

Appendix H – Economics

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1 INTRODUCTION

1.1 STUDY AREA

The study area is located west of Baldwin, Illinois, in Randolph County near river mile 18 on the Kaskaskia River Navigation Project, approximately 45 miles southeast of St. Louis. KRPD#2 is located on the south oxbow on the west side (right descending bank) of the Kaskaskia River (**Figure 1**).

Created by the Illinois State Legislature on June 22, 1965, the Kaskaskia Regional Port District operates on the rivers and the territory in Monroe, Randolph, and the southern half of St. Clair County. Facilities include the Fayetteville Terminal, Evansville Grain Terminal, Kellogg Dock, KRPD #1, and KRPD #2. Southern Illinois Transfer Company (SITCO) services the shipment of product on both the Mississippi and Kaskaskia Rivers and operates the docks at KRPD #1, KRPD #2, and Kellogg Dock.

The Kaskaskia River has a 9-foot navigable channel maintained by the St. Louis District U.S. Army Corps of Engineers from Fayetteville, IL, to the Mississippi River; the Mississippi River is also maintained to 9 feet from river mile 0.0 (confluence of the Ohio River) to river mile 300.0 (below Lock and Dam 22). The Jerry F. Costello Lock and Dam (formerly the Kaskaskia Lock and Dam) is 600 feet long and 84 feet wide and is located at Kaskaskia River Mile 0.8.

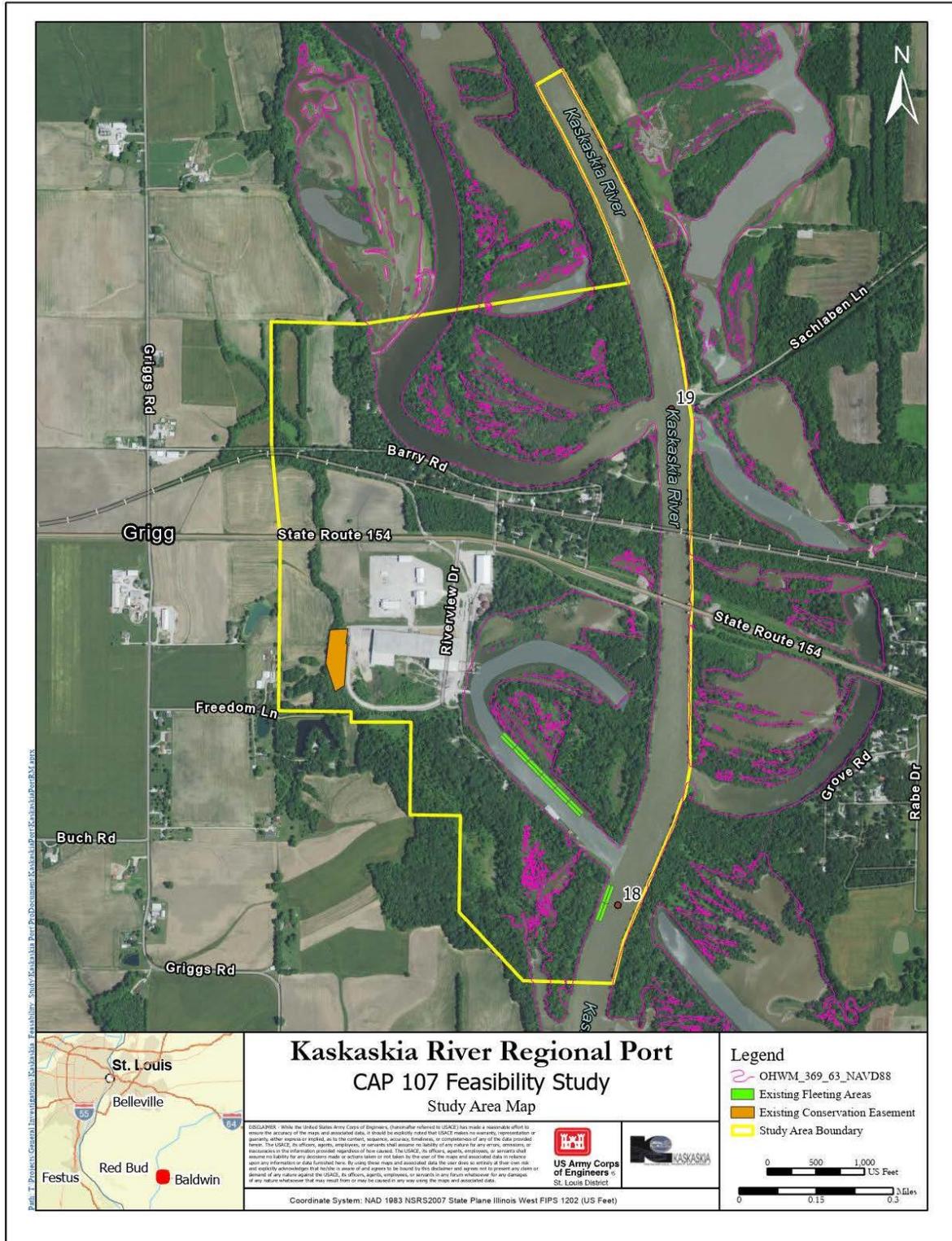


Figure 1. Study Area

1.2 HINTERLAND

1.2.1 Overview

The Kaskaskia River is the 4th longest river in Illinois and the longest river that is entirely within the state of Illinois. Approximately 325 miles long, it flows southwest from its beginnings near Champaign, IL, to the Mississippi River about 10 miles north of Chester, IL, with shipping being available on its lower 36 miles.

Geographically located in the heart of the country, KRPD#2 is a multimodal facility at River Mile 18 on the Kaskaskia River situated to service regional, national, and world markets. It is located less than 45 miles from St. Louis and less than 300 miles from the cities of Chicago, Kansas City, Nashville, and Memphis; Birmingham and Atlanta are less than 500 miles away (**Figure 2**).

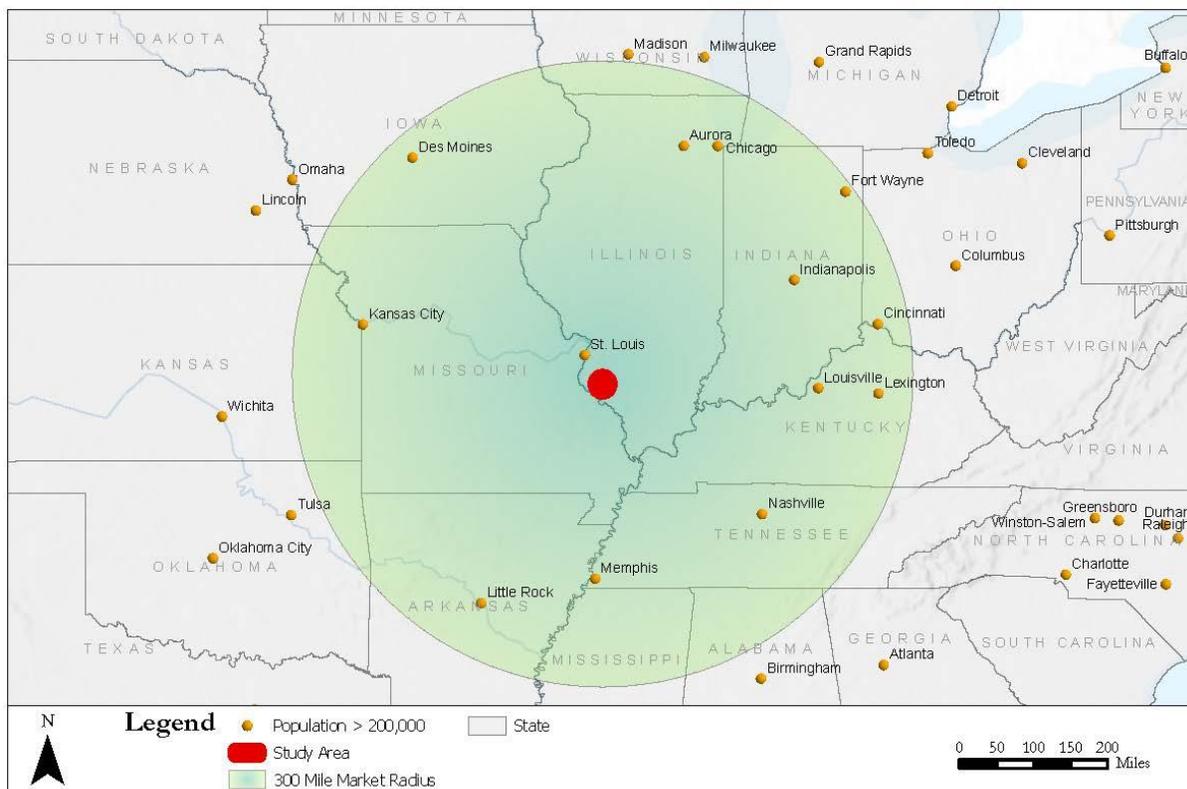


Figure 2. Major Market Radius

1.2.2 Waterway Access

KRPD#2 is located on the west bank of the Kaskaskia River at River Mile 18. Traffic entering or exiting the Kaskaskia River passes through the Jerry F. Costello Lock and Dam at River Mile 0.8 (**Figure 3**). As a gateway to the Mississippi River, KRPD#2 provides access to customers all along the river system and down to the Gulf of Mexico.

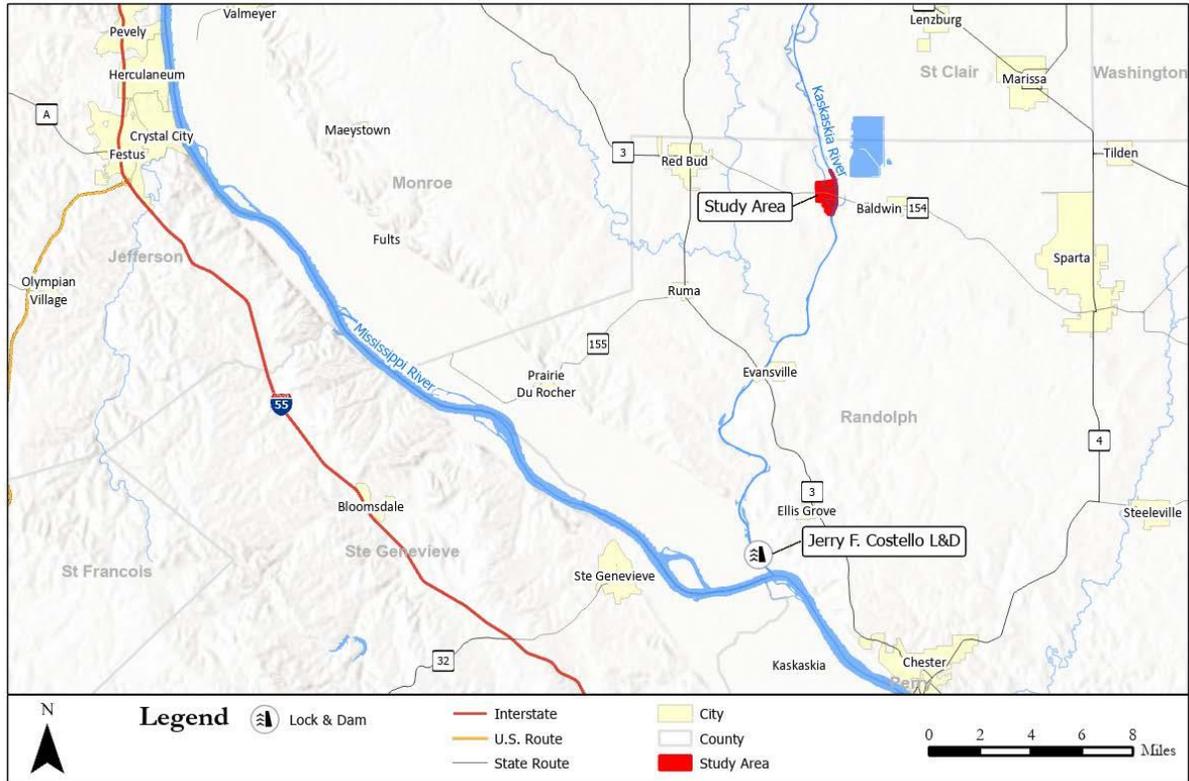


Figure 3. Vicinity map – KRPD#2 and Jerry F. Costello Lock and Dam

1.2.3 Road and Rail Network

Although lacking an interstate highway connection, KRPD#2 is located next to Illinois Route 154. It also has access to Canadian National with connections to Union Pacific and Norfolk Southern, all Class 1 railroads (**Figure 4**).

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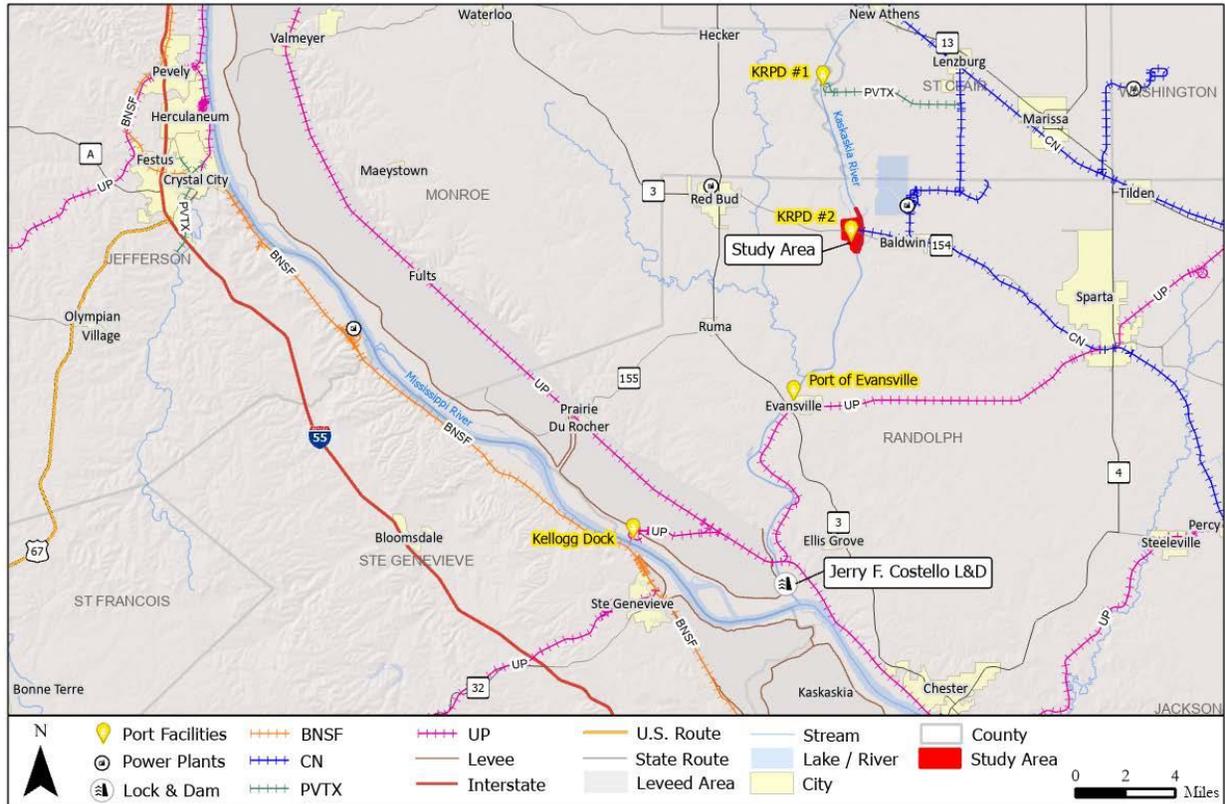


Figure 4. Road and Rail Map

2 EXISTING CONDITIONS

2.1 SOCIOECONOMIC

The socioeconomics of the communities in the study area are summarized in this section. The study area includes three counties in Illinois that may be directly impacted by the project. The parameters used to describe the demographic and socioeconomic environment include recent trends in population, employment, and wage earnings by sectors. Other social characteristics such as race, age distribution, and poverty are also examined.

2.1.1 Population

Illinois ranks as the 6th largest state in the Union in terms of resident population as of the 2020 United States census.

Between the years of 1990 and 2022, Illinois’s population increased by 12 percent from 11.4 million to 12.8 million persons, or a little more than one third of the national average of 33 percent. Although both Randolph and St. Clair counties saw decreases in population, Monroe County experienced a robust growth of 56 percent from 22,422 in 1990 to 34,905 in 2022 (**Table H-1**).

