agricultural products moving on low water rates is corn. Determination of the amount of transportation reflected back to farmers in terms of higher prices received is another consideration in this paper. Because Iowa is a leading corn producer, the initial phase of the study was conducted there.

Identification of direct price benefits to farmers from low cost water rates is a most difficult task

because of the many interrelated variables associated with grain pricing. However, comparison of prices received by Iowa farmers in the grain market reporting districts relatively near the Mississippi River can be made and reasonable assumptions can be derived from this analysis.

See Figure No. 1 on page 4 for locations of Iowa Department of Agriculture crop reporting districts. District No. 3 and 6 are located near the Mississippi River, hence, should have a lower transportation cost advantage when shipping to river terminals than those Districts located at greater distances from the river.

Another way of identifying the benefits is by comparing differentials between all-rail export rates and rail-barge combination export rates at specific points in each of the Iowa Districts. This will show transportation savings are available from combination rail and waterborne rates over all rail rates to export markets, Table 1*. These transportation savings can be related to the average price premiums farmers receive in those districts located near water transport.

It should be pointed out that Western Iowa farmers have access to the Missouri River. However, this river is plagued by severe navigational problems such as shallow draft, swift water, sharp curves, and a narrow channel. Hence, it is not possible to barge large quantities of grain on the Missouri River.

*In Appendix

Figure 1

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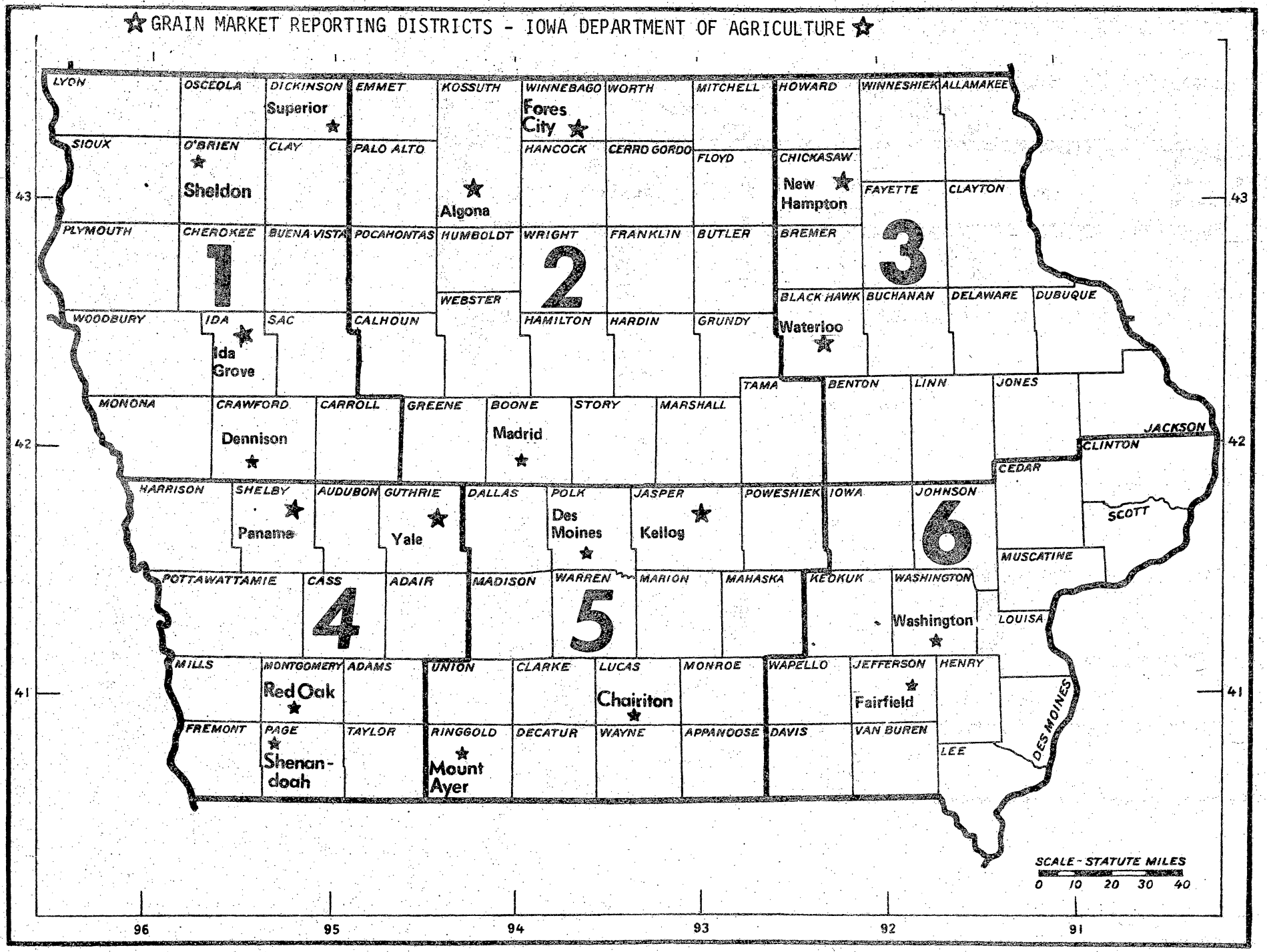

