

FY 1997 Proposed Rail Improvement Program Supplement



Illinois Department
of Transportation

PREFACE

The Illinois of Transportation has, in the past, published its Rail Program yearly, and its Rail Plan as needs dictate. The department will now combine both documents into one, which will be published yearly. The Supplement to the Rail Program contains those rail plan amendments which have been published subsequent to the 1991-92 Rail Plan. This Supplement also contains the benefit/cost methodology used to create the amendments.

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LINE: At Bourbonnais, Illinois
OWNER: Belson Scrap & Steel, Inc.
OPERATOR: Illinois Central Railroad

PROBLEM STATEMENT

A scrap steel recycling company located in the Kankakee area is planning to relocate and expand its operation involving the resale of secondary steel products and steel scrap. The company is physically constrained at its current location and envisions relocating and expanding at an undeveloped site in the nearby village of Bourbonnais. Rail service at the new location is essential, and the company has requested a low-interest loan for a rail spur from the state's Rail Freight Assistance Program.

The following analysis examines the benefits and costs of the proposal.

BACKGROUND

Belson Scrap & Steel currently operates a ferrous metal recycling and distribution yard in Kankakee. This site, served by the Illinois Central, is near its capacity. In order to take advantage of marketing opportunities to process scrap steel for use in remilling operations, the company must expand its storage, sorting and processing capabilities. It has located a new site and is now proceeding with its overall development plans.

LOCATION

The proposed recycling operation would be located in the greater Kankakee urban area, more specifically in the village of Bourbonnais immediately to the north of the city of Kankakee and the village of Bradley. This location in Kankakee County is approximately 51 miles south of Chicago. Figure 1 illustrates the location in relation to the regional rail network. As depicted in the site plan schematic in Figure 2, the site would be served via an industrial lead track from the Illinois Central Railroad's main line between Chicago and New Orleans.

ALTERNATE TRANSPORTATION

Direct access to rail transportation is critical for this business. Suppliers ship in large quantities from nearby mills by rail, and distant markets for scrap material originated by the shipper can only be reached economically by the higher volume-lower rate service provided by the rail mode.

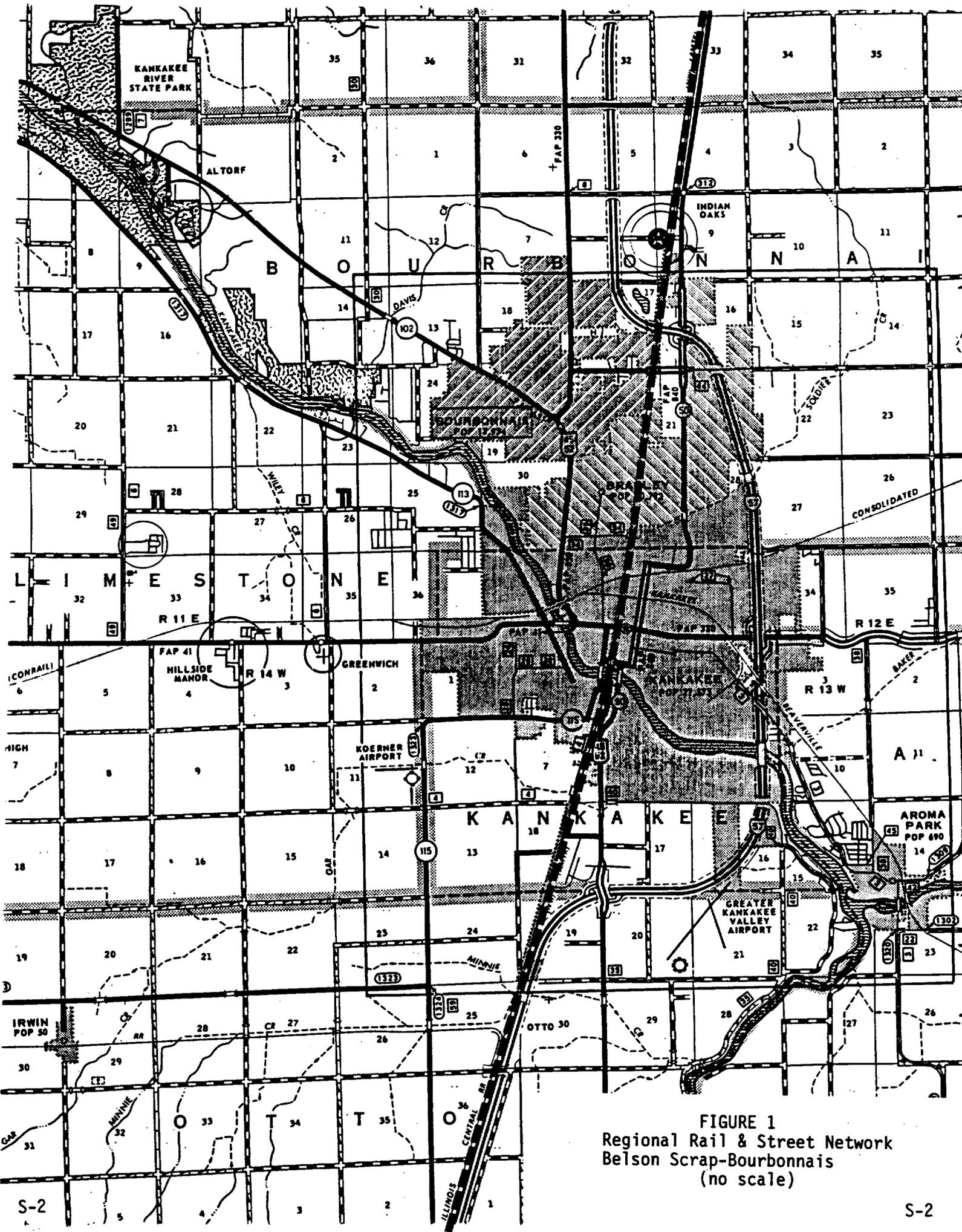


FIGURE 1
 Regional Rail & Street Network
 Belson Scrap-Bourbonnais
 (no scale)