Table H-1. Population Trends for Selected Illinois Counties - 1990 to 2022

County	1990 Pop.	2000 Pop.	2010 Pop.	2022 Pop.	1990 - 2000 % Change	2000 - 2010 % Change	2010 - 2022 % Change	1990 - 2022 % Change
Randolph	34,583	33,893	33,476	30,413	-2%	-1%	-9%	-12%
Monroe	22,422	27,619	32,957	34,905	23%	19%	6%	56%
St. Clair	262,852	256,082	270,056	256,791	-3%	5%	-5%	-2%
Illinois United States	11,430,602	12,419,293	12,830,632	12,757,634	9%	3%	-0.6%	12%
	248,709,873	281,421,906	308,745,538	331,097,593	13%	10%	7%	33%

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

2.1.2 Employment

Illinois employment in 2022 totaled about 6.3 million. Of the major industry sectors within the state, the educational services and health care and social assistance sector employs the most persons at 1,466,000. This industry is followed by professional, scientific, and management, and administrative and waste management services (787,000) and manufacturing (731,000).

The proportions of workers per sector in the counties in the study area fairly parallel what is observed at the state level (**Table H-2**).

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Table H-2. Employment by Industry – 2022

Industry	United States	Illinois	Randolph	Monroe	St. Clair
Agriculture, forestry, fishing and hunting, and mining	2,605,614	64,950	564	687	1,136
Construction	10,927,582	342,937	845	1,066	6,080
Manufacturing	15,876,915	731,486	2,049	2,034	10,462
Wholesale trade	3,816,197	175,238	245	423	2,235
Retail trade	17,463,378	658,806	1,445	2,008	12,902
Transportation and warehousing, and utilities	9,190,548	434,186	725	1,008	9,597
Information	3,016,820	107,181	69	309	1,802
Finance and insurance, and real estate and rental and leasing	10,582,227	463,714	455	1,639	7,905
Professional, scientific, and management, and administrative and waste management services	19,285,652	786,872	600	1,876	14,552
Educational services, and health care and social assistance	36,948,956	1,466,053	3,065	4,536	27,869
Arts, entertainment, and recreation, and accommodation and food services	14,244,205	527,829	802	1,514	12,523
Other services, except public administration	7,509,732	287,651	636	768	5,494
Public administration	7,445,378	233,544	1,070	836	7,642
TOTAL	158,913,204	6,280,447	12,570	18,704	120,199

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

2.1.3 Median Household Income for Selected Counties

Median household incomes for the three counties in 2022 are shown (**Table H-3**). The average median household income across the three Illinois counties is \$77,820, which is just lower than the state median of \$78,433 but higher than the national median of \$75,149.

Table H-3. Median Household Income – 2022

Geography	Median Household Income	% of State Median Household Income	% of National Median Household Income
Randolph	\$ 63,860	81%	85%
Monroe	\$ 100,685	128%	134%
St. Clair	\$ 68,915	88%	92%
Illinois	\$ 78,433	-	104%
United States	\$ 75,149	96%	-

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

As shown in **Table H-4**, the unemployment rates range from 1.7 percent (Monroe County) to 5.7 percent (St. Clair County). The average rate of 4.2 percent across the three Illinois counties is lower than the rate of 6.0 percent for the state and lower than the national rate of 5.3 percent.

Table H-4. Unemployment Rate – 2022

Geography	Unemployment Rate
Randolph	5.2%
Monroe	1.7%
St. Clair	5.7%
Illinois	6.0%
United States	5.3%

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

2.1.4 Race

In 2022 the majority population of Illinois is characterized as “White” and matches the national average of 66 percent. The next largest racial population is the “Black or African American” population. Illinois’s “Black or African American” population percentage at 14 percent is just a little over that of the national average (12%). Of the three Illinois counties, St. Clair County has the largest percentage of “Black or African American” population (28%), while Monroe County has the largest percentage of “White” population (97%).

Although not designated as a race category in the United States census, the “Hispanic or Latino” population percentage for Illinois (18%) was greater than that of the “Black or African American” population and just under that of the national average (19%). However, the “Hispanic or Latino” population percentages for the three Illinois counties are well below the state and national averages (**Table H-5 & Table H-6**).

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Table H-5. Racial Composition (Number) – 2022

Race	United States	Illinois	Randolph	Monroe	St. Clair
White	218,123,424	8,388,659	26,603	33,706	158,891
Black or African American	41,288,572	1,774,605	2,428	217	72,692
American Indian & Alaska Native	2,786,431	55,819	24	43	917
Asian	19,112,979	738,071	213	214	4,022
Native Hawaiian & Other Pacific Islander	624,863	5,476	17	-	72
Some other race	20,018,544	842,553	458	291	4,098
Two or more races	29,142,780	952,451	670	434	16,099
Hispanic or Latino	61,755,866	2,275,704	965	581	11,524
TOTAL	331,097,593	12,757,634	30,413	34,905	256,791

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Table H-6. Racial Composition (Percentage) – 2022

Race	United States	Illinois	Randolph	Monroe	St. Clair
White	66%	66%	87%	97%	62%
Black or African American	12%	14%	8%	0.6%	28%
American Indian & Alaska Native	0.8%	0.4%	0.1%	0.1%	0.4%
Asian	6%	6%	0.7%	0.6%	2%
Native Hawaiian & Other Pacific Islander	0.2%	0.04%	0.06%	-	0.03%
Some other race	6%	7%	2%	0.8%	2%
Two or more races	9%	7%	2%	1%	6%
Hispanic or Latino	19%	18%	3%	2%	4%
TOTAL	100%	100%	100%	100%	100%

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

2.1.5 Age Distribution

The age characteristics of the counties are shown in **Table H-7 & Table H-8**. The average median age across all three Illinois counties is 41.6 years and is almost three years greater than the state median of 38.7 years. The median age of the United States is 38.5 years.

Table H-7. Age Characteristics (Number) – 2022

Age	United States	Illinois	Randolph	Monroe	St. Clair
Under 18 years	73,213,705	2,820,477	6,122	7,713	59,716
18 - 65 years	203,146,240	7,866,250	18,079	20,769	155,057
65 years and older	54,737,648	2,070,907	6,212	6,423	42,018
Median age	38.5	38.7	43.0	42.5	39.4
Total population	331,097,593	12,757,634	30,413	34,905	256,791

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

Table H-8. Age Characteristics (Percent) – 2022

Age	United States	Illinois	Randolph	Monroe	St. Clair
Under 18 years	22%	22%	20%	22%	23%
18 - 65 years	61%	62%	59%	60%	60%
65 years and older	17%	16%	20%	18%	16%
Total population	100%	100%	100%	100%	100%

Source: American Community Survey, Demographic Characteristics, 2022 5-Year Estimates

2.1.6 Income and Poverty

Income and poverty data for the counties are summarized in **Table H-9** for 2022. Although Illinois has median household income and per capita income levels greater than the national average, two of the three counties show levels less than the national average. Both Randolph and St. Clair counties' median household income levels are less than the national average of \$75,149 and their per capita income is also less than the national average of \$41,261. Correspondingly, the "Persons Below Poverty Level" percentages for these two counties are greater than or equal the national average of 12.5 percent. Monroe County has the lowest "Persons Below Poverty Level" percentage at 4.3 percent.

Table H-9. Income and Poverty Data – 2022

Income and Poverty	United States	Illinois	Randolph	Monroe	St. Clair
Persons per Household	2.63	2.57	2.61	2.57	2.55
Median Household Income	\$75,149	\$78,433	\$63,860	\$100,685	\$68,915
Per Capita Income	\$41,261	\$43,198	\$29,832	\$47,248	\$36,010
Persons Below Poverty Level	12.5%	11.8%	12.5%	4.3%	13.8%

Source: American Community Survey, Economic Characteristics, 2022 5-Year Estimates

2.1.7 Education

The educational attainment levels for the counties in 2022 are presented in **Table H-10 & Table H-11**. On average across the counties in the study area, 90.9 percent of persons age 25 years and older had completed high school, while 26.6 percent had a bachelor’s degree or higher. Illinois’s percentages are 89.9 percent and 36.2 percent, respectively; the national percentages are 88.9 percent and 33.7 percent, respectively.

Table H-10. Educational Attainment for Persons 25 Years or Older (Number) – 2022

Education	United States	Illinois	Randolph	Monroe	St. Clair
High School Graduate or Higher	202,001,294	7,883,680	18,875	23,678	161,632
Bachelor's Degree or Higher	77,751,347	3,207,450	3,014	9,370	53,238

Source: American Community Survey, Social Characteristics, 2022 5-Year Estimates

Table H-11. Educational Attainment for Persons 25 Years or Older (Percent) – 2022

Education	United States	Illinois	Randolph	Monroe	St. Clair
High School Graduate or Higher	88.9%	89.9%	85.1%	95.3%	92.3%
Bachelor's Degree or Higher	33.7%	36.2%	13.2%	37.1%	29.6%

Source: American Community Survey, Social Characteristics, 2022 5-Year Estimates

2.2 FACILITIES AND INFRASTRUCTURE

Several ports and facilities are encompassed within the Kaskaskia Regional Port District. In addition to KRPD#2 which is the focus of this study, these include:

- Fayetteville Terminal (Kaskaskia River Mile 36)
- KRPD#1 (Kaskaskia River Mile 24.5)
- Evansville Grain Terminal (Kaskaskia River Mile 10)
- Kellogg Dock (Mississippi River Mile 125.5)

KRPD#2 itself is a multi-modal facility for river, rail, and road transportation.

2.2.1 Dock

The Stanley L. Reeble Dock at KRPD#2 handles inbound steel and fertilizer and outbound slag, fly ash, gypsum, and coal.

2.2.2 Industrial Park

KRPD owns 268 acres at KRPD#2, and existing businesses and operators own 20 acres. Sites are available for new and expanding companies. SITCO operates and services the existing facility. Current businesses include The Material Works (TMW) and Gateway FS.

2.2.3 Warehouse

On site is a 30,000 square-foot temperature and humidity-controlled warehouse.

2.2.4 Equipment

Equipment includes a 50-ton overhead crane capable of handling containers and an outbound conveyor.

2.3 HISTORICAL COMMERCE

2.3.1 Total Tons

KRPD#2's tonnage showed an increase from 2014 to 2017 and then a corresponding decrease in 2018 and 2019 before slightly increasing again in the years 2020 and 2021. The year 2022, however, saw an enormous increase in tonnage of outbound gypsum such that it dwarfed the tonnage of any other commodity. This continued the following year with outbound gypsum growing from 551,836 tons in 2022 to 862,887 tons in 2023.

2.3.1.1 Years 2014 - 2021

Average tonnage for the years 2014 - 2021 is 184,000 tons with a high of 276,000 tons in 2017 and a low of 135,000 tons in 2019. A high of 237,000 inbound tons occurred in 2018 and a low of 52,000 inbound tons occurred in 2014; outbound tonnage saw a high of 149,000 tons in 2017 and a low of 11,000 tons 2018. Outbound tonnage consisting of slag, fly ash, gypsum, coal, and grain dropped precipitously in 2018 and then began a decline after rising slightly in 2019 because of both a power plant closure and a shift of these remaining commodities to KRPD#1 and the Evansville Grain Terminal. Data available from 2014 onward was obtained through the Kaskaskia Regional Port District.

2.3.1.2 Years 2022 and 2023

If tonnage from years 2022 and 2023 are included, the substantial increase in gypsum raises the 10-year average to 311,000 tons. Average outbound tonnage at 201,000 is almost double the inbound tonnage at 111,000. Average outbound gypsum for these two years is 707,000 tons (**Table H-12**)

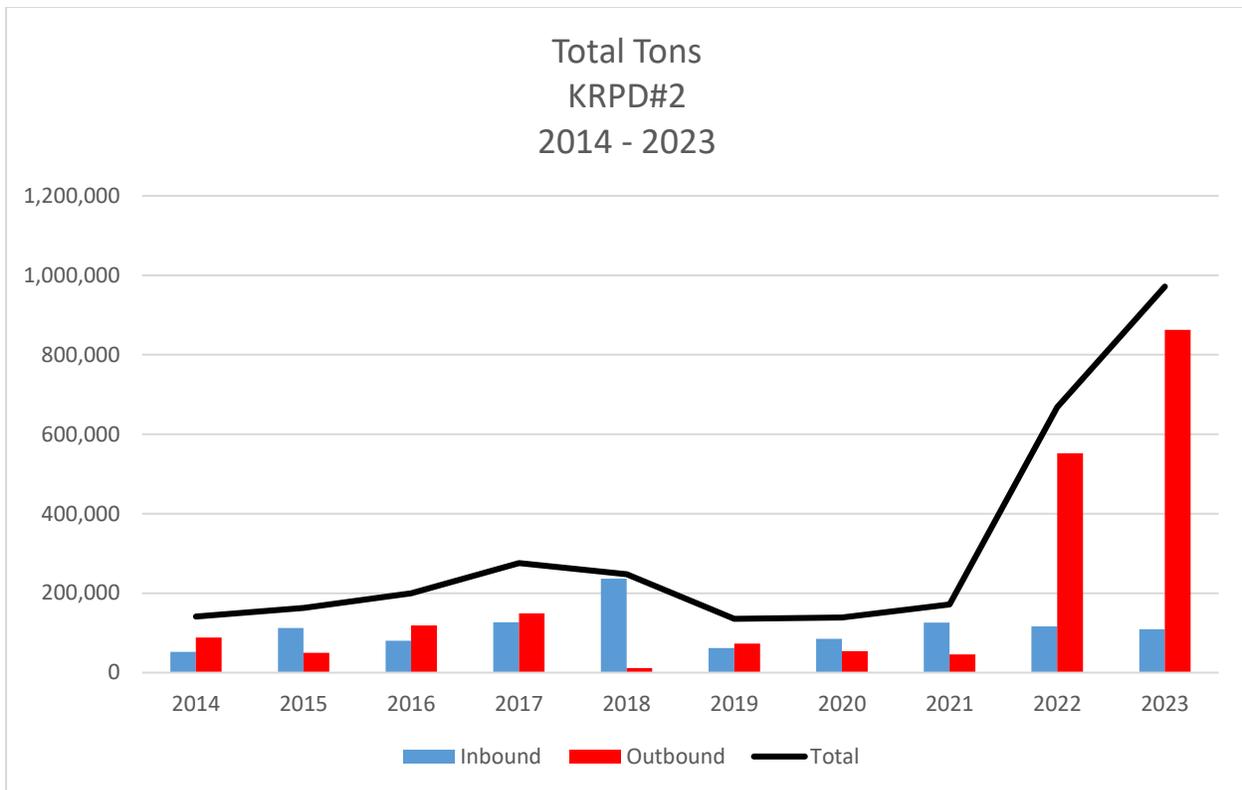


Figure H-5).