Mode of Transport and Grain Flows

Determination of type of carrier, as well as each modal share of the grain traffic in the state of Iowa, is not an easy task. The exempt status of the motor and water carrier for corn shipments leaves sizeable gaps in reported data that is necessary for mode volume quantification. However, the ICC's rail waybill statistics are available, permitting assessments of corn movement by railroad, and the Iowa Department of Transportation field study provides information on truck grain shipments.

ICC waybill statistics show railroads hauled 8.0 million tons of corn within and from Iowa in 1973. This is about 42 percent of the total 18.9 million tons of Iowa corn sold during the year. The ICC's data reveals that much of the Iowa corn sold moved from Iowa to Louisiana, Illinois, and Texas for export to foreign countries. Also, sizeable amounts of Iowa corn moved to many feed deficit states for livestock feeding throughout the United States, as well as corn processing plants located within the State.

The Iowa Department of Transportation field study, conducted at barge terminals in 1975, reveals that about 80 percent of the grains moving to barge terminals arrive by truck[3/]. Truck charges for grain shipments to the Mississippi River are usually slightly below available rail rates. The study also shows that some 4.2 million tons of grain arrived at Mississippi barge terminals

in 1975. This would be roughly one-sixth of the total Iowa grain sold. Most of this grain arriving at barge terminals comes from the eastern sector of Iowa. This study does not show specific commodity movements but instead, groups corn, soybeans and oats into the term "grains."

Corn Prices at Country Elevators

In Iowa, country elevators are the primary outlet for corn moving off the farm. There is only limited direct movements of corn to sub-terminals and processing outlets. Since country elevators receive their grains directly from farmers, their prices reflect actual price benefits received by farmers.

Highest prices received by Iowa corn farmers at country elevators are in District 6, with a yearly average of $2.94 per bushel, Table 2. District 6 is located in the Southeast corner of Iowa bordering the Mississippi River, see Figure 1. Several large river terminal elevators are found in District 6 as well as a sizeable corn processor located on the river at Muscatine, Iowa. Much of the corn sold in District 6 moves to these river terminals or to nearby corn processors. Hence, prices in this district are strongly influenced by the export demand at New Orleans, Louisiana.

Prices received by corn farmers in District 6 averaged 10 cents above those received by corn farmers in District

4 which is located in the Southwest part of Iowa. Corn from District 4 usually moves to Omaha or Kansas City markets, and to local processors.

Looking at the Northern Tier Districts in Iowa, namely Districts 1, 2, and 3, one finds only small price differences. District 3, located in the Northeast corner of Iowa, averaged only 3 cents above both Districts 1 and 2. Country elevators in the Northern Tier Districts of Iowa are not as closely tied to river markets as those in the Southern District. They ship their grain to several other markets. Those in North Eastern Iowa ship to Chicago domestic and export markets, as well as to processors at Cedar Rapids, and to the river. In the North Central Districts, country elevators can ship corn to Minneapolis, and even on to Duluth, when these markets are favorable. Also, they ship to processors at Cedar Rapids and to the River. In North Western Iowa, corn moves to Sioux City, Omaha, and Kansas City, Missouri. Deficit grain producing states in the Western part of the United States purchase from North Western Iowa. Some Western Iowa corn even moves to Canada, where cooler temperatures prevent the growing of corn.