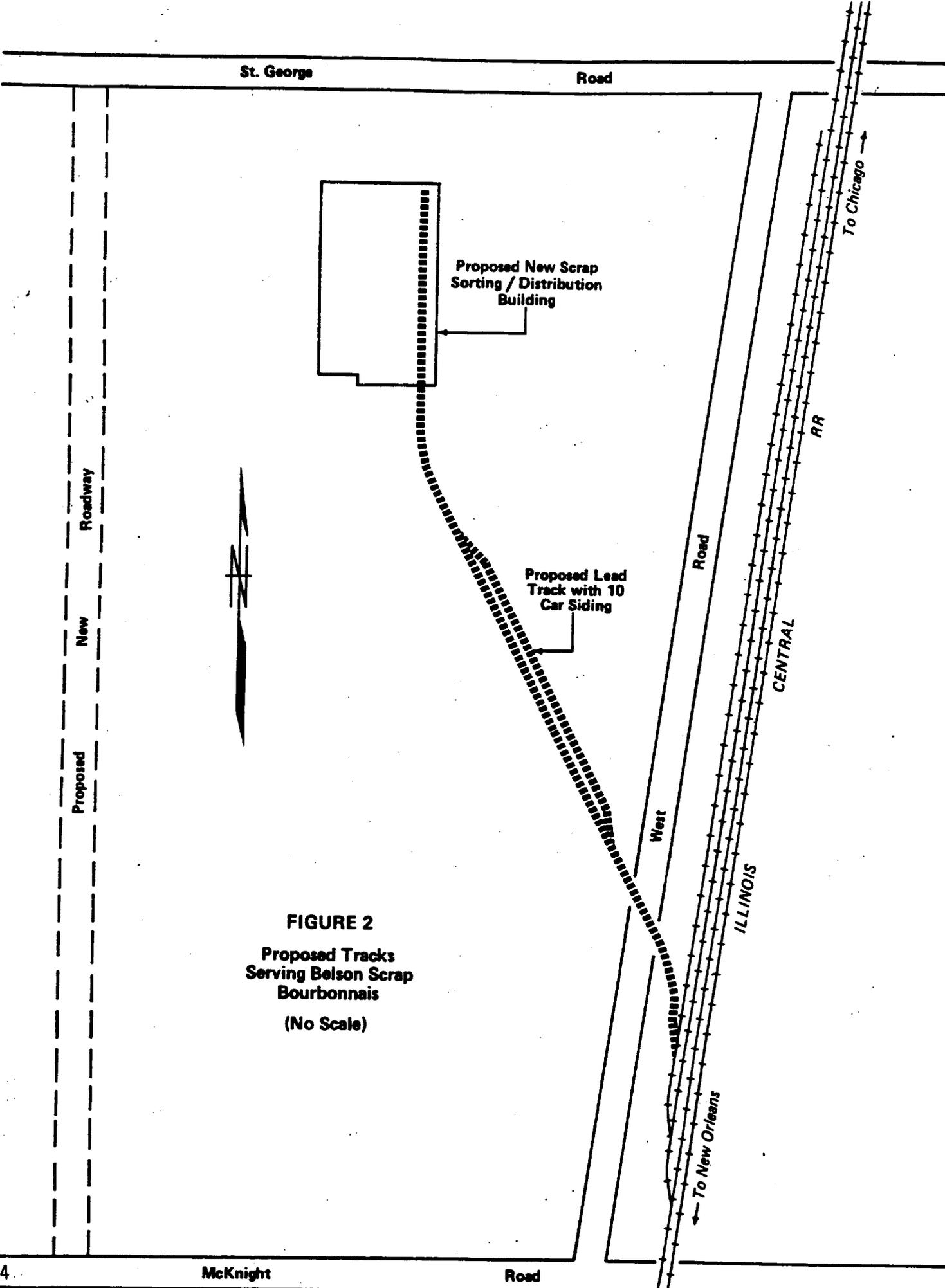


FIGURE 2
Proposed Tracks
Serving Belson Scrap
Bourbonnais
(No Scale)

A more detailed estimate of the costs for constructing the rail spur, including the runaround/storage track depicted in Figure 2, is show below in Table 1A.

-TABLE 1A-

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/Equip</u>	<u>Other</u>	<u>Total</u>
Engineering	L.S.	--	--	\$23,544	\$23,544
Clearing/Grubbing	L.S.	--	--	8,000	8,000
Grading	L.S.	--	--	39,000	39,000
Subballast @ 8"	2,421 C.Y.	\$28,955	\$12,492	--	41,447
Skeleton Track	2,600 T.F.	--	34,138	--	34,138
Rail-1151b-SH	5,200 L.F.	46,800	--	--	46,800
Ties	2,339 Ea.	58,475	--	--	58,475
OTM	2,600 T.F.	12,350	--	--	12,350
Turnouts #10	3 Ea.	--	15,000	--	15,000
Steel	3 Ea.	24,000	--	--	24,000
Ties	3 Sets	9,000	--	--	9,000
Ballast @ 10"	2,872 C.Y.	34,033	11,086	--	45,119
Surface, Align & Dress	3,400 T.F.	--	10,030	--	10,030
Grade Crossing	40 T.F.	4,000	4,000	--	8,000
Culverts	190 L.F.	4,750	3,450	--	8,200
Paving	500 S.Y.	5,000	3,500	--	8,500
Filter Fabric	5,550 S.Y.	5,500	1,665	--	7,215
Seeding Mulching	L.S.	--	--	2,700	2,700
Bonds/Insurance	L.S.	--	--	3,200	3,200
Contingencies	L.S.	--	--	20,282	20,282
Total Trackwork Estimate:					\$425,000

As Table 1 shows, this proposed investment will be implemented in two stages, with the distribution facility, access roads and spur being constructed first. The second stage will include the purchase and erection of a scrap steel shredder and sorting system at an estimated additional expense of \$3 million. Because this investment comes three years after the new facility is opened, its estimated cost for the Benefit-Cost analysis is discounted to its present value in Table 1.

Because the site improvements being proposed have an economic life longer than the 10-year time period used for this benefit/cost analysis, the total project cost is reduced by a residual value which approximates the value of improvements after 10 years. Residual value for the rail spur is based on a composite weighted value of the remaining life of rail (20 year life) and ties (15 year life). In this investment, a residual value of \$491,018, when

applied to the costs in Table 1, yields a cost for the B/C calculation of \$3,948,012 as shown below:

Item:	<u>Bldg. & Equip.</u>	<u>Other Equip.</u>	<u>Shredder</u>	<u>Rail Spur</u>	<u>Total</u>
Cost:	\$225,130	\$200,000	\$2,280,000	\$150,625	
Remaining Life:	<u>67%</u>	<u>34%</u>	<u>50%</u>	<u>42%</u>	
Residual:	\$150,837	\$ 68,000	\$1,140,000	\$64,067	\$1,272,067

Discount Factor: 0.386
Residual Value @ Present Worth: \$ 491,018

Total Project Cost: \$4,439,030
Less Residual Value: - 491,018
Projected Cost for B/C \$3,948,012

INVESTMENT OPTION BENEFITS

Based on the shipper survey conducted as part of this analysis, the investment proposed will have a significant positive impact on rail freight usage and the local economy. Outbound rail freight traffic, currently in the range of 200 to 300 cars per year, is estimated to increase to approximately 900 carloads per year after the installation of the shredding/sorting operation in the third project year. Increases in rail traffic during the first two years after Phase I is completed are more modest, but will still be upwards of 420 cars of additional scrap than currently being shipped.

Transportation Efficiency Benefits

Typically, quantified transportation efficiency benefits are measured by rate or cost savings a shipper experiences due to an investment. In this case, the project would not be undertaken and additional carloadings would not be generated if rail service was unavailable. Because rail is the only feasible mode to move the products to the new markets identified by the shipper, a comparison of rate savings over trucking or a truck-to-rail alternative is not appropriate. The project benefits therefore relate to the expansion in economic activity anticipated by the investment.