Table H-12. Total Tons at KRPD#2 (Inbound and Outbound)

Year	Inbound	Outbound	Total
2014	52,471	88,499	140,971
2015	112,420	50,127	162,547
2016	80,497	118,879	199,375
2017	126,687	148,911	275,598
2018	236,744	11,299	248,043
2019	62,259	73,198	135,458
2020	84,813	54,144	138,958
2021	125,853	46,041	171,894
2022	116,316	551,836	668,152
2023	108,858	862,887	971,746
Avg	110,692	200,582	311,274

Source: Kaskaskia Regional Port District

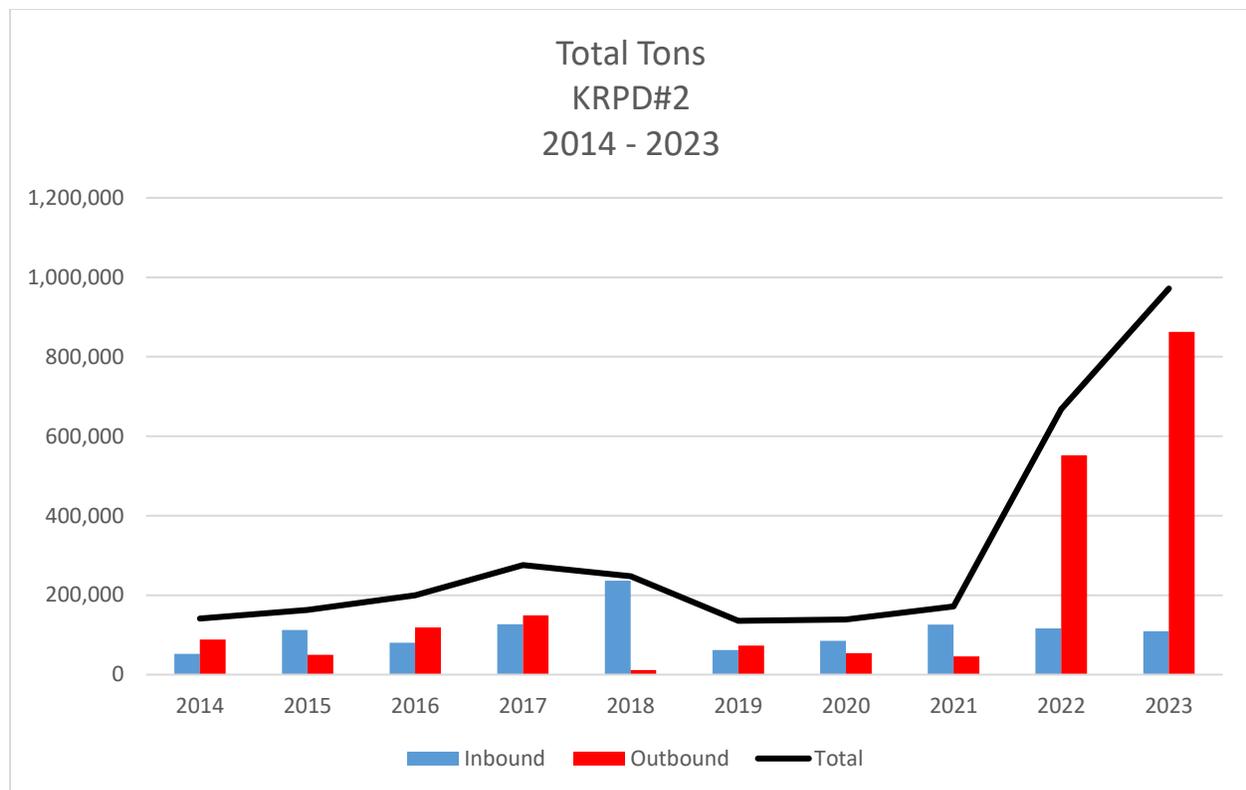


Figure H-5. Total Tons at KRPD#2 (Inbound and Outbound)

Source: Kaskaskia Regional Port District

2.3.2 Commodity Tons

Prior to 2022, slag/fly ash accounted for most of the tonnage moving through KRPD#2 since 2014. A total of 466,444 tons of this commodity passed through KRPD#1 from 2014 – 2019 (there was no slag/fly ash tonnage in 2020 or 2021). Fertilizer was the next highest commodity group at 341,310 tons followed by coal/grain (221,513 tons) and steel (218,533 tons) during this period. Gypsum/stone and frac sand were at the bottom with 114,986 tons and 110,058 tons, respectively, prior to 2022.

Frac sand reported tonnage only in years 2017 and 2018 and no more tonnage afterwards likely due to the decline in the fracking boom. Slag/fly ash reported no more tonnage after 2019, and this number is expected to remain zero because of the closure of the Vistra-owned Baldwin Power Plant in Randolph County as the Texas-based company focuses on solar and battery energy storage projects. Coal and grain reported no more tonnage after 2021. Coal tonnage is expected to remain minimal, and grain has shifted to the Evansville Grain Terminal at river mile 10.

Gypsum, produced as waste product from the Prairie State Energy Campus in rural Marissa, IL, saw its market change dramatically in 2022 with a substantial increase in demand. Because a second rail loop has not yet been completed nor have outbound conveyor belts been installed

at KRPD#1, this gypsum tonnage could not go through KRPD#1 and instead had to pass through KRPD #2; however, once these changes have been made to KRPD#1, the majority of future gypsum tonnage will pass through KRPD#1 with only about 200,000 tons going through KRPD#2.

Table H-13 & Figure H-6 display tons by commodity type.

Table H-13. Commodity Tons

Year	Steel	Fertilizer	Frac Sand	Slag/Fly Ash	Gypsum/Stone	Misc. Coal/Grain	Total Tonnage
2014	15,393	32,262	-	88,499	-	4,817	140,971
2015	12,650	27,479	-	50,127	36,415	35,876	162,547
2016	11,232	38,409	-	118,879	-	30,856	199,375
2017	41,420	43,723	98,759	50,153	-	41,544	275,598
2018	32,273	35,577	11,299	107,653	4,845	56,397	248,043
2019	16,505	45,754	-	51,134	-	22,065	135,458
2020	33,948	50,866	-	-	27,684	26,460	138,958
2021	55,113	67,241	-	-	46,041	3,499	171,894
2022	56,671	59,645	-	-	551,836	-	668,152
2023	32,743	76,115	-	-	862,887	-	971,746
Total	307,948	477,070	110,058	466,444	1,529,709	221,513	3,112,741

Source: Kaskaskia Regional Port District

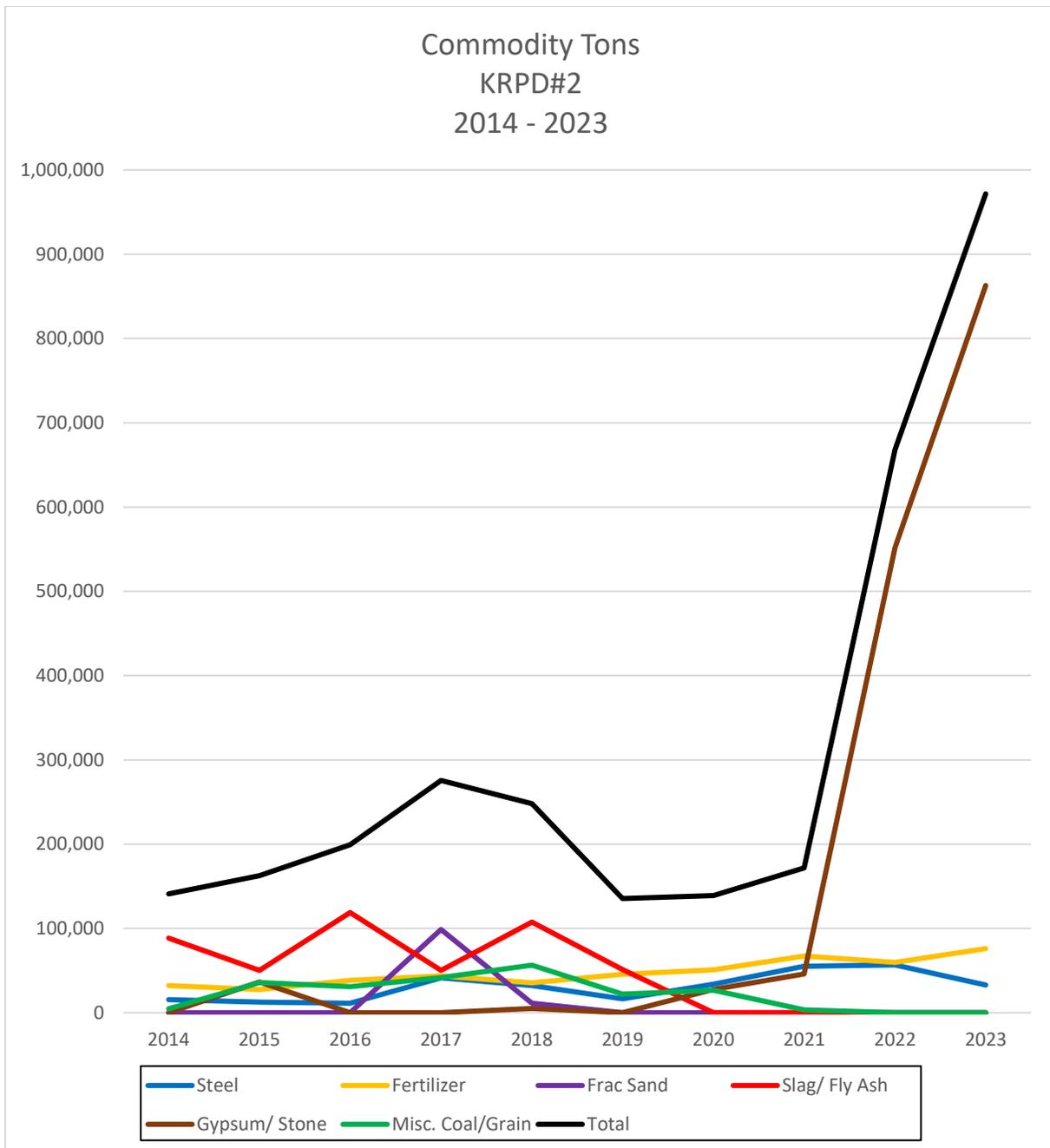


Figure H-6. Commodity Tons
Source: Kaskaskia Regional Port District

2.3.3 Commodity Distribution

Despite reporting no tonnage after 2019, slag/fly ash represented the largest percentage of commodities from 2014 – 2023 at 25 percent. Gypsum/stone was just behind at 24 percent followed by fertilizer at 22 percent. **Figure H-7** shows the percent of tonnage by commodity by year for KRPD#2.

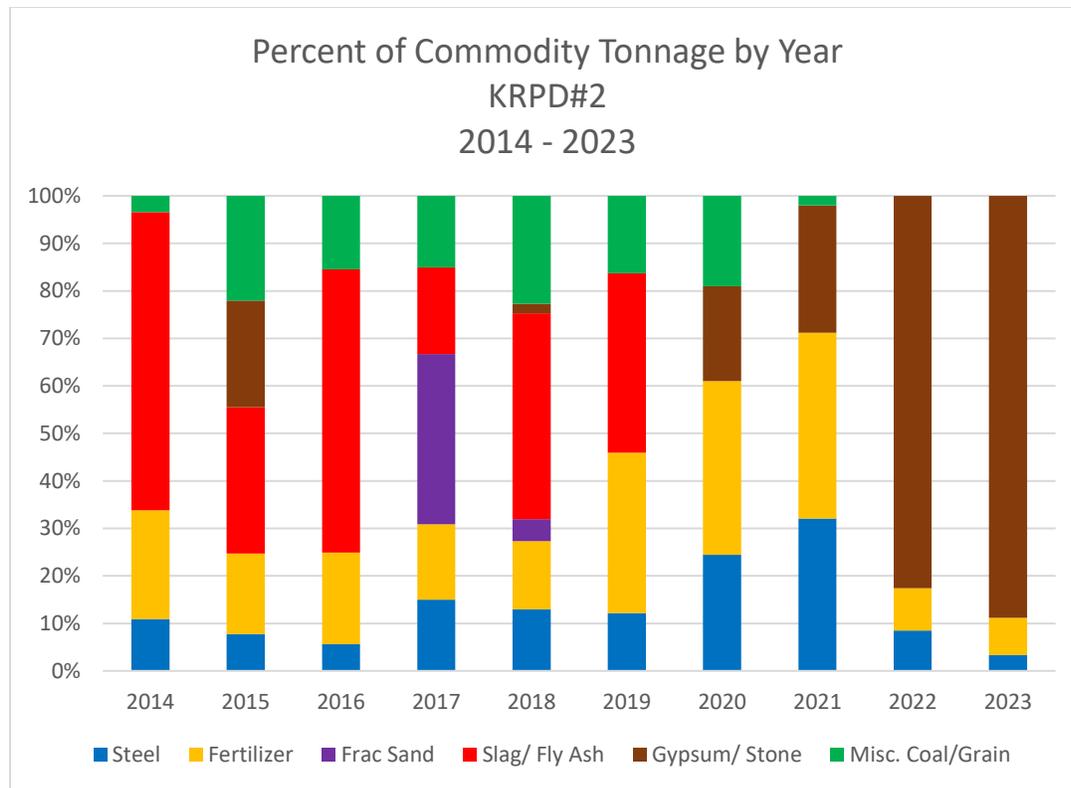


Figure H-7. Commodity Distribution by Year

Source: Kaskaskia Regional Port District

2.4 SHIPPING OPERATIONS

KRPD#2 is accessible to the Canadian National Railroad spur and includes a 50-ton overhead electric crane for harbor loading and off-loading, a shipyard, 30,000 sq ft warehouse, bulk cargo dump dock, and steel processing center. Southern Illinois Transfer Company (SITCO) services the shipment of product on both the Mississippi and Kaskaskia Rivers and operates the docks at KRPD#1, KRPD#2, and Kellogg Dock.

Because the south oxbow’s width limits the channel to one-way traffic, barges utilizing KRPD#2 are currently fleeted outside the south oxbow in the Kaskaskia River until the dock at KRPD#2 is available. Additionally, the absence of a turning basin as well as lack of fleeting areas inside the south oxbow contribute to time delays. Furthermore, barges are routinely light loaded because of the 9-foot depth of the channel despite their routes along the Kaskaskia River and the Mississippi River consistently being 12 feet or deeper, all leading to economic inefficiencies.

3 FUTURE CONDITIONS

3.1 COMMODITY GROWTH FORECAST

An essential step when evaluating navigation improvements is to analyze the types and volumes of cargo moving through the port. Trends in cargo history can offer insights into a port's long-term trade forecast and the estimated cargo volume upon which future vessel trips are based. In the case of KRPD#2, the Port and the companies utilizing KRPD#2 have stated that certain cargo will increase dramatically while other cargo will remain stagnant or disappear completely.

As shown previously in Section 2.3.1.2, tonnage at KRPD#2 has remained fairly stagnant from 2014 – 2021 despite occasional fluctuations. It was not until 2022 and 2023 that tonnage drastically increased due to the increase in demand for gypsum. Additionally, some commodities such as slag, fly ash, coal, grain, and frac sand reported no tonnage at all for a number of years (shown previously in Section 2.3.2). In the case of these disappearing commodities, the Port is confident that they are being phased out and will not play a role in future traffic conditions. Vistra's decision to close its Baldwin Power Plant to focus instead on a battery plant and a solar farm essentially eliminates any future slag or fly ash tonnage moving through KRPD#2. Coal tonnage is minimal and is expected to remain so for the future. Outbound grain tonnage has now been shifted entirely to the Evansville Grain Terminal; inbound grain may come through KRPD#2, but it will be infrequent as well as negligible. Frac sand tonnage has not been reported since 2018, and the Port does not anticipate its return in any significant quantities. Because the Port has stated that KRPD#2 has shifted away from these commodities and does not include them in future plans for the south oxbow, this study likewise excludes those commodities from tonnage forecasts.

In discussions about the current and future state of KRPD#2, the Port determined that KRPD#2 traffic would be shaped by three commodities: gypsum, fertilizer, and steel. This study focuses on the likely growth and impact of these three commodities on future traffic forecasts.

3.1.1 Gypsum

The Prairie State Energy Campus is a large coal-fired power plant and coal mine located in Washington County, IL, and is one of the newest and most technologically advanced coal-fired power plants in the country. Situated near Marissa, IL, the power plant began operations in June 2012 and has a capacity of approximately 1,600 megawatts (MW) of electricity. It utilizes advanced clean coal technologies such as supercritical boilers and advanced emission control systems to reduce environmental impacts compared to older coal-fired power plants.

Gypsum is produced as a byproduct of the Prairie State Energy Campus's operations. When coal is burned at the power plant, sulfur dioxide (SO₂) is released as part of the combustion process. To reduce air pollution, the plant employs flue gas desulfurization (FGD) systems, also

known as scrubbers, to capture and neutralize SO₂ emissions. One of the common methods used in FGD systems is to use limestone slurry, which reacts with the SO₂ in the flue gas to form calcium sulfate dihydrate, commonly known as gypsum. This gypsum is then separated from the scrubber system and can be collected for further processing or disposal.

Gypsum produced in this manner can have various uses, including being a key ingredient in the production of drywall or wallboard used in construction; being a soil amendment in agriculture to improve soil structure, drainage, and nutrient uptake by plants; and being a part of cement production, making molds and casts, and as a filler in products like paper and paints.

The demand for this outbound gypsum markedly increased in 2022, resulting in tonnage amounts of 551,836 and 862,887 passing through KRPD#2 in years 2022 and 2023. Although these tonnage amounts have ranged between about half a million tons to nearly 1 million tons, the Port states that the majority of this amount will shift to the nearby KRPD#1 once a second rail loop and outbound conveyor belts have been installed. After this completion in the next few years, approximately 200,000 tons of gypsum will remain outbound from KRPD#2. This estimate is used as the future gypsum tonnage forecast for KRPD#2 (**Figure H-8**).