The influence of the many market alternatives in the Northern Tier makes waterborne benefits extremely difficult to identify without more research in this area.

Corn Rate Differentials

In this analysis, "rate differential" is the term used to explain differences between multiple car rail rates to

the river in combination with barge rates to New Orleans versus all-rail rates to New Orleans. The rail-barge rates listed are those quoted and in effect between 9-29-75 and 10-11-75.

A look at Table 1 shows District 3 with the highest rate differential of 9.89 cents. The high differentials in District 3 reflect the benefits of the low barge rates, but also include the effects of special rates published by the Milwaukee Railroad to meet truck competition on grains going to river terminal elevators at McGregor, Iowa.

Differentials in District 6 were 8.00 and 8.84 cents. However, conversations with country elevator managers in this area indicate that most of the corn is trucked to river elevators within the District. Thus, truck-barge combination rates would be more representative of actual conditions and would be somewhat lower than rail rates. At this time, sufficient reliable information on truck rates is not available for valid comparisons. Further research would be needed for this purpose.

Differentials in the other Iowa Districts were smaller, ranging from -1.18 cents in District 1 to 6.38 cents in District 5.

Water Rate Savings For Corn

Table 1 shows that unit train rates from Panama, Iowa, located in District 4, is 33.38 cents per bushel to New

Orleans, Louisiana. Unit train rates from Washington, Iowa, located in District 5 is 34.44 cents to New Orleans. However, the corn shipper in Washington is more fortunate than the one located in Panama because of the availability of rail-water facilities, as he can use the 25.66 cents per bushel rail-barge combination rate to New Orleans.

The combination of rail-water rates save the Washington corn shipper nearly 9 cents a bushel over the cheapest all-rail rate available. Also, it must be pointed out that many country elevators in District 6 truck their corn to the river, or to processors located on the river. Hence, the transportation savings in the truck-barge combination is actually larger than the previously mentioned 9 cent rail-barge savings.

Beneficiaries of Transportation Savings for Corn

The question prevails as to whether or not transportation savings realized by country grain buyers are passed on to the corn producers. It is known that corn merchandisers and processors must remain competitive in a given market. However, the transportation savings derived from the cheaper waterborne rates, that is passed back to the farmer, has been difficult to identify.

Considering the 10 cent price advantage District 6 corn farmers have over those in District 4, one sees a close relationship to the 9 cent transportation savings in

District 6 which is primarily due to the available water transportation. Hence, evidence strongly suggests that the savings from low cost waterborne transportation is passed on to those Iowa corn producers located close to the Mississippi River. Particularly farmers in the southeast portion who are strongly tied to river markets.

Tangible Water Benefits for Iowa Farmers

As previously shown, corn farmers in District 6 (located close to Mississippi River) received a 10 cent price advantage over those in District 4 (located far from Mississippi River). Relating this 10 cent price advantage to the 78.9 million bushels of corn going into commercial grain sales in 1972, one can estimate a price benefit of about $8 million a year (78.9 million x 10 cents) from low water transport charges to those farmers in District 6. This is the amount directly attributable to low water charges in the state of Iowa at this time. Additional research would uncover more price benefits from low water transportation savings in other areas of Iowa, however.

Summary and Conclusions

Corn farmers in Iowa Crop Reporting District 6 received 10 cents per bushel more than farmers located in District 4. Relating the 10 cent higher price received to approximately 80 million bushels of commercial corn sold yearly in District 6 amounts to an $8 million price benefit for those farmers in District 6.