Economic Benefits:

As noted earlier, this project entails a substantial increase in business activity by the shipper. The data obtained for this analysis (which was also used to obtain some \$500,000 in CDAP funding for site improvements) indicate the company expects to double its employment by the time Phase II of the project is implemented. A current employment level of 55 full-time positions is expected to raise to over 120 full-time jobs available to the area work force. The shipper also notes that contract work, principally with local independent truckers, will increase substantially.

The total value of wage and fringe benefits generated directly by this expansion are estimate by the shipper at \$1,091,000 once Phase II is completed. The added employment value within the first two years is estimated at \$381,850, using forecast annual tonnage output from the facility. The total economic benefit on a 10 year time frame is \$5,473,820 as calculated in Table 2.

-Table 2-
Investment Option Economic Benefits

<u>Project Year</u>	<u>Added Employment</u>	<u>Discount Factor</u>	<u>Present Worth</u>
1	\$ 381,850	0.909	\$ 347,102
2	381,850	0.826	315,408
3	1,091,000	0.751	819,341
4	1,091,000	0.683	745,153
5	1,091,000	0.621	677,511
6	1,091,000	0.565	616,415
7	1,091,000	0.513	559,683
8	1,091,000	0.467	509,497
9	1,091,000	0.424	462,584
10	1,091,000	0.386	<u>421,126</u>
		Total:	<u>\$5,473,820</u>

BENEFIT/COST RATIO

Using benefits derived in Table 2 compared to costs developed in Table 1, a B/C ratio of 1.39 is derived:

$$\frac{B}{C} = \frac{5,473,820}{3,948,012} = 1.39$$

This investment option is, therefore eligible for consideration under the guidelines established for the State's Rail Freight Assistance Program.

LINE: Rochelle Industrial Spur (Rochelle IV)
OWNER: Professional Storage (PS)
OPERATOR: Chicago and Northwestern Transportation Co. (CNW)

PROBLEM STATEMENT

A Rochelle based company which operates a warehouse and storage facility, is seeking to provide direct rail service for its tenant. The company has identified a plan to construct a rail spur from the Chicago and Northwestern Transportation Company's (CNW) main track to serve the warehouse facility. Professional Storage (PS) has requested a loan from the State's Rail Freight Assistance Program for this project. The following analysis examines the benefits and costs of the project.

BACKGROUND

Professional Storage (PS) owns a warehouse facility in Rochelle, Illinois, which is leased to Ashton Warehouse and Distribution Center, Inc. (Ashton). Ashton receives primarily dry foodstuffs and kindred products by rail and distributes the same by means of truck and rail within a 2,000 mile radius of its Rochelle location. The volume and weight of products handled by Ashton are such that rail is the primary transportation mode.

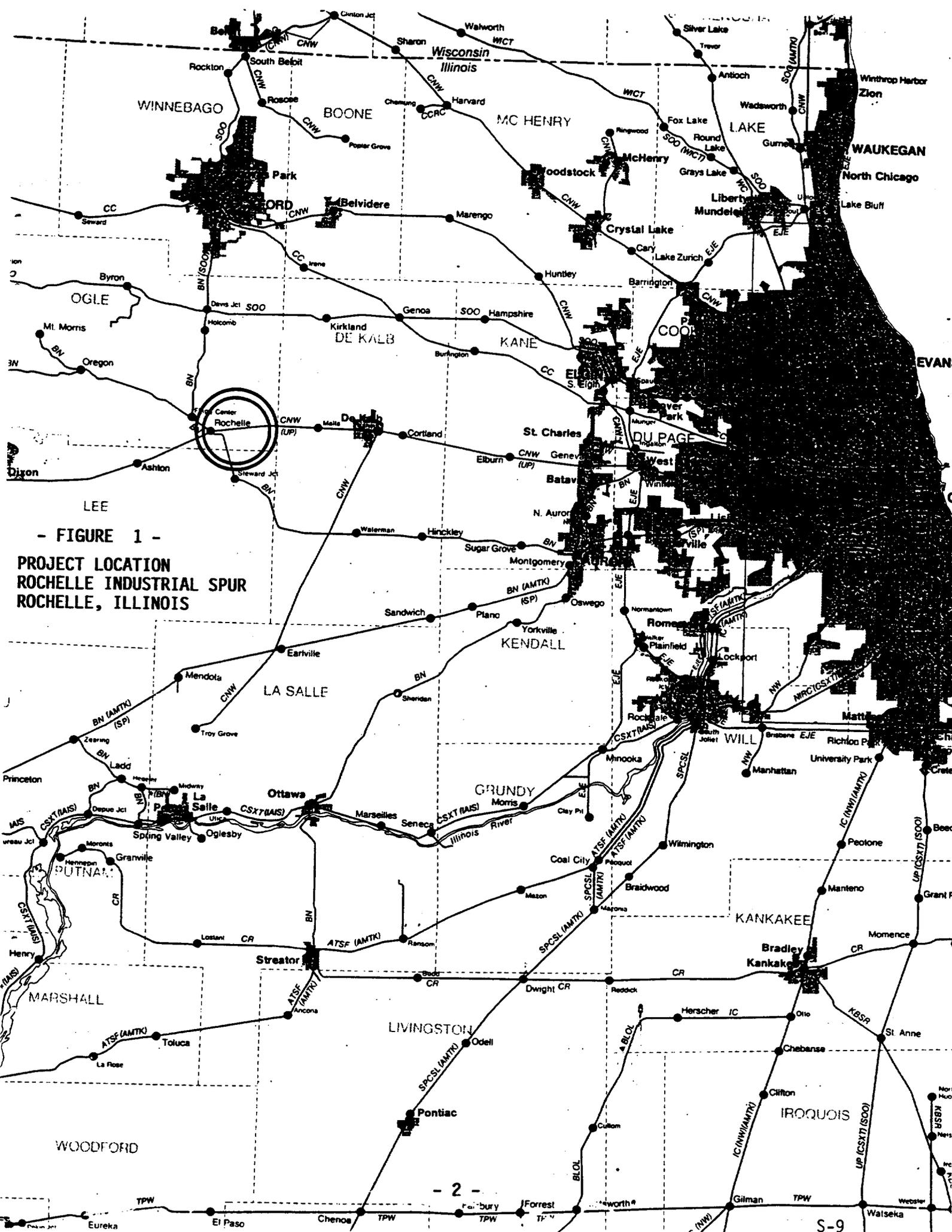
LOCATION

The general location of the project site is in Rochelle, Illinois. The location of the project in relation to the state's rail network is shown in Figure 1. Project limits are shown in Figure 2.

INVESTMENT OPTIONS

For the purpose of determining whether the proposed rail spur construction project is eligible for program funding, two options are reviewed:

- o No investment, which would limit Ashton's ability to receive and distribute its warehouse products.
- o Construction of the rail spur to allow safe, efficient movement of products into and out of Rochelle.