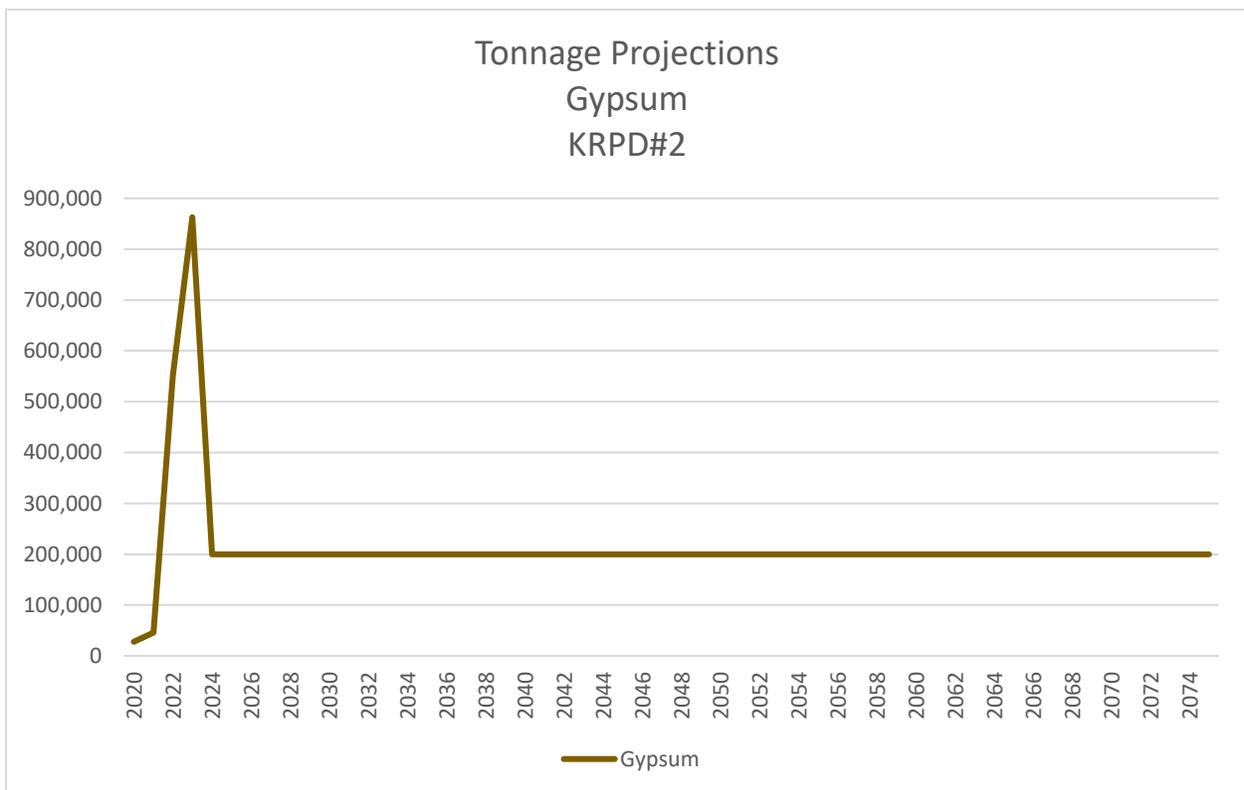


Figure H-8. Tonnage Projections: Gypsum

3.1.2 Fertilizer

Gateway FS, Inc. is a locally owned agricultural cooperative serving producers in Clinton, Jefferson, Monroe, Randolph, and Washington counties in Illinois. Gateway FS operates as part of the Growmark System, which is a network of cooperatives serving the needs of farmers in the United States and Canada. Growmark provides agricultural inputs, energy products, grain marketing services, and more through its member cooperatives like Gateway FS.

Headquartered in Red Bud, IL, Gateway FS has a facility at KRPD#2 that receives fertilizer by barge from New Orleans. Five-year average tonnage from 2019 – 2023 is 60,000 tons. Within the next 12 months, Gateway FS will add to and increase their building capacity at KRPD#2 as well as purchase a new conveyor belt. These improvements will allow them to expand their inbound tonnage to 100,000 tons by 2027 with incremental increases of 10,000 tons up to that year. After 2027 their tonnage should remain steady at 100,000 tons (**Figure H-9**).

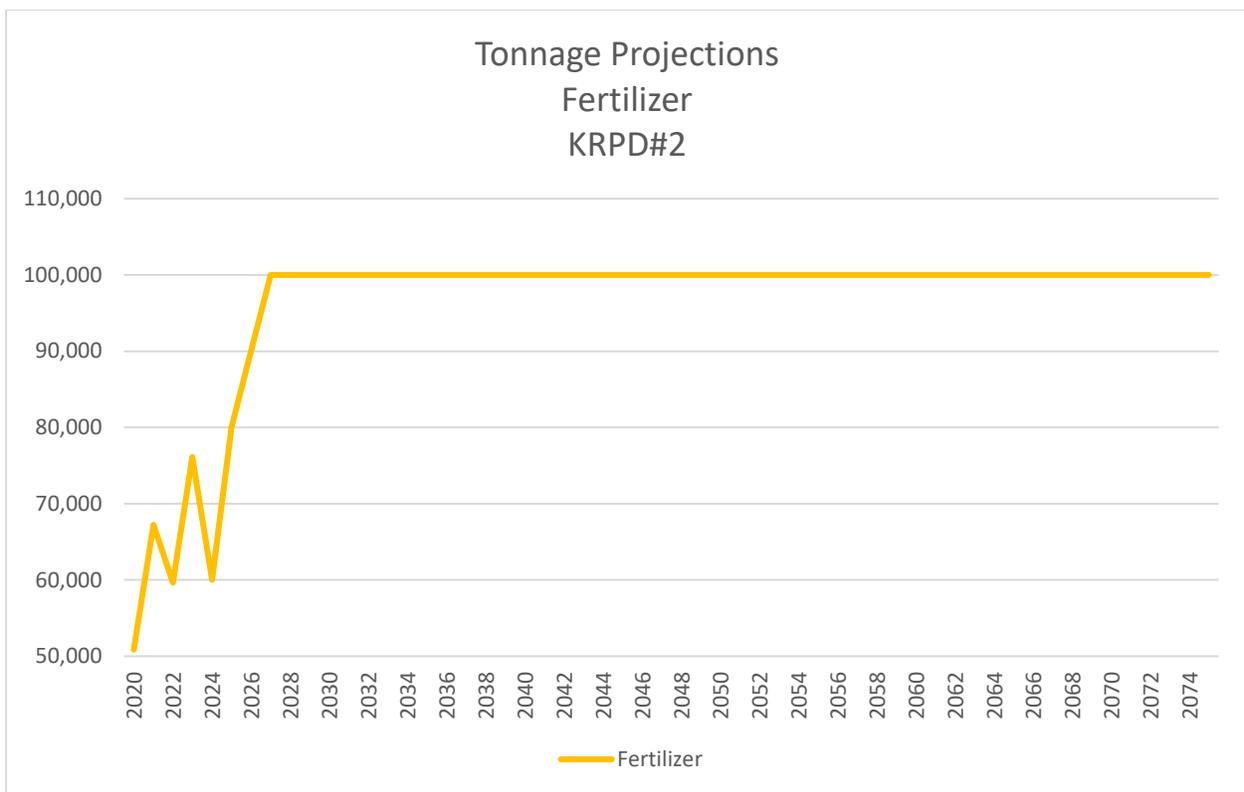


Figure H-9. Tonnage Projections: Fertilizer

3.1.3 Steel

3.1.3.1 The Material Works, Ltd.

The Material Works, Ltd. (TMW), founded in 1992, is a company focusing on the toll processing of flat rolled metals. Its processing division performs slitting, blanking, cut-to-length, leveling and EPS processing for service centers and OEM manufacturers in the central and southern USA. There are 2 TMW processing plants, and TMW Processing Plant 1 is adjacent to the

Baldwin Terminal at KRPD#2. Steel comes by barge from Osceola, AR, and the shipments are offloaded by an overhead crane directly into coil storage.

Five-year average tonnage from 2019 – 2023 is 39,000 tons. A new plant with an additional wing to process more steel is scheduled to be online in 2026, allowing them to receive 270,000 tons per year. Tonnage will increase to 100,000 tons in 2026 and then ramp up to 270,000 tons by 2029. After this expansion, their tonnage from 2029 onwards should remain steady at 270,000 tons (Figure H-10).

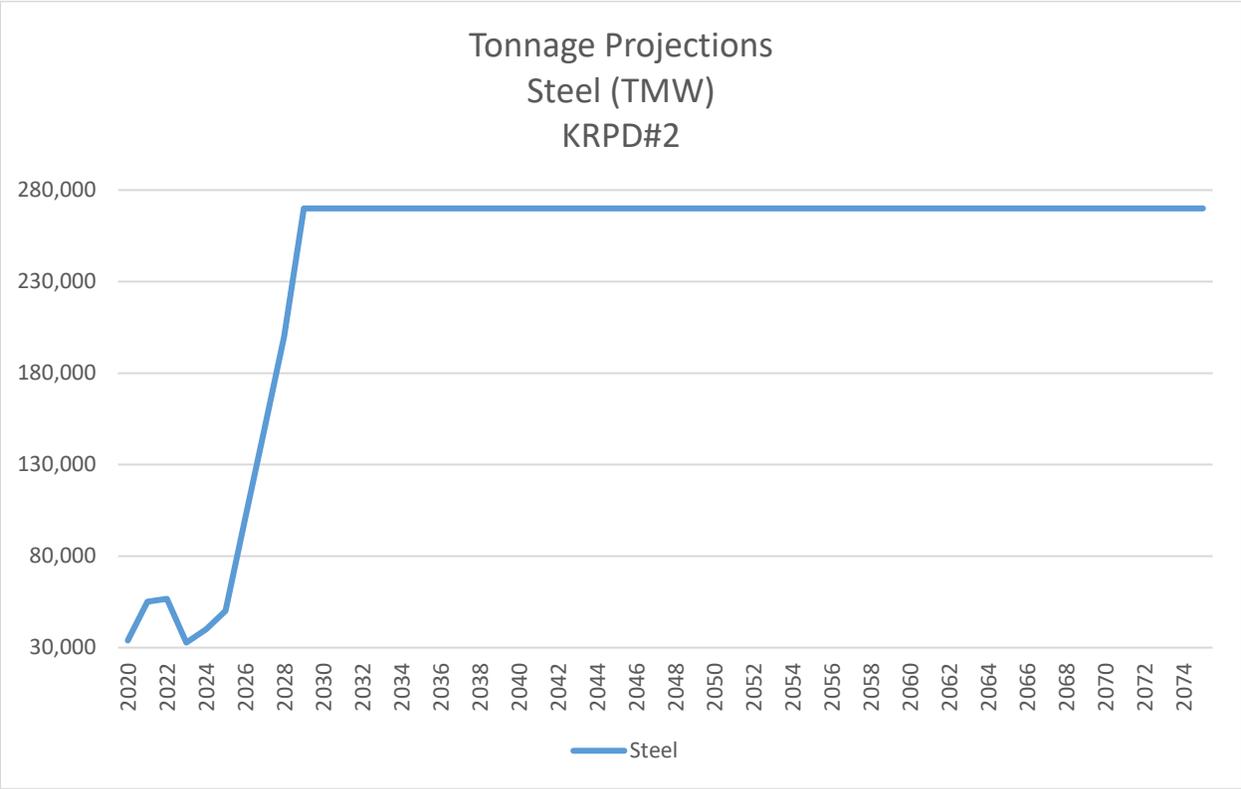


Figure H-10. Tonnage Projections: Steel (TMW)

3.1.3.2 STAG Specialty Steels, LLC

STAG Steel is a new company that has expressed interest in building a facility at KRPD#2 and worked with KRPD to develop preliminary plans that would rely on transloading goods to the north oxbow. The company is not currently in operation. Their plan is to build a facility northwest of New Orleans, LA, that will produce raw hot rolled coiled steel. This intermediate steel product would then be shipped by barge to a metal processing and treatment facility to be built upon property owned by KRPD that is adjacent and near the proposed new dock at the north oxbow at KRPD#2. The processed steel would then be shipped out by truck or rail. Because of its estimated inbound tonnage of 2.5-3 million tons, STAG Steel would require the existence of a navigable north oxbow since the south oxbow is unable to handle such a large quantity of traffic.

Currently, there is not enough substantial evidence to indicate that STAG Steel will build their processing facility or operate at KRPD#2. Additionally, there are concerns about the ability to estimate transportation cost savings for a company that does not presently exist and therefore does not have historic transportation costs; following extensive coordination within USACE, no acceptable cost savings estimation method could be identified. Therefore, although the projected 2.5-3 million tons is about 5 times greater than the total tonnage projected for all the businesses operating at the south oxbow, the tonnage and potential economic benefits from STAG Steel are not included in this study.

3.2 TONNAGE FORECAST

The tonnage forecast for gypsum, fertilizer, and steel are shown in **Table H-14**. Tonnage was projected 20 years from the 2026 base year of the study. After the year 2045, no growth is assumed until the end of the study’s scope in 2075.

Table H-14. Projected Commodity Tonnages 2026 - 2075

Year	Gypsum	Fertilizer	Steel
2026	200,000	90,000	100,000
2027	200,000	100,000	150,000
2028	200,000	100,000	200,000
2029	200,000	100,000	270,000
2030	200,000	100,000	270,000
2031	200,000	100,000	270,000
2032	200,000	100,000	270,000
2033	200,000	100,000	270,000
2034	200,000	100,000	270,000
2035	200,000	100,000	270,000
2036	200,000	100,000	270,000
2037	200,000	100,000	270,000
2038	200,000	100,000	270,000
2039	200,000	100,000	270,000
2040	200,000	100,000	270,000
2041	200,000	100,000	270,000
2042	200,000	100,000	270,000
2043	200,000	100,000	270,000
2044	200,000	100,000	270,000
2045	200,000	100,000	270,000
-			
2075	200,000	100,000	270,000

3.3 BARGE FORECAST

Using an average of 1,500 tons per barge, the Kaskaskia Regional Port District estimated the total number of barges per year for KRPD#2 from 2014 – 2023 (**Table H-15**).

Table H-15. Number of Barges 2014 - 2023

Year	Tonnage	Barges
2014	140,971	94
2015	162,547	108
2016	199,375	133
2017	275,598	184
2018	248,043	165
2019	135,458	90
2020	138,958	93
2021	171,894	115
2022	668,152	445
2023	971,746	648

Source: Kaskaskia Regional Port District

Projected commodity tonnage (**Table H-14**, above) was divided by the average tons per barge of 1,500 to project the annual number of barges for that commodity for the years 2026 – 2075 (**Table H-16**).

Table H-16. Projected Number of Barges 2026 - 2075

Year	Gypsum	Fertilizer	Steel	TOTAL
2026	133	60	67	260
2027	133	67	100	300
2028	133	67	133	333
2029	133	67	180	380
2030	133	67	180	380
2031	133	67	180	380
2032	133	67	180	380
2033	133	67	180	380
2034	133	67	180	380
2035	133	67	180	380
2036	133	67	180	380
2037	133	67	180	380
2038	133	67	180	380
2039	133	67	180	380
2040	133	67	180	380
2041	133	67	180	380
2042	133	67	180	380
2043	133	67	180	380
2044	133	67	180	380

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Year	Gypsum	Fertilizer	Steel	TOTAL
2045	133	67	180	380
-				
2075	133	67	180	380

4 TRANSPORTATION COST SAVINGS BENEFIT ANALYSIS

For the purposes of Navigation Economic Analysis per ER 1105-2-100, a National Economic Development (NED) benefit may include:

“Cost reduction benefits for commodities for the same origin and destination and the same mode of transit thus increasing the efficiency of current users. This reduction represents a NED gain because resources will be released for productive use elsewhere in the economy. Examples for inland navigation are reductions in costs incurred from trip delays (e.g. reduction in lock congestions), reduction in costs associated with the use of larger or longer tows, and reduction in costs due to more efficient use of barges.”

The intention of this analysis is to describe the benefits associated with the alternatives under consideration for the POR. NED benefits were estimated by calculating the reduction in transportation cost for each of these alternatives.

4.1 SAVINGS BY ALTERNATIVE

Barge time savings and vessel operating costs were provided by the Kaskaskia Regional Port District and SITCO vessel operators. Transportation cost savings are shown in order from the minimum alternative to the maximum alternative.

4.1.1 South Oxbow

4.1.1.1 Alternative 3b – Deepen South Oxbow to 12 Feet

Although the Kaskaskia River is federally maintained to 9 feet, surveys show that the depth of the Kaskaskia River is consistently 12 feet or deeper. Because the south oxbow channel is currently only 9 feet, barges using KRPD#2 are unable to be loaded to take advantage of the deeper depth of the Kaskaskia River¹. Port and SITCO officials estimate that the annual number of barges would be reduced by 10% if the barges could be loaded for a channel of depth of 12 feet.

To estimate benefits, the projected annual number of barges from **Table H-16** were reduced by 10%. Barge rates obtained by the Port and SITCO were then multiplied by this annual number of reduced barges to obtain annual savings. Average barge rates by commodity are shown in **Table H-17**. Annual barge savings by commodity are shown in **Table H-18**.