This $8 million benefit is not the total benefit derived by Iowa corn farmers from waterborne transportation. Many elevator operators located outside of District 6, in the eastern part of Iowa, truck or rail their corn to Mississippi River elevators. Waterborne benefits to farmers located outside District 6 are somewhat smaller than those inside the district. However, identification of these additional benefits would undoubtedly produce a substantial sum. Additional field research is required for quantification of the additional waterborne benefits at this time.

Rail freight rates in the state of Iowa show the effect of water competition. An example would be unit train rates to New Orleans, Louisiana. Unit train rates from both eastern and western parts of the state are similar. These reduced rates were published because of water competition. Low water transportation rates, to some extent, have benefited all producing areas in Iowa. It can be assumed that most rail rates in the entire state currently would be higher if the river were not an available alternative.

From this investigation it appears that farmers located close to the Mississippi do derive substantial benefits from the river. Locks and Dam No. 26 is obsolete and can become more of a bottleneck to traffic on the Mississippi River System than it is at present. Repair or replacement of this structure is of interest to many, in view of the agricultural use and benefits derived by farmers along the river.

APPENDIX

References

1/ Upper Mississippi Waterway Association, "The Economic Impact of Waterborne Transportation On The Upper Mississippi River Basin", July 1975.

2/ American Waterways Operators, Inc., "1973 Inland Waterborne Commerce Statistics", Arlington, Va., 1974.

3/ Verified Statement of R. D. Berkland, Chief, Transportation Regulations Board, Iowa Department of Transportation. Submitted to the Interstate Commerce Commission in Ex Parte 270 (Sub No. 9).

Table 2, Corn Prices Received by Iowa Farmers at Country Elevators in State Reporting Districts 1974-75 Crop Reporting Year*

Month	State Price Reporting Districts 1	2	3	4	5	6
	Dollars Per Bushel					
October 74	3.39	3.43	3.43	3.39	3.39	3.50
November 74	3.26	3.26	3.24	3.22	3.20	3.30
December 74	3.20	3.20	3.20	3.16	3.16	3.26
January 75	2.93	2.91	2.92	2.86	2.88	2.98
February 75	2.69	2.66	2.70	2.64	2.66	2.76
March 75	2.64	2.65	2.70	2.60	2.65	2.74
April 75	2.74	2.73	2.78	2.67	2.73	2.79
May 75	2.65	2.62	2.66	2.64	2.65	2.66
June 75	2.66	2.66	2.71	2.66	2.67	2.74
July 75	2.70	2.68	2.72	2.70	2.70	2.77
August 75	2.89	2.90	2.95	2.88	2.92	3.00
September 75	2.74	2.75	2.78	2.69	2.73	2.81
Crop year average	2.87	2.87	2.90	2.84	2.86	2.94

Source: Grain Market News, Iowa Dept. of Agriculture

*Crop year beginning October

Table 1, Comparison of Corn Rail Plus Barge With All-Rail Rates

Origin Town	County	Districts	Railroad	Rail Barge Rates	Unit Train Rail to N.O.	Rates Differential
				To N.O. Cents per Bushel		
Superior	Dickinson	1	(RI)	37.30	36.12	-1.18
Sheldon	O'Brien	1	(MILW)	34.02	36.16	2.14
Iowa Falls	Franklin	2	(RI)	30.30	34.44	4.14
Madrid	Boone	2	(MILW)	30.93	34.44	3.51
New Hampton	Chickasaw	3	(MILW)	24.55*	34.44	9.89
Waterloo	Black Hawk	3	(RI)	28.90*	35.34	6.44
Yale	Guthrie	4	(MILW)	32.82	34.44	1.62
Panama	Shelby	4	(MILW)	33.60	33.38	-.22
Des Moines	Polk	5	(RI)	28.62	34.44	5.82
Kellog	Jasper	5	(RI)	28.06	34.44	6.38
Fairfield	Jefferson	6	(RI)	26.44	34.44	8.00
Washington	Washington	6	(RI)	25.66	34.44	8.84

Rail Rates including Ex Parte 313 through January 1976
*Includes special 5 car rate to compete with truck competition
N.O.=New Orleans, LA. (RI)=Rock Island Railroad (MILW)= Chicago Milwaukee St Paul and Pacific R.R.