- FIGURE 1 -

**PROJECT LOCATION
ROCHELLE INDUSTRIAL SPUR
ROCHELLE, ILLINOIS**

NO INVESTMENT OPTION

No investment to construct a new rail spur to serve the PS warehouse facility would limit Ashton's ability to receive and distribute large volumes of dry foodstuff products. Employment opportunities would be limited in Rochelle, as well.

INVESTMENT OPTION

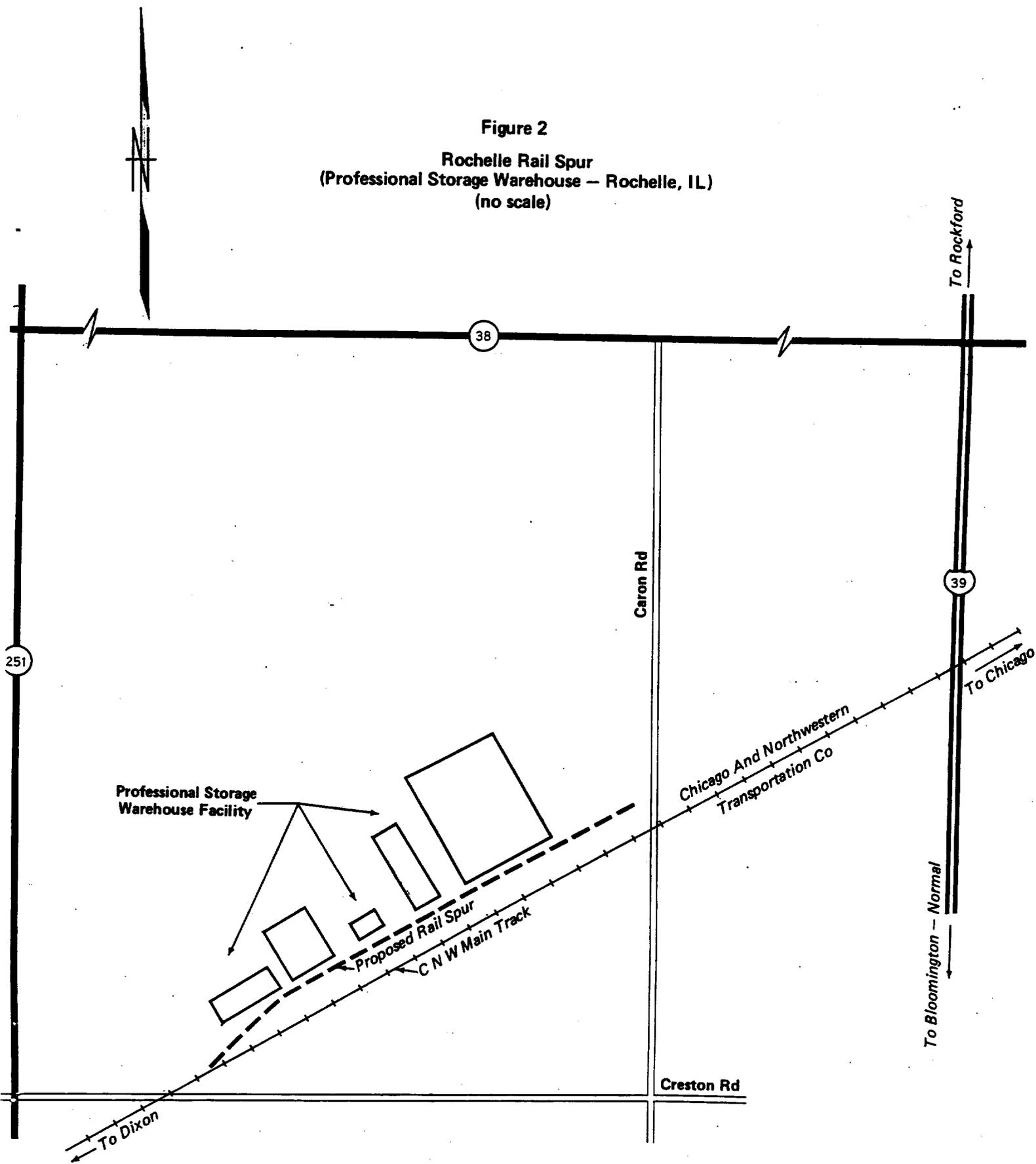
The investment option examines the construction of a new spur to provide the PS warehouse site (where Ashton operates its warehouse/distribution center) with rail service. The estimated project cost is detailed in Table 1.

TABLE 1

Estimated Project Cost - Rochelle Rail Spur

<u>ITEM</u>	<u>COST</u>
Clearing, Grubbing & Grading	\$ 15,000.00
Seeding & Mulching	1,000.00
Subballast	13,260.00
Skeleton Track Construction	15,750.00
o Rail	11,361.00
o Ties	16,150.00
o OTM	6,825.00
Ballasting	11,220.00
Surface, Align & Dress	2,100.00
Bumping Post-Earth	1,375.00
Lateral Drain System	7,500.00
Culvert Installation	2,430.00
Turnout Installation	35,000.00
Fencing	3,500.00
Bonds and Insurance	3,200.00
Subtotal	<u>\$145,671.00</u>
Contingencies	<u>4,329.00</u>
Total Estimated Project Cost	<u>\$150,000.00</u>

Figure 2
Rochelle Rail Spur
(Professional Storage Warehouse – Rochelle, IL)
(no scale)



For the purpose of determining the benefit/cost ratio for the investment option, the estimated project cost is reduced by the residual value approximating the remaining economic value of the improvement at the end of a five year project life. The cost for the benefit/cost is summarized as follows:

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$30,000	\$26,100
% of Material Life Remaining	x 0.75	x 0.67
Residual Value	\$22,500	\$17,520
Present Worth Factor	x0.6209	x0.6209
	\$13,970	\$10,878
Total Residual Value		<u>\$24,878</u>
Project Cost (Table 1)	\$150,000	
Less Residual Value	(<u>24,878</u>)	
Net Project Cost (Cost for B/C)	\$125,122	

TRANSPORTATION BENEFITS

Construction of the rail spur will allow Ashton to realize a transportation cost savings by utilizing rail service as its main transportation mode. Table 2 below outlines the transportation cost savings projected by implementation of the investment option.

TABLE 2

Transportation Benefits

<u>Project Year</u>	<u>Annual Transportation Cost Savings</u>	<u>Five-Year Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$1,560,000	3.791	\$5,913,960

ECONOMIC BENEFITS

Ashton projects that up to 22 new jobs would be created by implementing the investment option. Table 3 below illustrates those economic benefits.

TABLE 3

Economic Benefits-Employment

<u>Project Year</u>	<u>Annual Wages & Fringe Benefits</u>	<u>Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$520,000	3.791	\$1,971,320

BENEFIT/COST ANALYSIS

Those benefits applicable to this project include increased local employment and reduced transportation costs. These benefits amount to a total of \$7,885,280 over the five year project life.