¹ Origin and destination docks are all at 12 feet or deeper.

Table H-17. Average Barge Rate (One-Way)

Commodity²	Cost
Gypsum	\$17,000
Fertilizer	\$18,575
Steel	\$17,152

² Fertilizer rate is from New Orleans to KRPD#2; steel rate is from Osceola, AR, to KRPD#2; and gypsum rate is average outbound rate to all customers.

Table H-18. Annual Barge Savings by Commodity (Deepen Channel)—South Oxbow

Year	<u>Gypsum</u>			<u>Fertilizer</u>			<u>Steel</u>			Total
	Number of Barges	Number of Reduced Barges (10%)	Annual Savings	Number of Barges	Number of Reduced Barges (10%)	Annual Savings	Number of Barges	Number of Reduced Barges (10%)	Annual Savings	
2026	133	13	\$ 226,667	60	6	\$ 111,450	67	7	\$ 114,347	\$ 452,463
2027	133	13	\$ 226,667	67	7	\$ 123,833	100	10	\$ 171,520	\$ 522,020
2028	133	13	\$ 226,667	67	7	\$ 123,833	133	13	\$ 228,693	\$ 579,193
2029	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2030	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2031	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2032	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2033	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2034	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2035	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2036	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2037	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2038	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2039	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2040	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2041	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2042	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2043	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2044	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
2045	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236
-	-	-	-	-	-	-	-	-	-	-
2075	133	13	\$ 226,667	67	7	\$ 123,833	180	18	\$ 308,736	\$ 659,236

Because there will be a reduction in the annual number of barges, there will also be a reduction in the number of trucks servicing the dock in loading/unloading the barges. It takes 17 trucks an average of 3.5 hours to load or unload a barge at the KRPD#2 dock. Annual truck savings are calculated by multiplying the annual number of reduced barges by 17 and then by 3.5 hours. This product is then multiplied by \$150, the hourly operating cost of a truck (Table H-19). Total annual savings are displayed in Table H-20.

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Table H-19. Annual Truck Savings by Commodity (Deepen Channel)—South Oxbow

Year	<u>Gypsum</u>			<u>Fertilizer</u>			<u>Steel</u>			Total	
	Number of Barges	Number of Reduced Barges (10%)	Annual Savings	Number of Barges	Number of Reduced Barges (10%)	Annual Savings	Number of Barges	Number of Reduced Barges (10%)	Annual Savings		
2026	133	13	\$ 119,000	60	6	\$ 53,550	67	7	\$ 59,500	\$ 232,050	
2027	133	13	\$ 119,000	67	7	\$ 59,500	100	10	\$ 89,250	\$ 267,750	
2028	133	13	\$ 119,000	67	7	\$ 59,500	133	13	\$ 119,000	\$ 297,500	
2029	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2030	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2031	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2032	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2033	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2034	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2035	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2036	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2037	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2038	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2039	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2040	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2041	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2042	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2043	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2044	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
2045	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	
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2075	133	13	\$ 119,000	67	7	\$ 59,500	180	18	\$ 160,650	\$ 339,150	

Table H-20. Total Annual Savings (Deepen Channel)—South Oxbow

Year	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	\$ 452,463	\$ 232,050	\$ 684,513
2027	\$ 522,020	\$ 267,750	\$ 789,770
2028	\$ 579,193	\$ 297,500	\$ 876,693
2029	\$ 659,236	\$ 339,150	\$ 998,386
2030	\$ 659,236	\$ 339,150	\$ 998,386
2031	\$ 659,236	\$ 339,150	\$ 998,386
2032	\$ 659,236	\$ 339,150	\$ 998,386
2033	\$ 659,236	\$ 339,150	\$ 998,386
2034	\$ 659,236	\$ 339,150	\$ 998,386
2035	\$ 659,236	\$ 339,150	\$ 998,386
2036	\$ 659,236	\$ 339,150	\$ 998,386
2037	\$ 659,236	\$ 339,150	\$ 998,386
2038	\$ 659,236	\$ 339,150	\$ 998,386
2039	\$ 659,236	\$ 339,150	\$ 998,386
2040	\$ 659,236	\$ 339,150	\$ 998,386
2041	\$ 659,236	\$ 339,150	\$ 998,386
2042	\$ 659,236	\$ 339,150	\$ 998,386
2043	\$ 659,236	\$ 339,150	\$ 998,386
2044	\$ 659,236	\$ 339,150	\$ 998,386
2045	\$ 659,236	\$ 339,150	\$ 998,386
-	\$ -	\$ -	\$ -
2075	\$ 659,236	\$ 339,150	\$ 998,386

4.1.1.2 Alternative 3a – Deepen South Oxbow to 12 Feet and Widen Entire Channel to 110 Feet

Widening the channel to 110 feet to allow two-way traffic would result in time savings for barge operations. Currently barges experience 1.5 hours of delay as they wait in the Kaskaskia River to travel to the dock at KRPD#2. If the channel width permitted two-way traffic, barges could proceed to the dock at KRPD#2 once the dock is available instead of waiting for the barge currently at the dock to exit the channel into the Kaskaskia River.

Time saved per barge would be 30 minutes, and the Port estimates that 50% of the annual number of barges would be able to benefit from this time savings. Using an hourly operating barge rate of \$520, the total number of annual barges (less the number of reduced barges from Alternative 3b) are multiplied by 0.5 and then multiplied by \$260 (half of the \$520 hourly operating barge rate) to calculate annual barge savings. Truck savings are calculated by multiplying the total number of annual barges by 17 (trucks per barge) and then by \$75 (half of the truck hourly operating cost of \$150) as shown in **Table H-21**. These annual benefits are

added to the annual benefits shown in **Table H-20** for the total annual benefits of Alternative 3a.

Table H-21. Total Annual Savings (Widen Channel)—South Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	117	\$ 30,420	\$ 149,175	\$ 179,595
2027	135	\$ 35,100	\$ 172,125	\$ 207,225
2028	150	\$ 39,000	\$ 191,250	\$ 230,250
2029	171	\$ 44,460	\$ 218,025	\$ 262,485
2030	171	\$ 44,460	\$ 218,025	\$ 262,485
2031	171	\$ 44,460	\$ 218,025	\$ 262,485
2032	171	\$ 44,460	\$ 218,025	\$ 262,485
2033	171	\$ 44,460	\$ 218,025	\$ 262,485
2034	171	\$ 44,460	\$ 218,025	\$ 262,485
2035	171	\$ 44,460	\$ 218,025	\$ 262,485
2036	171	\$ 44,460	\$ 218,025	\$ 262,485
2037	171	\$ 44,460	\$ 218,025	\$ 262,485
2038	171	\$ 44,460	\$ 218,025	\$ 262,485
2039	171	\$ 44,460	\$ 218,025	\$ 262,485
2040	171	\$ 44,460	\$ 218,025	\$ 262,485
2041	171	\$ 44,460	\$ 218,025	\$ 262,485
2042	171	\$ 44,460	\$ 218,025	\$ 262,485
2043	171	\$ 44,460	\$ 218,025	\$ 262,485
2044	171	\$ 44,460	\$ 218,025	\$ 262,485
2045	171	\$ 44,460	\$ 218,025	\$ 262,485
-	-	-	-	-
2075	171	\$ 44,460	\$ 218,025	\$ 262,485

4.1.1.3 Alternative 2b – Deepen South Oxbow to 12 Feet and Add Turning Basin

A turning basin located at the north end of the south oxbow would allow barges to fully turn around and exit the channel instead of having to pass backwards through the channel after utilizing the dock at KRPD#2 (**Figure H-11**).

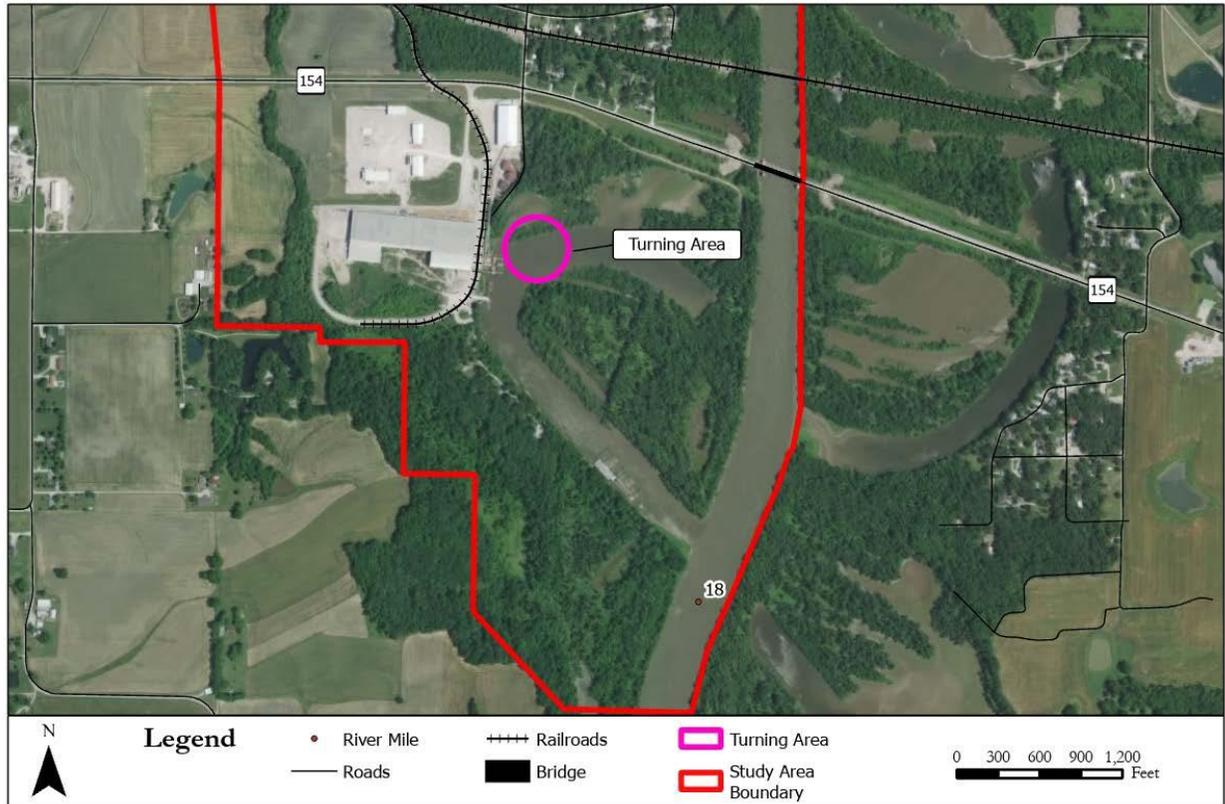


Figure H-11. Turning Area

Time saved per barge would be 15 minutes, and the Port estimates that 50% of the annual number of barges would be able to benefit from this time savings. Using an hourly operating barge rate of \$520, the total number of annual barges (less the number of reduced barges from Alternative 3b) are multiplied by 0.5 and then multiplied by \$130 (one-fourth of the \$520 hourly operating barge rate) to calculate annual barge savings. Truck savings are calculated by multiplying the total number of annual barges by 17 (trucks per barge) and then by \$38 (one-fourth of the truck hourly operating cost of \$150) as shown in **Table H-22**. These annual benefits are added to the annual benefits shown in **Table H-20** for the total annual benefits of Alternative 2b.

Table H-22. Total Annual Savings (Turning Basin)—South Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	117	\$ 15,210	\$ 74,588	\$ 89,798
2027	135	\$ 17,550	\$ 86,063	\$ 103,613
2028	150	\$ 19,500	\$ 95,625	\$ 115,125
2029	171	\$ 22,230	\$ 109,013	\$ 131,243
2030	171	\$ 22,230	\$ 109,013	\$ 131,243
2031	171	\$ 22,230	\$ 109,013	\$ 131,243
2032	171	\$ 22,230	\$ 109,013	\$ 131,243

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2033	171	\$ 22,230	\$ 109,013	\$ 131,243
2034	171	\$ 22,230	\$ 109,013	\$ 131,243
2035	171	\$ 22,230	\$ 109,013	\$ 131,243
2036	171	\$ 22,230	\$ 109,013	\$ 131,243
2037	171	\$ 22,230	\$ 109,013	\$ 131,243
2038	171	\$ 22,230	\$ 109,013	\$ 131,243
2039	171	\$ 22,230	\$ 109,013	\$ 131,243
2040	171	\$ 22,230	\$ 109,013	\$ 131,243
2041	171	\$ 22,230	\$ 109,013	\$ 131,243
2042	171	\$ 22,230	\$ 109,013	\$ 131,243
2043	171	\$ 22,230	\$ 109,013	\$ 131,243
2044	171	\$ 22,230	\$ 109,013	\$ 131,243
2045	171	\$ 22,230	\$ 109,013	\$ 131,243
-	-	-	-	-
2075	171	\$ 22,230	\$ 109,013	\$ 131,243

4.1.1.4 Alternative 2a – Deepen South Oxbow to 12 Feet, Widen Entire Channel to 110 Feet, and Add Turning Basin

Alternative 2a is the combination of the savings from **Table H-20**, **Table H-21**, and **Table H-22**.

4.1.1.5 Alternative 1b – Deepen South Oxbow to 12 Feet, Add Turning Basin, and Add Fleeting Areas 1 & 2

Two fleeting areas (designated FL-1 and FL-2) working together would save a total of 30 minutes per barge (**Figure H-12**). Because barges are currently fledged in the Kaskaskia River, fleeting areas located closer to the dock at KRPD#2 would reduce waiting times, allowing barges to more quickly access the dock or depart from the dock.

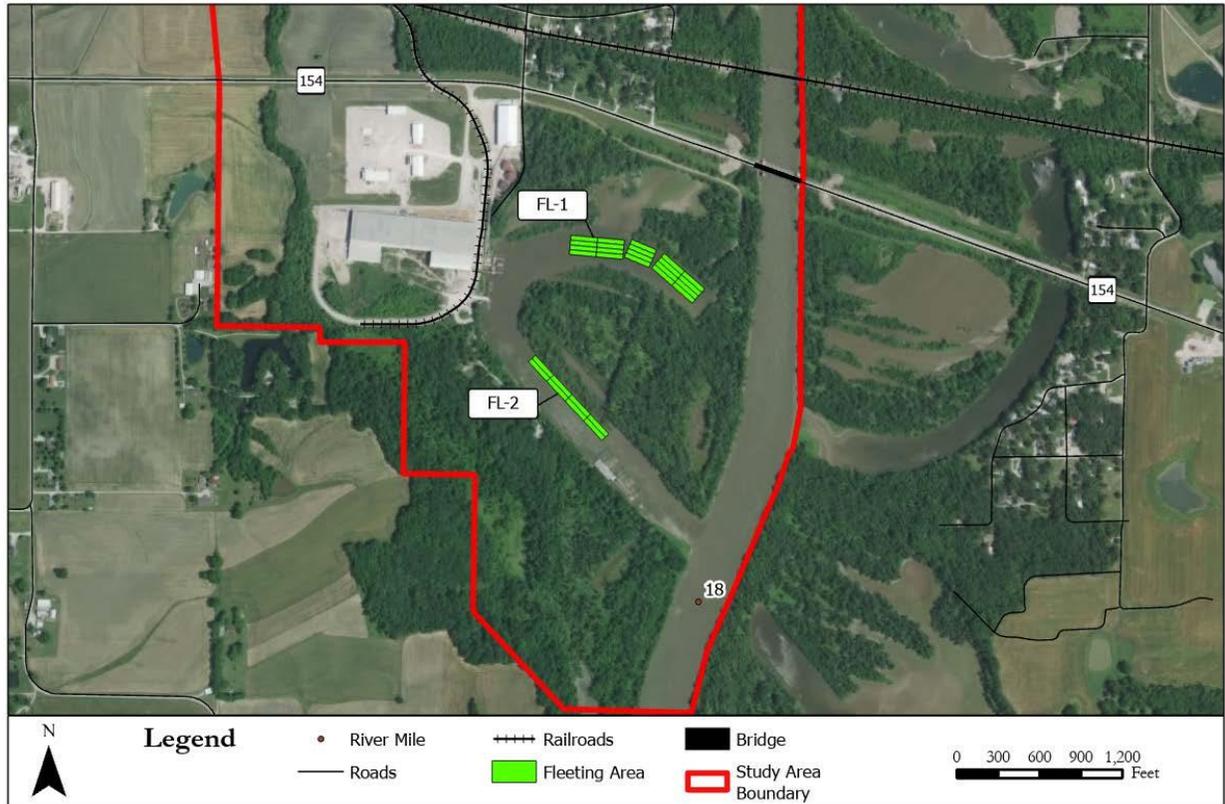


Figure H-12. Fleeting Areas 1 & 2

Time saved per barge would be 30 minutes, and the Port estimates that 50% of the annual number of barges would be able to benefit from this time savings. Using an hourly operating barge rate of \$520, the total number of annual barges (less the number of reduced barges from Alternative 3b) are multiplied by 0.5 and then multiplied by \$260 (half of the \$520 hourly operating barge rate) to calculate annual barge savings. Truck savings are calculated by multiplying the total number of annual barges by 17 (trucks per barge) and then by \$75 (half of the truck hourly operating cost of \$150) as shown in **Table H-23**. These annual benefits are added to the annual benefits shown in **Table H-20** and **Table H-22** for the total annual benefits of Alternative 1b.

Table H-23. Total Annual Savings (Fleeting Areas 1 & 2)—South Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	117	\$ 30,420	\$ 149,175	\$ 179,595
2027	135	\$ 35,100	\$ 172,125	\$ 207,225
2028	150	\$ 39,000	\$ 191,250	\$ 230,250
2029	171	\$ 44,460	\$ 218,025	\$ 262,485
2030	171	\$ 44,460	\$ 218,025	\$ 262,485
2031	171	\$ 44,460	\$ 218,025	\$ 262,485
2032	171	\$ 44,460	\$ 218,025	\$ 262,485

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2033	171	\$ 44,460	\$ 218,025	\$ 262,485
2034	171	\$ 44,460	\$ 218,025	\$ 262,485
2035	171	\$ 44,460	\$ 218,025	\$ 262,485
2036	171	\$ 44,460	\$ 218,025	\$ 262,485
2037	171	\$ 44,460	\$ 218,025	\$ 262,485
2038	171	\$ 44,460	\$ 218,025	\$ 262,485
2039	171	\$ 44,460	\$ 218,025	\$ 262,485
2040	171	\$ 44,460	\$ 218,025	\$ 262,485
2041	171	\$ 44,460	\$ 218,025	\$ 262,485
2042	171	\$ 44,460	\$ 218,025	\$ 262,485
2043	171	\$ 44,460	\$ 218,025	\$ 262,485
2044	171	\$ 44,460	\$ 218,025	\$ 262,485
2045	171	\$ 44,460	\$ 218,025	\$ 262,485
-	-	-	-	-
2075	171	\$ 44,460	\$ 218,025	\$ 262,485

4.1.1.6 Alternative 1a – Deepen South Oxbow to 12 Feet, Widen Entire Channel to 110 Feet, Add Turning Basin, and Add Fleeting Area 1

Fleeting Area 1 (designated FL-1) operating without the existence of Fleeting Area 2 would save a total of 15 minutes per barge, and the Port estimates that 50% of the annual number of barges would be able to benefit from this time savings. Using an hourly operating barge rate of \$520, the total number of annual barges (less the number of reduced barges from Alternative 3b) are multiplied by 0.5 and then multiplied by \$130 (one-fourth of the \$520 hourly operating barge rate) to calculate annual barge savings. Truck savings are calculated by multiplying the total number of annual barges by 17 (trucks per barge) and then by \$38 (one-fourth of the truck hourly operating cost of \$150) as shown in **Table H-24**. These annual benefits are added to the annual benefits shown in **Table H-20**, **Table H-21**, and **Table H-22** for the total annual benefits of Alternative 1a.

Table H-24. Total Annual Savings (Fleeting Area 1)—South Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	117	\$ 15,210	\$ 74,588	\$ 89,798
2027	135	\$ 17,550	\$ 86,063	\$ 103,613
2028	150	\$ 19,500	\$ 95,625	\$ 115,125
2029	171	\$ 22,230	\$ 109,013	\$ 131,243
2030	171	\$ 22,230	\$ 109,013	\$ 131,243
2031	171	\$ 22,230	\$ 109,013	\$ 131,243
2032	171	\$ 22,230	\$ 109,013	\$ 131,243
2033	171	\$ 22,230	\$ 109,013	\$ 131,243
2034	171	\$ 22,230	\$ 109,013	\$ 131,243
2035	171	\$ 22,230	\$ 109,013	\$ 131,243

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2036	171	\$ 22,230	\$ 109,013	\$ 131,243
2037	171	\$ 22,230	\$ 109,013	\$ 131,243
2038	171	\$ 22,230	\$ 109,013	\$ 131,243
2039	171	\$ 22,230	\$ 109,013	\$ 131,243
2040	171	\$ 22,230	\$ 109,013	\$ 131,243
2041	171	\$ 22,230	\$ 109,013	\$ 131,243
2042	171	\$ 22,230	\$ 109,013	\$ 131,243
2043	171	\$ 22,230	\$ 109,013	\$ 131,243
2044	171	\$ 22,230	\$ 109,013	\$ 131,243
2045	171	\$ 22,230	\$ 109,013	\$ 131,243
-	-	-	-	-
2075	171	\$ 22,230	\$ 109,013	\$ 131,243

4.1.1.7 Total Annual Transportation Cost Savings Benefits—South Oxbow

Total annual transportation cost savings benefits for each alternative are shown in **Table H-25**.

Table H-25. Transportation Cost Savings Benefits 2026 - 2075—South Oxbow

Year	Alt 1a	Alt 1b	Alt 2a	Alt 2b	Alt 3a	Alt 3b
2026	\$ 1,043,703	\$ 953,906	\$ 953,906	\$ 774,311	\$ 864,108	\$ 684,513
2027	\$ 1,204,220	\$ 1,100,608	\$ 1,100,608	\$ 893,383	\$ 996,995	\$ 789,770
2028	\$ 1,337,193	\$ 1,222,068	\$ 1,222,068	\$ 991,818	\$ 1,106,943	\$ 876,693
2029	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2030	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2031	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2032	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2033	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2034	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2035	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2036	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2037	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2038	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2039	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2040	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2041	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2042	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2043	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2044	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
2045	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386
-	-	-	-	-	-	-
2075	\$ 1,523,356	\$ 1,392,114	\$ 1,392,114	\$ 1,129,629	\$ 1,260,871	\$ 998,386

NOTE: Benefits for Alt 1b and Alt 2a are identical because the time savings for a wider channel (30 minutes per barge) is the same as the time savings for Fleeting Areas 1 & 2 (30 minutes per barge).

4.1.2 North Oxbow

The North Oxbow is currently unnavigable. In order to estimate traffic, the Port believed that half of the traffic using the South Oxbow would be shifted to the North Oxbow while the other half remains at the South Oxbow if the following alternatives were to be implemented. Additionally, because there are no current operations and no traffic at the North Oxbow, the Port used their professional judgment to assume that similar potential features implemented in the North Oxbow would produce the same savings as those features implemented in the South Oxbow.

4.1.2.1 Alternative 7b – Deepen North Oxbow to 12 Feet

Previous **Table H-20** displays the total annual savings for deepening the South Oxbow. Because we are shifting half of this traffic to the North Oxbow, total annual savings for deepening the North Oxbow are half of these benefits. **Table H-26** displays the total annual savings for deepening the North Oxbow.

Table H-26. Total Annual Savings (Deepen Channel)—North Oxbow

Year	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	\$226,232	\$116,025	\$342,257
2027	\$261,010	\$133,875	\$394,885
2028	\$289,597	\$148,750	\$438,347
2029	\$329,618	\$169,575	\$499,193
2030	\$329,618	\$169,575	\$499,193
2031	\$329,618	\$169,575	\$499,193
2032	\$329,618	\$169,575	\$499,193
2033	\$329,618	\$169,575	\$499,193
2034	\$329,618	\$169,575	\$499,193
2035	\$329,618	\$169,575	\$499,193
2036	\$329,618	\$169,575	\$499,193
2037	\$329,618	\$169,575	\$499,193
2038	\$329,618	\$169,575	\$499,193
2039	\$329,618	\$169,575	\$499,193
2040	\$329,618	\$169,575	\$499,193
2041	\$329,618	\$169,575	\$499,193
2042	\$329,618	\$169,575	\$499,193
2043	\$329,618	\$169,575	\$499,193
2044	\$329,618	\$169,575	\$499,193
2045	\$329,618	\$169,575	\$499,193
-	\$ -	\$ -	\$ -
2075	\$329,618	\$169,575	\$499,193

4.1.2.2 Alternative 7a – Deepen North Oxbow to 12 Feet and Widen Entire Channel to 110 Feet

Previous **Table H-21** displays the total annual savings for widening the South Oxbow. Savings for the North Oxbow are half of these values and are shown in **Table H-27**. These annual benefits are added to the annual benefits shown in **Table H-26** for the total annual benefits of Alternative 7a.

Table H-27. Total Annual Savings (Widen Channel)—North Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	59	\$15,210	\$ 74,588	\$ 89,798
2027	68	\$17,550	\$ 86,063	\$103,613
2028	75	\$19,500	\$ 95,625	\$115,125
2029	86	\$22,230	\$109,013	\$131,243
2030	86	\$22,230	\$109,013	\$131,243
2031	86	\$22,230	\$109,013	\$131,243
2032	86	\$22,230	\$109,013	\$131,243
2033	86	\$22,230	\$109,013	\$131,243
2034	86	\$22,230	\$109,013	\$131,243
2035	86	\$22,230	\$109,013	\$131,243
2036	86	\$22,230	\$109,013	\$131,243
2037	86	\$22,230	\$109,013	\$131,243
2038	86	\$22,230	\$109,013	\$131,243
2039	86	\$22,230	\$109,013	\$131,243
2040	86	\$22,230	\$109,013	\$131,243
2041	86	\$22,230	\$109,013	\$131,243
2042	86	\$22,230	\$109,013	\$131,243
2043	86	\$22,230	\$109,013	\$131,243
2044	86	\$22,230	\$109,013	\$131,243
2045	86	\$22,230	\$109,013	\$131,243
-	-	-	-	-
2075	85.5	\$22,230	\$109,013	\$131,243

4.1.2.3 Alternative 6b – Deepen North Oxbow to 12 Feet and Widen Mouth of North Oxbow

Widening the mouth of the North Oxbow would grant increased maneuverability to barges and would reduce barge time by 45 minutes. However, these benefits would only occur during periods of high water (about 40 days per year). Because 40 days is about 11% of the total 365 days per year, the annual number of barges is multiplied by 0.11 to calculate the number of barges benefiting from the widening of the mouth of the North Oxbow. This number is further halved to represent only half the traffic utilizing the North Oxbow.

This new total number of annual barges is multiplied by \$390 (three-fourths of the \$520 hourly operating barge rate) to calculate annual barge savings. Truck savings are calculated by multiplying the total number of annual barges by 17 (trucks per barge) and then by \$113 (three-fourths of the truck hourly operating cost of \$150) as shown in **Table H-28**. These annual

benefits are added to the annual benefits shown in **Table H-26** for the total annual benefits of Alternative 6b.

Table H-28. Total Annual Savings (Widen Mouth)—North Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	13	\$ 5,019	\$ 24,614	\$ 29,633
2027	15	\$ 5,792	\$ 28,401	\$ 34,192
2028	17	\$ 6,435	\$ 31,556	\$ 37,991
2029	19	\$ 7,336	\$ 35,974	\$ 43,310
2030	19	\$ 7,336	\$ 35,974	\$ 43,310
2031	19	\$ 7,336	\$ 35,974	\$ 43,310
2032	19	\$ 7,336	\$ 35,974	\$ 43,310
2033	19	\$ 7,336	\$ 35,974	\$ 43,310
2034	19	\$ 7,336	\$ 35,974	\$ 43,310
2035	19	\$ 7,336	\$ 35,974	\$ 43,310
2036	19	\$ 7,336	\$ 35,974	\$ 43,310
2037	19	\$ 7,336	\$ 35,974	\$ 43,310
2038	19	\$ 7,336	\$ 35,974	\$ 43,310
2039	19	\$ 7,336	\$ 35,974	\$ 43,310
2040	19	\$ 7,336	\$ 35,974	\$ 43,310
2041	19	\$ 7,336	\$ 35,974	\$ 43,310
2042	19	\$ 7,336	\$ 35,974	\$ 43,310
2043	19	\$ 7,336	\$ 35,974	\$ 43,310
2044	19	\$ 7,336	\$ 35,974	\$ 43,310
2045	19	\$ 7,336	\$ 35,974	\$ 43,310
-	-	-	-	-
2075	19	\$ 7,336	\$ 35,974	\$ 43,310

4.1.2.4 Alternative 6a – Deepen North Oxbow to 12 Feet, Widen Entire Channel to 110 Feet, and Widen Mouth of North Oxbow

Alternative 6a is the combination of the savings from **Table H-26**, **Table H-27**, and **Table H-28**.

4.1.2.5 Alternative 5b – Deepen North Oxbow to 12 Feet and Add Fleeting Areas 4 & 5

Two fleeting areas (designated FL-4 and FL-5) working together would save a total of 30 minutes per barge (**Figure H-13**). These fleeting areas would function similar to FL-1 and FL-2, reducing waiting times and allowing barges to more quickly access or depart from the future dock.

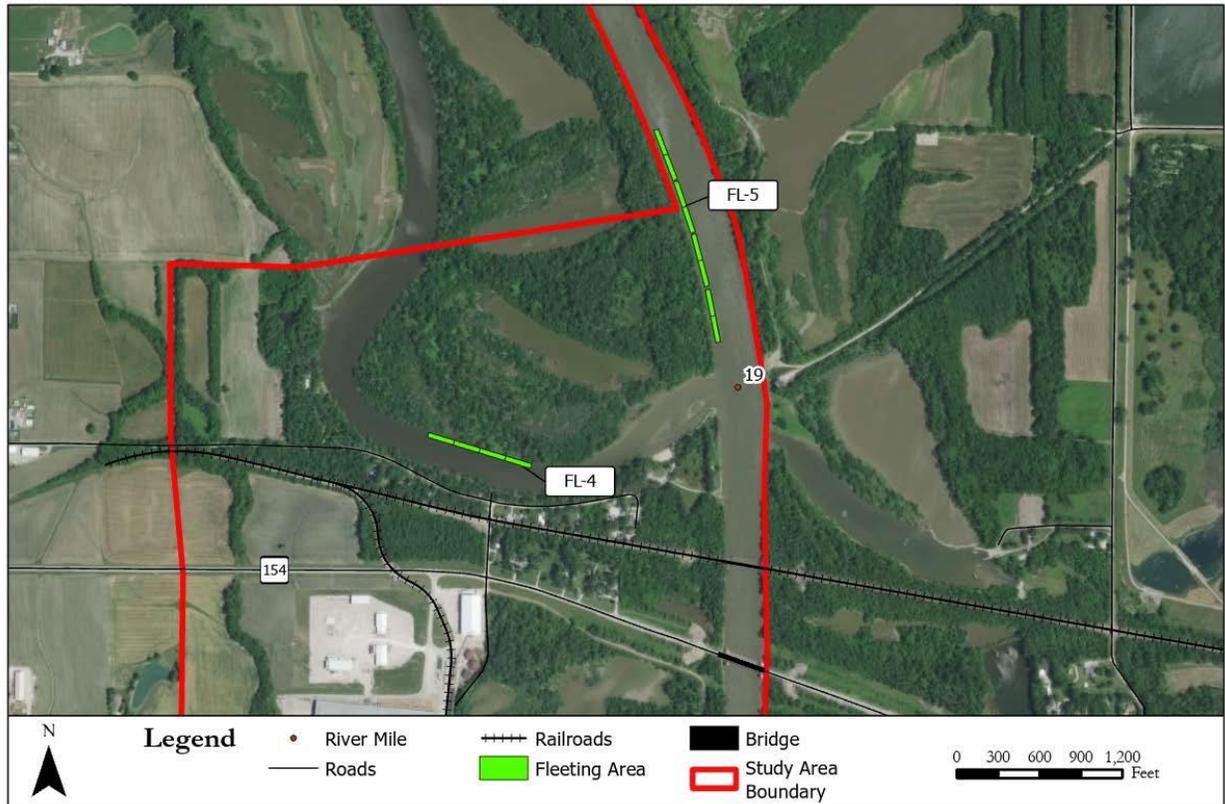


Figure H-13. Fleeting Areas 4 & 5

Previous **Table H-23** displays the total annual savings for adding Fleeting Areas 1 & 2. Savings for the North Oxbow are half of these values and are shown in **Table H-29**. These annual benefits are added to the annual benefits shown in **Table H-26** for the total annual benefits of Alternative 5b.