When compared to the estimated project costs, less residual value, the project benefits yield a benefit/cost ratio of 63.02 as shown below:

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Economic Benefits}}{\text{Net Project Cost}}$$

$$\frac{B}{C} = \frac{\$7,885,280}{\$125,122} = \underline{63.02}$$

LINE: Villa Park
OWNER: Major-Prime Plastics, Inc. (MPP)
OPERATOR: Chicago Central & Pacific Railroad Co. (CCP)

PROBLEM STATEMENT

A Villa Park based company, which operates a plastics resin distribution center, is seeking to expand its existing rail facilities within limited space. The company has identified a plan to reconfigure its existing rail facilities. To accomplish this reconfiguration, however, the company must construct new trackage and relocate a portion of its existing trackage. Major-Prime Plastics (MPP) has requested a loan from the State's Rail Freight Assistance Program for this project. The following analysis examines the benefits and costs of the proposal.

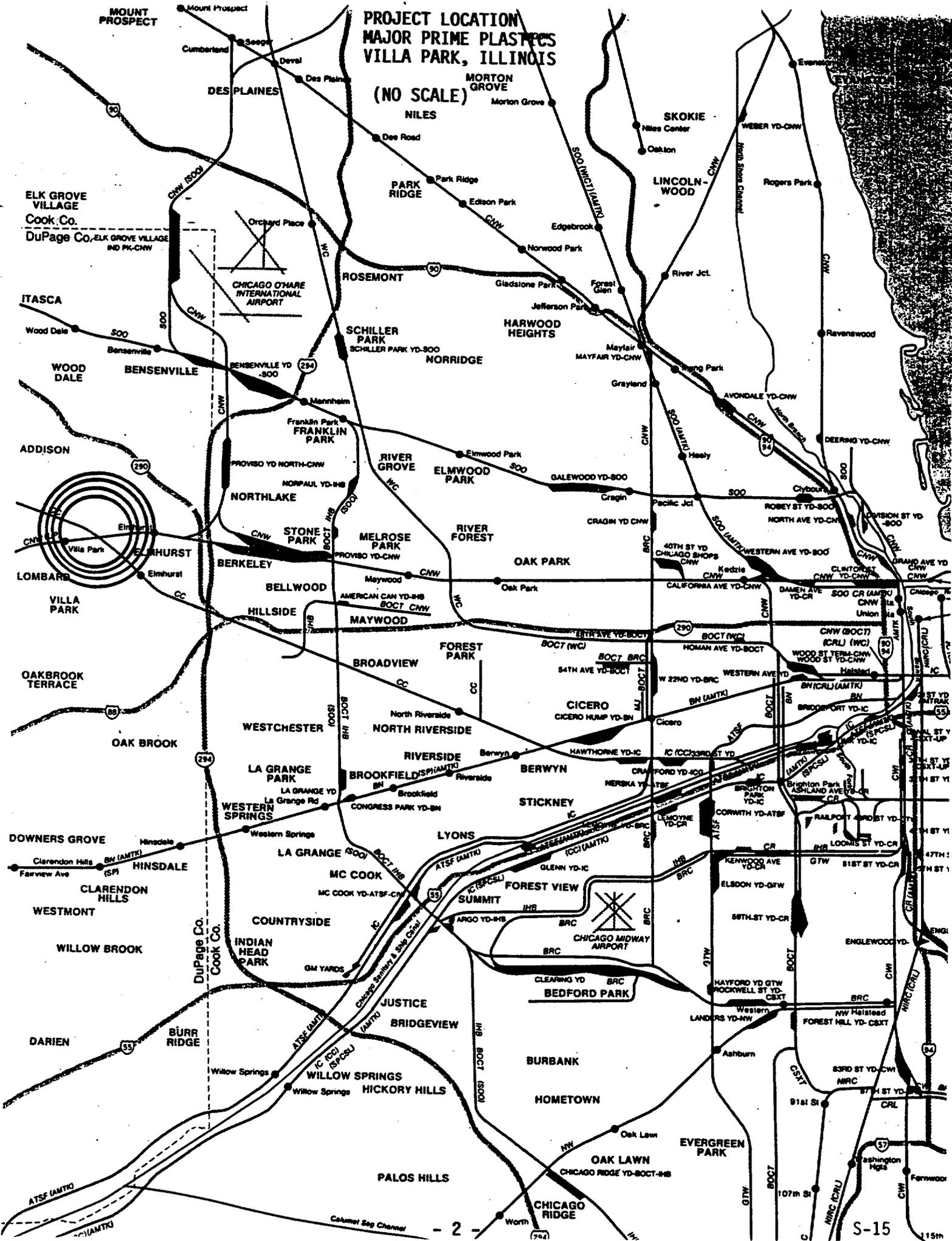
BACKGROUND

MPP currently utilizes rail service as its major source for inbound delivery of thermoplastic resins. Involved in the blending and packaging of plastic resins, MPP relies on rail service to deliver thermoplastic resins shipments from points of origin in the Southwest and Lower Midwest regions of the country. MPP currently handles up to 52 rail cars at all times. Additional cars are held on CCP tracks waiting for available track space at the plant site.

MPP has determined that reconfiguration of its existing track layout, and construction of an additional track, will increase track storage, increase production and create additional jobs.

PROJECT LOCATION MAJOR PRIME PLASTICS VILLA PARK, ILLINOIS

(NO SCALE)



LOCATION

The general location of the project site is in Villa Park, a Western suburb of Chicago. The location of the project in relation to the Chicago region's rail network is shown in Figure 1. Project limits are shown in Figure 2.

INVESTMENT OPTIONS

For the purpose of determining whether the proposed intermodal yard improvement project is eligible for program funding, two options are reviewed:

- o No investment, which would maintain current operating conditions at MPP; and
- o Reconfiguration of MPP's existing rail facilities, and construction of additional trackage to allow safe, efficient movement of rail shipments.

NO INVESTMENT

No investment to upgrade existing facilities would prevent MPP from making more efficient use of its plant. Additional business volume would not be generated, constraining the company's growth and limiting new employment opportunities.

INVESTMENT OPTION

The investment option examines reconfiguration of MPP existing rail facilities to provide for more efficient use of its plastics plant. Work includes reconfiguration of existing trackage, as well as construction of new trackage. The estimated project cost detail is shown in Table 1.