Table H-29. Total Annual Savings (Fleeting Areas 4 & 5)—North Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	59	\$15,210	\$ 74,588	\$ 89,798
2027	68	\$17,550	\$ 86,063	\$103,613
2028	75	\$19,500	\$ 95,625	\$115,125
2029	86	\$22,230	\$109,013	\$131,243
2030	86	\$22,230	\$109,013	\$131,243
2031	86	\$22,230	\$109,013	\$131,243
2032	86	\$22,230	\$109,013	\$131,243
2033	86	\$22,230	\$109,013	\$131,243
2034	86	\$22,230	\$109,013	\$131,243
2035	86	\$22,230	\$109,013	\$131,243
2036	86	\$22,230	\$109,013	\$131,243
2037	86	\$22,230	\$109,013	\$131,243

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2038	86	\$22,230	\$109,013	\$131,243
2039	86	\$22,230	\$109,013	\$131,243
2040	86	\$22,230	\$109,013	\$131,243
2041	86	\$22,230	\$109,013	\$131,243
2042	86	\$22,230	\$109,013	\$131,243
2043	86	\$22,230	\$109,013	\$131,243
2044	86	\$22,230	\$109,013	\$131,243
2045	86	\$22,230	\$109,013	\$131,243
-	-	-	-	-
2075	86	\$22,230	\$109,013	\$131,243

4.1.2.6 Alternative 5a – Deepen North Oxbow to 12 Feet, Widen Entire Channel to 110 Feet, and Add Fleeting Area 5

Previous **Table H-24** displays the total annual savings for adding Fleeting Area 1. Savings for the North Oxbow are half of these values and are shown in **Table H-30**. These annual benefits are added to the annual benefits shown in **Table H-26** and **Table H-27** for the total annual benefits of Alternative 5a.

Table H-30. Total Annual Savings (Fleeting Area 5)—North Oxbow

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2026	59	\$ 7,605	\$ 37,294	\$ 44,899
2027	68	\$ 8,775	\$ 43,031	\$ 51,806
2028	75	\$ 9,750	\$ 47,813	\$ 57,563
2029	86	\$11,115	\$ 54,506	\$ 65,621
2030	86	\$11,115	\$ 54,506	\$ 65,621
2031	86	\$11,115	\$ 54,506	\$ 65,621
2032	86	\$11,115	\$ 54,506	\$ 65,621
2033	86	\$11,115	\$ 54,506	\$ 65,621
2034	86	\$11,115	\$ 54,506	\$ 65,621
2035	86	\$11,115	\$ 54,506	\$ 65,621
2036	86	\$11,115	\$ 54,506	\$ 65,621
2037	86	\$11,115	\$ 54,506	\$ 65,621
2038	86	\$11,115	\$ 54,506	\$ 65,621
2039	86	\$11,115	\$ 54,506	\$ 65,621
2040	86	\$11,115	\$ 54,506	\$ 65,621
2041	86	\$11,115	\$ 54,506	\$ 65,621
2042	86	\$11,115	\$ 54,506	\$ 65,621
2043	86	\$11,115	\$ 54,506	\$ 65,621
2044	86	\$11,115	\$ 54,506	\$ 65,621
2045	86	\$11,115	\$ 54,506	\$ 65,621
-	-	-	-	-

Year	Number of Barges	Barge Annual Savings	Truck Annual Savings	TOTAL
2075	86	\$11,115	\$ 54,506	\$ 65,621

4.1.2.7 Alternative 4b – Deepen North Oxbow to 12 Feet, Widen Mouth of North Oxbow, and Add Fleeting Areas 4 & 5

Alternative 4b is the combination of the savings from **Table H-26, Table H-28, and Table H-29.**

4.1.2.8 Alternative 4a – Deepen North Oxbow to 12 Feet, Widen Entire Channel to 110 Feet, Widen Mouth of North Oxbow, and Add Fleeting Area 5

Alternative 4a is the combination of the savings from **Table H-26, Table H-27, Table H-28, and Table H-30.**

4.1.2.9 Total Annual Transportation Cost Savings Benefits—North Oxbow

Total annual transportation cost savings benefits for each alternative are shown in **Table H-31.**

Table H-31. Transportation Cost Savings Benefits 2026 - 2075—North Oxbow

Year	Alt 4a	Alt 4b	Alt 5a	Alt 5b	Alt 6a	Alt 6b	Alt 7a	Alt 7b
2026	\$506,586	\$461,687	\$476,953	\$432,054	\$461,687	\$371,890	\$432,054	\$342,257
2027	\$584,496	\$532,690	\$550,304	\$498,498	\$532,690	\$429,077	\$498,498	\$394,885
2028	\$649,025	\$591,463	\$611,034	\$553,472	\$591,463	\$476,338	\$553,472	\$438,347
2029	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2030	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2031	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2032	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2033	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2034	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2035	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2036	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2037	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2038	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2039	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2040	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2041	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2042	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2043	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2044	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
2045	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193
-	-	-	-	-	-	-	-	-
2075	\$739,367	\$673,746	\$696,057	\$630,436	\$673,746	\$542,503	\$630,436	\$499,193

5 NED BENEFITS AND COSTS

5.1 NED COSTS

Financial costs of the proposed project consist of the construction and mitigation costs accrued during construction of the project and over its lifecycle. U.S. Army Corps of Engineers (USACE) cost engineers prepared the cost estimate for each of the proposed alternatives for use in the economic analysis. The sum of these costs is used to determine Interest During Construction (IDC), which represents the economic cost of building a project.

Another financial cost is the annual cost accrued over the life of a project due to Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) activities that represent an increase over the current OMRR&R costs to maintain the entrance channel. OMRR&R was excluded from the list of financial costs above because it is not included in the calculation of IDC. IDC takes into account only those costs incurred during construction.

IDC represents an economic cost of building a project that is considered in the selection of the TSP but does not factor in as a paid cost. IDC is the cost of the foregone opportunity to invest the money required to construct a project for another use. The hypothetical return on another investment, measured as IDC, is counted as an NED cost. As an economic cost rather than a financial cost, IDC is not considered in the determination of cost-sharing responsibilities.

IDC reflects that project construction costs are not incurred in one lump sum, but as a flow over the construction period. This analysis assumes that construction expenditures are incurred at a constant rate over the period of construction, an assumption which is supported by the NED Manual for Deep Draft Navigation.

The calculation of IDC is summarized in the NED Manual for Deep Draft Navigation as:

If B is the project base year (the year in which construction costs end and the project begins to derive benefits), then the total cost incurred during construction, including actual expenditures and implicit interest payment, is the equivalent lump-sum expenditure in the base year, CB, which is computed as:

$CB = \sum_{i=1}^t C_i (1+r)^{t-i}$; where

C_i construction expenditures in period i

r per unit interest rate; and

t number of construction periods up to the year that the project is implemented, which is the start of the period of analysis

Therefore, $IDC = CB - \text{Estimated First Cost of Construction}$

Calculating the hypothetical interest earned on each yearly construction payment and summing them to arrive at the total construction investment cost (CB) enables the calculation of IDC by taking the difference between CB and estimated construction cost. IDC is, therefore, a function of both estimated total construction cost and construction time. The longer it takes to construct a project, the larger the hypothetical alternative investment grows. The implication behind this fact is that IDC accounts for a larger proportion of NED Costs the larger the project and the longer it takes to construct. Total present value is the sum of the present value of first cost and annual OMRR&R costs over the 50-year period of analysis; average annual cost is calculated by multiplying total present value by the 50-year amortization factor.

Table H-32 shows the NED first costs for all South Oxbow alternatives, and **Table H-33** shows the NED first costs for all North Oxbow alternatives. **Table H-34** and **Table H-35** show total investment, IDC, average annual first costs, average annual incremental OMRR&R, and total average annual costs for the South and North Oxbow alternatives. Values are at FY2024 price levels and amortized at the 2024 Federal discount rate of 2.75 percent.

5.1.1 South Oxbow First Costs

Table H-32. First Costs—South Oxbow

Alternative	Item	Project First Cost
1a	Construction w/ Contingency	\$ 9,740,000
	Preconstruction Engineering, and Design	\$ 1,753,000
	Supervision and Administration	\$ 974,000
	Real Estate	\$ 271,000
	Environmental Mitigation	\$ 1,050,000
	TOTAL	\$13,788,000
1b	Construction w/ Contingency	\$ 9,543,000
	Preconstruction Engineering, and Design	\$ 1,718,000
	Supervision and Administration	\$ 954,000
	Real Estate	\$ 290,000
	Environmental Mitigation	\$ 1,100,000
	TOTAL	\$13,605,000
2a	Construction w/ Contingency	\$ 8,221,000
	Preconstruction Engineering, and Design	\$ 1,480,000
	Supervision and Administration	\$ 822,000
	Real Estate	\$ 247,000
	Environmental Mitigation	\$ 1,000,000
	TOTAL	\$11,770,000
2b	Construction w/ Contingency	\$ 7,608,000
	Preconstruction Engineering, and Design	\$ 1,370,000
	Supervision and Administration	\$ 761,000
	Real Estate	\$ 247,000
	Environmental Mitigation	\$ 1,000,000
	TOTAL	\$10,986,000
3a	Construction w/ Contingency	\$ 2,961,000
	Preconstruction Engineering, and Design	\$ 533,000
	Supervision and Administration	\$ 297,000
	Real Estate	\$ 96,000
	Environmental Mitigation	\$ 1,000,000
	TOTAL	\$ 4,887,000
3b	Construction w/ Contingency	\$ 2,350,000
	Preconstruction Engineering, and Design	\$ 423,000
	Supervision and Administration	\$ 236,000
	Real Estate	\$ 96,000
	Environmental Mitigation	\$ 1,000,000
	TOTAL	\$ 4,105,000

5.1.2 North Oxbow First Costs

Table H-33. First Costs—North Oxbow

Alternative	Item	Project First Cost
4a	Construction w/ Contingency	\$28,986,000
	Preconstruction Engineering, and Design	\$ 5,217,000
	Supervision and Administration	\$ 2,899,000
	Real Estate	\$ 217,000
	Environmental Mitigation	\$ 1,400,000
	TOTAL	\$38,719,000
4b	Construction w/ Contingency	\$27,181,000
	Preconstruction Engineering, and Design	\$ 4,893,000
	Supervision and Administration	\$ 2,719,000
	Real Estate	\$ 235,000
	Environmental Mitigation	\$ 1,450,000
	TOTAL	\$36,478,000
5a	Construction w/ Contingency	\$27,943,000
	Preconstruction Engineering, and Design	\$ 5,029,000
	Supervision and Administration	\$ 2,794,000
	Real Estate	\$ 202,000
	Environmental Mitigation	\$ 1,400,000
	TOTAL	\$37,368,000
5b	Construction w/ Contingency	\$25,922,000
	Preconstruction Engineering, and Design	\$ 4,666,000
	Supervision and Administration	\$ 2,592,000
	Real Estate	\$ 220,000
	Environmental Mitigation	\$ 1,450,000
	TOTAL	\$34,850,000
6a	Construction w/ Contingency	\$27,842,000
	Preconstruction Engineering, and Design	\$ 5,011,000
	Supervision and Administration	\$ 2,785,000
	Real Estate	\$ 194,000
	Environmental Mitigation	\$ 1,300,000
	TOTAL	\$37,132,000
6b	Construction w/ Contingency	\$25,979,000
	Preconstruction Engineering, and Design	\$ 4,676,000
	Supervision and Administration	\$ 2,598,000
	Real Estate	\$ 194,000
	Environmental Mitigation	\$ 1,300,000
	TOTAL	\$34,747,000
7a	Construction w/ Contingency	\$26,802,000
	Preconstruction Engineering, and Design	\$ 4,824,000
	Supervision and Administration	\$ 2,680,000
	Real Estate	\$ 179,000
	Environmental Mitigation	\$ 1,300,000
	TOTAL	\$35,785,000
7b	Construction w/ Contingency	\$22,819,000
	Preconstruction Engineering, and Design	\$ 4,107,000
	Supervision and Administration	\$ 2,282,000
	Real Estate	\$ 179,000
	Environmental Mitigation	\$ 1,300,000
	TOTAL	\$30,687,000

5.1.3 South Oxbow Total Costs

Table H-34. Total Costs—South Oxbow

Channel Alternative	Alt 1a	Alt 1b	Alt 2a	Alt 2b	Alt 3a	Alt 3b
First Cost of Construction	\$ 13,788,000	\$13,605,000	\$ 11,770,000	\$ 10,986,000	\$ 4,887,000	\$ 4,105,000
Interest During Construction	\$ 188,000	\$ 186,000	\$ 161,000	\$ 150,000	\$ 67,000	\$ 56,000
Total Investment	\$ 13,976,000	\$13,791,000	\$ 11,931,000	\$ 11,136,000	\$ 4,954,000	\$ 4,161,000
Average Annual First Cost	\$ 518,000	\$ 511,000	\$ 442,000	\$ 412,000	\$ 183,000	\$ 154,000
Average Annual Increm. O&M	\$ 151,000	\$ 146,000	\$ 94,000	\$ 86,000	\$ 61,000	\$ 52,000
Total Average Annual Cost	\$ 668,000	\$ 657,000	\$ 536,000	\$ 498,000	\$ 245,000	\$ 207,000

5.1.4 North Oxbow Total Costs

Table H-35. Total Costs—North Oxbow

Channel Alternative	Alt 4a	Alt 4b	Alt 5a	Alt 5b	Alt 6a	Alt 6b	Alt 7a	Alt 7b
First Cost of Construction	\$ 38,719,000	\$36,478,000	\$ 37,368,000	\$ 34,850,000	\$ 37,132,000	\$ 34,747,000	\$ 35,785,000	\$ 30,687,000
Interest During Construction	\$ 529,000	\$ 498,000	\$ 510,000	\$ 476,000	\$ 507,000	\$ 475,000	\$ 489,000	\$ 419,000
Total Investment	\$ 39,248,000	\$36,976,000	\$ 37,878,000	\$ 35,326,000	\$ 37,639,000	\$ 35,222,000	\$ 36,274,000	\$ 31,106,000
Average Annual First Cost	\$ 1,454,000	\$ 1,370,000	\$ 1,403,000	\$ 1,309,000	\$ 1,394,000	\$ 1,305,000	\$ 1,344,000	\$ 1,152,000
Average Annual Increm. O&M	\$ 162,000	\$ 135,000	\$ 149,000	\$ 119,000	\$ 152,000	\$ 126,000	\$ 139,000	\$ 110,000
Total Average Annual Cost	\$ 1,616,000	\$ 1,505,000	\$ 1,552,000	\$ 1,428,000	\$ 1,546,000	\$ 1,431,000	\$ 1,482,000	\$ 1,263,000

5.2 PRELIMINARY NET BENEFITS AND BENEFIT-COST (B/C) RATIO

Having identified the costs and benefits associated with all alternatives, identification of the tentatively selected plan (TSP) requires a comparison of the average annual net benefits resulting from each alternative. **Table H-36** and **Table H-37** contain the NED annual costs and benefits as well as the resulting average annual net benefits and benefit-cost ratios for the South and North Oxbow alternatives at FY2024 price levels and amortized at the 2024 Federal discount rate of 2.75 percent.

Using preliminary cost estimates, Alternative 3a has the greatest average annual net benefits at \$1,004,000 and a B/C ratio of 5.1 to 1 for the South Oxbow. For the North Oxbow, no alternatives have a positive B/C ratio.