FIGURE 2
Major Prime Plastics
Rail Expansion
Villa Park, Ill.
(No Scale)

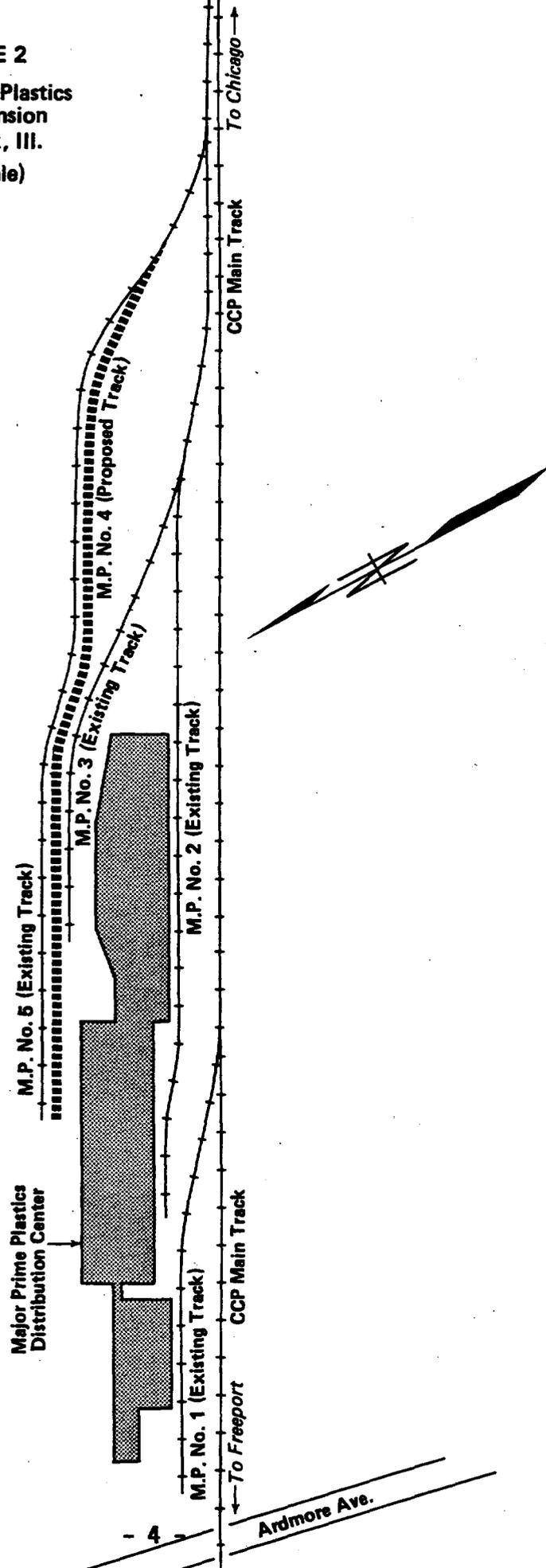


TABLE 1

Estimated Project Cost - Villa Park Rail Spur

<u>Item</u>	<u>Cost</u>
Engineering	\$ 5,000
Grading	18,000
Subballast	4,092
Skeleton Track Construction	14,087
o Rail (100#)	12,659
o Ties	14,400
o OTM	4,680
Skeleton Turnout Construction	3,536
o Timber (#8)	3,000
o Steel (#8-100#)	8,027
Ballast	19,760
Surface, Align and Dress	7,493
Track Paving	16,260
Bumping Post (Steel)	1,918
Relocate Hydrant	1,700
Storage Silos	135,000
Drainage Improvements	3,150
Crosstie Renewal	5,250
Bolt Tightening	702
Bonds and Insurance	<u>3,200</u>
Subtotal	\$281,914
Contingencies	<u>18,086</u>
Total Estimated Project Cost	\$300,000

For the purpose of determining the benefit/cost ratio for the investment option, the estimated project cost is reduced by a residual value approximating the remaining economic value of the improvement at the end of the five year project life. The cost for the benefit/cost is summarized as follows:

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$ 30,000	\$ 20,000
% of Material Life Remaining	<u>x 0.75</u>	<u>x 0.67</u>
Residual Value	\$ 22,500	\$ 13,400
Present Worth Factor	<u>x 0.6209</u>	<u>x 0.6209</u>
	\$ 13,970	\$ 8,320
Total Residual Value	<u>\$22,290</u>	
Project Cost (Table 1)	\$ 300,000	
Less Residual Value	<u>(22,290)</u>	
Net Project Cost (Cost for B/C)	\$ 277,710	

ECONOMIC BENEFITS:

The expansion and rehabilitation plans envisioned by MPP will help to increase production at the Villa Park Plant. More importantly, the investment option will provide additional employment to the local area. MPP estimates an annual increase in production of approximately 25%. In addition, the company projects an additional 10 new jobs will be created. Tables 3 and 4 below outline the economic benefits attributable to the investment option.

TABLE 2

Economic Benefits-Increased Production

<u>Project Year</u>	<u>Annual Increased Production</u>	<u>Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$400,000	3.791	\$1,516,400

TABLE 3

Economic Benefits-Employment

<u>Project Year</u>	<u>Annual Added Wages & Fringe Benefits</u>	<u>Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$170,000	3.791	\$644,470

BENEFIT/COST ANALYSIS

Those benefits applicable to this project include increased plant production and increased employment. These benefits amount to a total of \$2,160,870 over the five year project life.

When compared to the estimated project costs, less residual value, the economic benefits yield a benefit/cost ratio of 7.78 as shown below:

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Economic Benefits}}{\text{Net Project Cost}}$$

$$\frac{B}{C} = \frac{2,160,870}{277,710} = 7.78$$

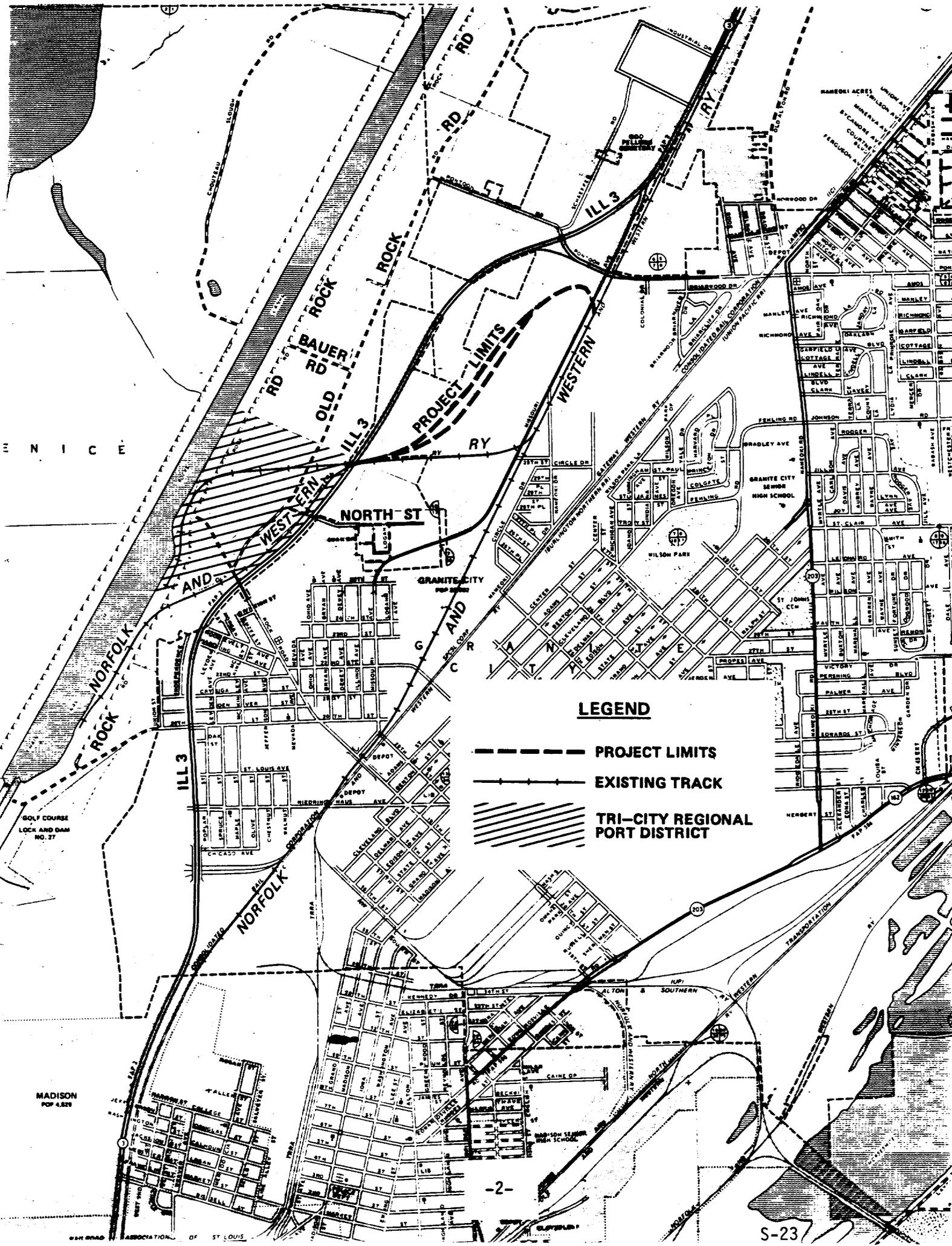
LINE: TRI-CITY PORT
OWNER: TRI-CITY PORT
OPERATOR: NORFOLK AND WESTERN RAILWAY COMPANY (N&W)

PROBLEM STATEMENT

Gaming boat activity, other proposed high density recreational development of the Alton, Illinois riverfront and the construction of the Berm Highway (IL Rte. 143) connection to the Great River Road, are creating a situation that requires ADM's abandonment of their river dock at Alton. This facility, which is served by the Norfolk Southern unloads 15,000-20,000 rail cars per year. This traffic now requires a new river loading point. Two available points of access for barge loading are the Tri-City Regional Port District at Granite City, Illinois, served by the Norfolk Southern, and Mount Vernon, Indiana, served by the CSX. Due to insufficient capacity in the existing A. O. Smith railyard, the Norfolk Southern cannot efficiently handle this move at the Tri-City Regional Port District. This traffic would probably be diverted to the Indiana Southwind Port at Mount Vernon if capacity is not improved at Tri-City Port.

BACKGROUND/ECONOMIC IMPACT

The Tri-City Regional Port District, a public port established by an Act of the Illinois Legislature, serves agricultural and other shippers throughout the southern half of the state and some shippers from a much wider area. The Port District operates two (2) dry bulk product loading facilities. These two facilities represent a significant public investment. Lewis & Clark Marine, operator of the facilities under an agreement with the District, provides jobs, purchases, supplies and services in the Southwestern Illinois region, pays the Debt service on a \$2,750,000 CDB loan and pays rentals and thruputs to the Port District. These Port District revenues are used to pay operating expenses, to construct new public facilities and to leverage new private investment in the Port District.



E N I C E

LEGEND

-  PROJECT LIMITS
-  EXISTING TRACK
-  TRI-CITY REGIONAL PORT DISTRICT

MADISON
POP 4,829

LOCATION

This project is located in the Port District on a site east of Illinois Route 3 and northeast of the Port's Harbor Side Industrial Park. The site will be leased by the Port District for a twenty (20) year term. The proposed railyard will be served by a connection with the Norfolk Southern's Federal line. The yard will connect to the main lead track from the Norfolk Southern's A. O Smith yard to the Tri-City Regional Port District.

ALTERNATE TRANSPORTATION

No viable alternate is available to handle additional traffic of this magnitude at the Tri-City Regional Port District.

INVESTMENT OPTIONS

This analysis reviews the impact of two investment options:

- o No investment, and
- o \$1,370,500 for the construction of a new rail yard to serve the Tri-City Regional Port District Harbor.

IMPACT OF NO INVESTMENT

Without the required investment in track construction, the new railyard, the existing 15,000-20,000 rail car move would probably be directed to Mount Vernon, causing loss of fifteen (15) jobs and significant economic activity to the region.

Table 1
No Investment
Foregone Income Due to Lost Employment Opportunities

<u>Project Year</u>	<u>Lost Employment</u>	<u>Average Wage & Fringe Benefits</u>	<u>Present Worth Factor</u>	<u>Total Economic Loss</u>
1-10	15	\$345,000	6.144	\$2,119,680

INVESTMENT OPTION

This investment option would provide for the construction of a new railyard to serve the Tri-City Regional Port District. The following table provides the detailed scope and estimated cost for this option.

Table 2
Tri-City Regional Port District
150 Car Railyard

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/ Equipment</u>	<u>Other</u>	<u>Total</u>
Grading	L.S.				\$ 294,250
Subballast - 8"	8,300yds.	\$ 62,110	\$ 51,450	\$ 19,190	132,750
Build Skeleton Track	11,010 T.F.		148,780	28,980	177,760
Ties - 6" x 8"	6,291 ea.	176,150		17,550	193,700
Plates	25,164 ea.	50,330		8,430	58,760
Rail - 112 #/yd.	411 ton	138,300		20,600	158,900
Spikes	27,093 ea.	11,850		1,980	13,830
Bars	564 pr.	10,155		900	11,055
Anchors	6,700 ea.	10,055		1,480	11,535
Build Skeleton Turnout	2 ea.	22,180	10,500	6,320	39,000
Ballast, Surface & Align	6,826 yd.	51,600	43,011	20,069	114,680
Drainage Structures	L.S.				15,520
Highway Paving	L.S.				25,500
Landscaping	L.S.				5,250
Protect 54" Rail waterline	L.S.				<u>50,000</u>
Est. Project Cost					1,302,490
Contingency	10%				130,250
Engineering	L.S.				<u>26,000</u>
Net Project Cost					\$1,458,740

For the benefit/cost analysis, the total project cost is reduced by the residual value of the material remaining in the yard at the end of a ten (10) year project life. A present worth residual value is shown below.