5.2.1 South Oxbow Average Annual Costs and Benefits

Table H-36. Preliminary Average Annual Costs and Benefits for the South Oxbow Alternatives

Channel Alternative	Alternative 1a	Alternative 1b	Alternative 2a	Alternative 2b	Alternative 3a	Alternative 3b
First Cost of Construction	\$ 13,788,000	\$13,605,000	\$ 11,770,000	\$ 10,986,000	\$ 4,887,000	\$ 4,105,000
Interest During Construction	\$ 188,000	\$ 186,000	\$ 161,000	\$ 150,000	\$ 67,000	\$ 56,000
Total Investment	\$ 13,976,000	\$13,791,000	\$ 11,931,000	\$ 11,136,000	\$ 4,954,000	\$ 4,161,000
Average Annual First Cost	\$ 518,000	\$ 511,000	\$ 442,000	\$ 412,000	\$ 183,000	\$ 154,000
Average Annual Increm. O&M	\$ 151,000	\$ 146,000	\$ 94,000	\$ 86,000	\$ 61,000	\$ 52,000
Total Average Annual Cost	\$ 668,000	\$ 657,000	\$ 536,000	\$ 498,000	\$ 245,000	\$ 207,000
Total Average Annual Benefits	\$ 1,509,000	\$ 1,379,000	\$ 1,379,000	\$ 1,119,000	\$ 1,249,000	\$ 989,000
Net Benefits	\$ 841,000	\$ 722,000	\$ 843,000	\$ 621,000	\$ 1,004,000	\$ 782,000
B/C Ratio	2.3	2.1	2.6	2.2	5.1	4.8

5.2.2 North Oxbow Average Annual Costs and Benefits

Table H-37. Preliminary Average Annual Costs and Benefits for the North Oxbow Alternatives

Channel Alternative	Alternative 4a	Alternative 4b	Alternative 5a	Alternative 5b	Alternative 6a	Alternative 6b	Alternative 7a	Alternative 7b
First Cost of Construction	\$ 38,719,000	\$36,478,000	\$ 37,368,000	\$ 34,850,000	\$ 37,132,000	\$ 34,747,000	\$ 35,785,000	\$ 30,687,000
Interest During Construction	\$ 529,000	\$ 498,000	\$ 510,000	\$ 476,000	\$ 507,000	\$ 475,000	\$ 489,000	\$ 419,000
Total Investment	\$ 39,248,000	\$36,976,000	\$ 37,878,000	\$ 35,326,000	\$ 37,639,000	\$ 35,222,000	\$ 36,274,000	\$ 31,106,000
Average Annual First Cost	\$ 1,454,000	\$ 1,370,000	\$ 1,403,000	\$ 1,309,000	\$ 1,394,000	\$ 1,305,000	\$ 1,344,000	\$ 1,152,000
Average Annual Increm. O&M	\$ 162,000	\$ 135,000	\$ 149,000	\$ 119,000	\$ 152,000	\$ 126,000	\$ 139,000	\$ 110,000
Total Average Annual Cost	\$ 1,616,000	\$ 1,505,000	\$ 1,552,000	\$ 1,428,000	\$ 1,546,000	\$ 1,431,000	\$ 1,482,000	\$ 1,263,000
Total Average Annual Benefits	\$ 732,000	\$ 667,000	\$ 689,000	\$ 624,000	\$ 667,000	\$ 537,000	\$ 624,000	\$ 494,000
Net Benefits	\$ (884,000)	\$ (838,000)	\$ (863,000)	\$ (804,000)	\$ (879,000)	\$ (894,000)	\$ (858,000)	\$ (769,000)
B/C Ratio	0.5	0.4						

5.3 FINAL ARRAY

For the final array, alternatives 1b, 2b, and 3b were screened out because they had lower net benefits compared to their counterpart alternatives. They were also less effective towards achieving the study objective. The North Oxbow has no alternatives with a positive B/C ratio.

Table H-38 contains the NED annual costs and benefits as well as the resulting average annual net benefits and benefit-cost ratios for the South Oxbow alternatives at FY2024 price levels and amortized at the 2024 Federal discount rate of 2.75 percent.

Using preliminary cost estimates, Alternative 3a has the greatest average annual net benefits at \$1,004,000 and a B/C ratio of 5.1 to 1 for the South Oxbow.

Table H-38. Average Annual Costs and Benefits—South Oxbow

Channel Alternative	Alt 1a	Alt 2a	Alt 3a
First Cost of Construction	\$ 13,788,000	\$ 11,770,000	\$ 4,887,000
Interest During Construction	\$ 188,000	\$ 161,000	\$ 67,000
Total Investment	\$ 13,976,000	\$ 11,931,000	\$ 4,954,000
Average Annual First Cost	\$ 518,000	\$ 442,000	\$ 183,000
Average Annual Increm. O&M	\$ 151,000	\$ 94,000	\$ 61,000
Total Average Annual Cost	\$ 668,000	\$ 536,000	\$ 245,000
Total Average Annual Benefits	\$ 1,509,000	\$ 1,379,000	\$ 1,249,000
Net Benefits	\$ 841,000	\$ 843,000	\$ 1,004,000
B/C Ratio	2.3	2.6	5.1

5.4 TENTATIVELY SELECTED PLAN

Alternative 3a is the TSP with average annual net benefits of \$1,004,000 and a B/C ratio of 5.1 to 1 (**Table H-39**).

Table H-39. Average Annual Costs and Benefits of TSP (Alt. 3a)

Cost or Benefit	Amount
Investment Cost	
First Cost	\$4,887,000
Interest During Construction	\$67,000
Total Investment Cost	\$4,954,000
Average Annual Cost	
Average Annual First Cost	\$183,000
Average Annual Incremental OMRR&R	\$61,000
Total Average Annual Cost	\$245,000
Benefits	
Average Annual Benefits	\$1,249,000

Cost or Benefit	Amount
Net Annual Benefits	\$1,004,000
B/C Ratio (computed at 2.75%)	5.1

5.5 RISK & UNCERTAINTY AND SENSITIVITY ANALYSIS

The Principles & Guidelines and subsequent ER1105-2-100 recognize the inherent variability in water resources planning. Navigation projects in particular are fraught with uncertainty about future conditions, particularly as they relate to the commodity and fleet forecast. Therefore a sensitivity analysis in which key quantitative assumptions and computations are changed is required to assess their effect on the final outcome. Typically, high- and low-traffic scenarios are generated and then evaluated to determine if a project is still justified.

5.5.1 Maximum Traffic for North Oxbow

In estimating the benefits for the North Oxbow, half of the traffic projected to use the South Oxbow was shifted to the North Oxbow while the other half remained at the South Oxbow. As shown previously in **Table H-37**, all North Oxbow alternatives had B/C ratios well below 1 when traffic is split 50/50. A maximum traffic sensitivity analysis was created in which all traffic currently moving through the South Oxbow were to shift entirely to the North Oxbow. In this scenario, still none of the alternatives produce a B/C ratio greater than 1; Alternative 4a produces the closest at 0.9 (**Table H-40**). Because it is unrealistic for all South Oxbow traffic to shift to the North Oxbow, there does not appear to be a viable traffic scenario in which any of the North Oxbow alternatives could be justified.

Table H-40. Average Annual Costs and Benefits—North Oxbow Maximum Traffic

Channel Alternative	Alternative 4a	Alternative 4b	Alternative 5a	Alternative 5b	Alternative 6a	Alternative 6b	Alternative 7a	Alternative 7b
First Cost of Construction	\$ 38,719,000	\$36,478,000	\$ 37,368,000	\$ 34,850,000	\$ 37,132,000	\$ 34,747,000	\$ 35,785,000	\$ 30,687,000
Interest During Construction	\$ 529,000	\$ 498,000	\$ 510,000	\$ 476,000	\$ 507,000	\$ 475,000	\$ 489,000	\$ 419,000
Total Investment	\$ 39,248,000	\$36,976,000	\$ 37,878,000	\$ 35,326,000	\$ 37,639,000	\$ 35,222,000	\$ 36,274,000	\$ 31,106,000
Average Annual First Cost	\$ 1,454,000	\$ 1,370,000	\$ 1,403,000	\$ 1,309,000	\$ 1,394,000	\$ 1,305,000	\$ 1,344,000	\$ 1,152,000
Average Annual Increm. O&M	\$ 162,000	\$ 135,000	\$ 149,000	\$ 119,000	\$ 152,000	\$ 126,000	\$ 139,000	\$ 110,000
Total Average Annual Cost	\$ 1,616,000	\$ 1,505,000	\$ 1,552,000	\$ 1,428,000	\$ 1,546,000	\$ 1,431,000	\$ 1,482,000	\$ 1,263,000
Total Average Annual Benefits	\$ 1,465,000	\$ 1,335,000	\$ 1,379,000	\$ 1,249,000	\$ 1,335,000	\$ 1,075,000	\$ 1,249,000	\$ 989,000
Net Benefits	\$ (151,000)	\$ (170,000)	\$ (173,000)	\$ (179,000)	\$ (211,000)	\$ (356,000)	\$ (233,000)	\$ (274,000)
B/C Ratio	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8

5.5.2 Gypsum Reduction

Gypsum tonnage is expected to remain at about 200,000 tons for the 50-year period of analysis. For this sensitivity analysis, the recent upsurge in gypsum does not occur, and the 5-year average gypsum tonnage of 16,000 tons from 2017 – 2021 is used (the upsurge in gypsum began in 2022). In this instance, Alternative 3a is still justified and has the greatest average annual net benefits at \$687,000 and a B/C ratio of 3.8 (Table H-41).

Table H-41. Average Annual Costs and Benefits—South Oxbow Gypsum Reduction

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
First Cost of Construction	\$ 13,788,000	\$ 11,770,000	\$ 4,887,000
Interest During Construction	\$ 188,000	\$ 161,000	\$ 67,000
Total Investment	\$ 13,976,000	\$ 11,931,000	\$ 4,954,000
Average Annual First Cost	\$ 518,000	\$ 442,000	\$ 183,000
Average Annual Increm. O&M	\$ 151,000	\$ 94,000	\$ 61,000
Total Average Annual Cost	\$ 668,000	\$ 536,000	\$ 245,000
Total Average Annual Benefits	\$ 1,125,000	\$ 1,029,000	\$ 932,000
Net Benefits	\$ 457,000	\$ 493,000	\$ 687,000
B/C Ratio	1.7	1.9	3.8

5.5.3 Fertilizer Reduction

Gateway FS is expected to increase their building capacity at KRPD#2 as well as purchase a new conveyor belt which will allow them to expand their inbound tonnage to 100,000 tons by 2027. For this sensitivity analysis, Gateway FS does not expand, and tonnage remains at its 5-year average from 2019 – 2023 of 60,000 tons. In this instance, Alternative 3a is still justified and has the greatest average annual net benefits at \$912,000 and a B/C ratio of 4.7 (Table H-42).

Table H-42. Average Annual Costs and Benefits—South Oxbow Fertilizer Reduction

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
First Cost of Construction	\$ 13,788,000	\$ 11,770,000	\$ 4,887,000
Interest During Construction	\$ 188,000	\$ 161,000	\$ 67,000
Total Investment	\$ 13,976,000	\$ 11,931,000	\$ 4,954,000
Average Annual First Cost	\$ 518,000	\$ 442,000	\$ 183,000
Average Annual Increm. O&M	\$ 151,000	\$ 94,000	\$ 61,000
Total Average Annual Cost	\$ 668,000	\$ 536,000	\$ 245,000
Total Average Annual Benefits	\$ 1,398,000	\$ 1,277,000	\$ 1,157,000
Net Benefits	\$ 730,000	\$ 741,000	\$ 912,000

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
B/C Ratio	2.1	2.4	4.7

5.5.4 Steel Reduction

TMW is scheduled for improvements which will allow it to receive 270,000 tons of steel per year. For this sensitivity analysis, TMW improvements do not occur, and tonnage remains at its 5-year average from 2019 – 2023 of 39,000 tons. In this instance, Alternative 3a is still justified and has the greatest average annual net benefits at \$517,000 and a B/C ratio of 3.1 (Table H-43).

Table H-43. Average Annual Costs and Benefits—South Oxbow Steel Reduction

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
First Cost of Construction	\$ 13,788,000	\$ 11,770,000	\$ 4,887,000
Interest During Construction	\$ 188,000	\$ 161,000	\$ 67,000
Total Investment	\$ 13,976,000	\$ 11,931,000	\$ 4,954,000
Average Annual First Cost	\$ 518,000	\$ 442,000	\$ 183,000
Average Annual Increm. O&M	\$ 151,000	\$ 94,000	\$ 61,000
Total Average Annual Cost	\$ 668,000	\$ 536,000	\$ 245,000
Total Average Annual Benefits	\$ 920,000	\$ 841,000	\$ 762,000
Net Benefits	\$ 252,000	\$ 305,000	\$ 517,000
B/C Ratio	1.4	1.6	3.1

5.5.5 Total Reduction

For this sensitivity analysis, all of the above reductions for gypsum, fertilizer, and steel occur. Tonnage for gypsum, fertilizer, and steel are 16,000, 60,000, and 39,000 tons, respectively. In this instance, Alternative 3a is still justified and has the greatest average annual net benefits at \$17,000 and a B/C ratio of 1.1 (Table H-44).

Table H-44. Average Annual Costs and Benefits—South Oxbow Total Reduction

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
First Cost of Construction	\$ 13,788,000	\$ 11,770,000	\$ 4,887,000
Interest During Construction	\$ 188,000	\$ 161,000	\$ 67,000
Total Investment	\$ 13,976,000	\$ 11,931,000	\$ 4,954,000
Average Annual First Cost	\$ 518,000	\$ 442,000	\$ 183,000
Average Annual Increm. O&M	\$ 151,000	\$ 94,000	\$ 61,000

Kaskaskia River Regional Port Feasibility Study with Integrated Environmental Assessment
 Draft Report

Channel Alternative	Alternative 1a	Alternative 2a	Alternative 3a
Total Average Annual Cost	\$ 668,000	\$ 536,000	\$ 245,000
Total Average Annual Benefits	\$ 316,000	\$ 289,000	\$ 262,000
Net Benefits	\$ (352,000)	\$ (247,000)	\$ 17,000
B/C Ratio	0.5	0.5	1.1

6 REGIONAL ECONOMIC DEVELOPMENT

6.1 RECONS MODEL

The USACE Institute for Water Resources, Louis Berger, and Michigan State University have developed a regional economic impact modeling tool, RECONS (Regional ECONomic System), that provides estimates of jobs and other economic measures such as labor income, value added, and sales that are supported by USACE programs, projects, and activities. This modeling tool automates calculations and generates estimates of jobs, labor income, value added, and sales through the use of IMPLAN®'s multipliers and ratios, customized impact areas for USACE project locations, and customized spending profiles for USACE projects, business lines, and work activities. RECONS allows the USACE to evaluate the regional economic impact and contribution associated with USACE expenditures, activities, and infrastructure.

6.2 RESULTS

Table H-45. Local, State, and National Impacts: Alternative 1a

Area	Local Capture	Output	Jobs*	Labor Income	Value Added
Local					
Direct Impact		\$9,060,034	75.9	\$6,238,763	\$6,042,282
Secondary Impact		\$9,801,855	50.7	\$3,295,766	\$5,555,651
Total Impact	\$9,060,034	\$18,861,889	126.7	\$9,534,529	\$11,597,934
State					
Direct Impact		\$9,717,560	82.2	\$6,707,190	\$6,705,441
Secondary Impact		\$10,590,771	54.3	\$3,551,074	\$6,036,940
Total Impact	\$9,717,560	\$20,308,331	136.5	\$10,258,265	\$12,742,380
US					
Direct Impact		\$12,591,425	102.6	\$7,928,829	\$8,219,189
Secondary Impact		\$21,402,046	95.2	\$6,720,243	\$11,602,206
Total Impact	\$12,591,425	\$33,993,472	197.9	\$14,649,072	\$19,821,395

* Jobs are presented in full-time equivalence (FTE)

Table H-46. Local, State, and National Impacts: Alternative 2a

Area	Local Capture	Output	Jobs*	Labor Income	Value Added
Local					
Direct Impact		\$7,230,788	60.6	\$4,979,140	\$4,822,329
Secondary Impact		\$7,822,834	40.5	\$2,630,341	\$4,433,950
Total Impact	\$7,230,788	\$15,053,622	101.1	\$7,609,481	\$9,256,279
State					
Direct Impact		\$7,755,558	65.6	\$5,352,990	\$5,351,594
Secondary Impact		\$8,452,465	43.3	\$2,834,103	\$4,818,065
Total Impact	\$7,755,558	\$16,208,023	109.0	\$8,187,093	\$10,169,659

Area	Local Capture	Output	Jobs*	Labor Income	Value Added
US					
Direct Impact		\$10,049,182	81.9	\$6,327,977	\$6,559,712
Secondary Impact		\$17,080,914	76.0	\$5,363,408	\$9,259,689
Total Impact	\$10,049,182	\$27,130,096	157.9	\$11,691,384	\$15,819,401

* Jobs are presented in full-time equivalence (FTE)

Table H-47. Local, State, and National Impacts: Alternative 3a

Area	Local Capture	Output	Jobs*	Labor Income	Value Added
Local					
Direct Impact		\$3,003,821	25.2	\$2,068,439	\$2,003,297
Secondary Impact		\$3,249,769	16.8	\$1,092,699	\$1,841,956
Total Impact	\$3,003,821	\$6,253,591	42.0	\$3,161,138	\$3,845,253
State					
Direct Impact		\$3,221,822	27.3	\$2,223,745	\$2,223,164
Secondary Impact		\$3,511,332	18.0	\$1,177,346	\$2,001,525
Total Impact	\$3,221,822	\$6,733,153	45.3	\$3,401,090	\$4,224,690
US					
Direct Impact		\$4,174,641	34.0	\$2,628,774	\$2,725,042
Secondary Impact		\$7,095,771	31.6	\$2,228,072	\$3,846,669
Total Impact	\$4,174,641	\$11,270,412	65.6	\$4,856,847	\$6,571,711

* Jobs are presented in full-time equivalence (FTE)