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$208,840	\$176,150
% of Material Life Remaining	<u>x0.50</u>	<u>x0.34</u>
Residual Value	104,420	59,891
Present Worth Factor	0.386	<u>0.386</u>
Residual Value	<u>40,306</u>	<u>23,118</u>
Total Residual Value	\$ 63,424	
Project Cost	\$1,458,740	
Less Residual Value	<u>\$ 63,424</u>	
Net Project Cost	\$1,395,316	

BENEFIT COST ANALYSIS

The benefits applicable to this investment are the regional retention of jobs that would otherwise be lost if the railyard was not constructed. As described under the No Investment option, the present worth of those benefits is \$2,119,680. When compared to the project's cost of \$1,395,316 the resultant Benefit/Cost Ratio is 1.52 to 1:

$$\frac{B}{C} = \frac{\$2,119,680}{\$1,395,316} = 1.52$$

LINE: Industrial Spur Chicago, Illinois
OPERATOR: Indiana Harbor Belt
OWNER: Indiana Harbor Belt/Industry

PROBLEM STATEMENT

Given the potential benefits of the expansion of the area's work force along with the retention of the existing employees, this analysis will examine these benefits compared to the costs of construction.

BACKGROUND

An official request for construction assistance was received by the Department from a Chicago area scrap steel dealer. This assistance would provide for the necessary rail service to an existing facility. The site selected for the construction would be served by the Indiana Harbor Belt (IHB).

Since this project concerns one user, traffic volumes will not be discussed, as this is privileged information. The benefits will be determined by employment expansion and retention plus transportation cost savings.

The existing site has been in place for a number of years. However, it has now been taken over by a new company. This new company must have a usable rail facility to take advantage of less expensive transportation costs in shipping bulk scrap material.

LOCATION

This potential project is located in Chicago on Cottage Grove Avenue.

PHYSICAL CONDITION

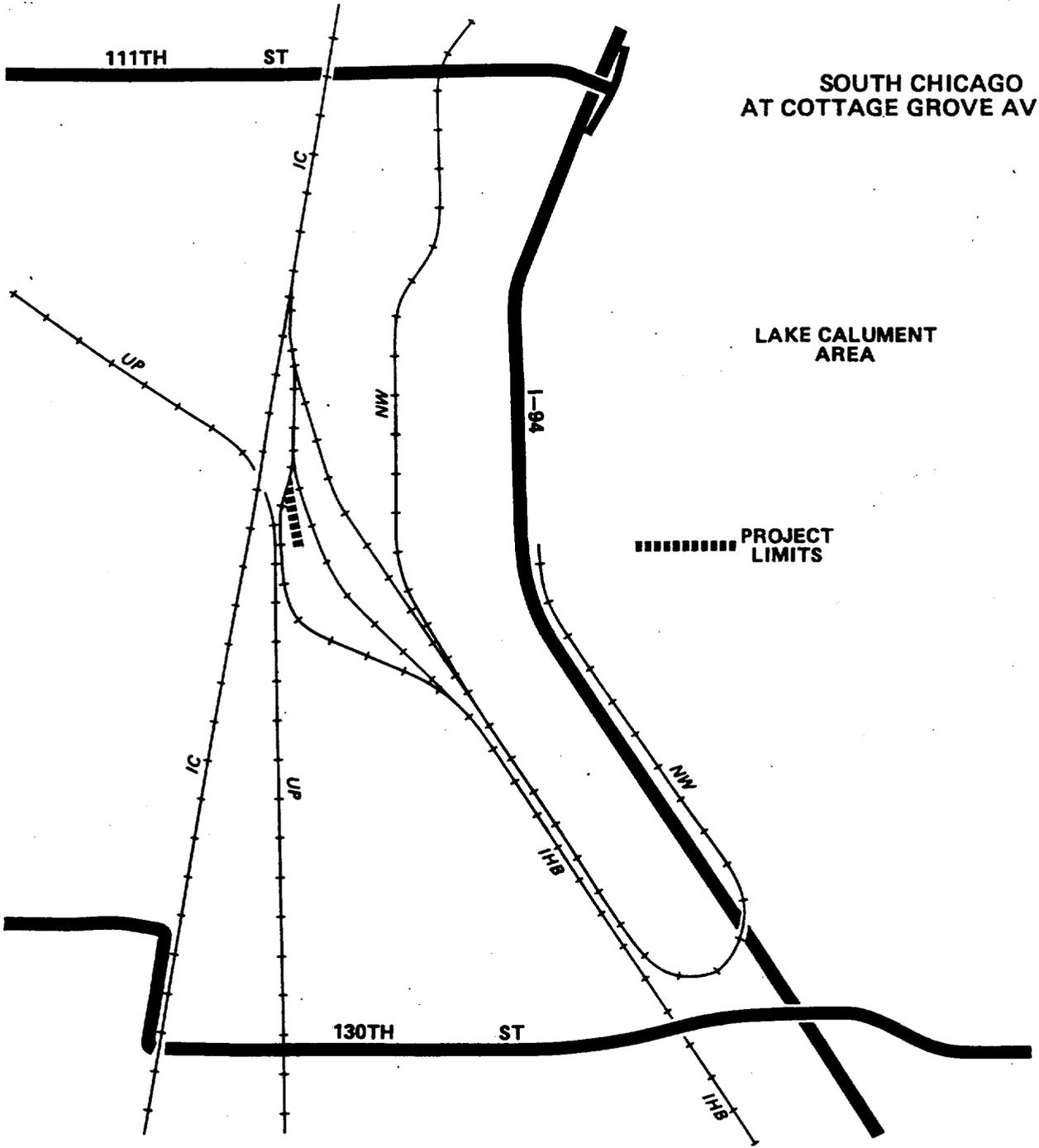
The IHB branch line, which will serve this industry, is in very good condition. The existing track in the site will have to be reconstructed.

INVESTMENT OPTIONS

Two options are compared in this analysis.

- o No Investment - which means that no new employment will be retained or created.
- o \$300,000 for new construction/rebuild.

**SOUTH CHICAGO
AT COTTAGE GROVE AVENUE**



**LAKE CALUMENT
AREA**

**PROJECT
LIMITS**

NO INVESTMENT OPTION

Without an investment the area's job market will not expand and thereby will not create new employment opportunities. New opportunities amount to 10 jobs. This is due to planned expansion the company has considered, but only if a usable rail facility can be established in the existing yard. If the rail facility is not improved, the company has to consider the relocation of this operation to another state.

Given the possibility of 15 positions being relocated along with the business, these positions would be considered as retained. The company has many other options outside the state of Illinois. Therefore, without an investment these positions will not be retained.

The impacts, in present dollars, under the no investment option are as follows:

<u>Project Year</u>	<u>Retention and Employment</u>	<u>Wages and Benefits</u>	<u>Present Worth Series Factor</u>	<u>Lost Income in 5 years</u>
1	15	\$468,000	.909	\$ 425,410
2	17	\$530,400	.826	\$ 438,110
3	19	\$592,800	.751	\$ 445,190
4	21	\$655,200	.683	\$ 447,500
5	21	\$717,600	.629	<u>\$ 451,370</u>
				\$2,207,580

INVESTMENT OPTION

An estimated \$300,000 is necessary for the rail service upgrade. If the entire investment is made, the area's economy would receive a conservative boost of over \$2.2 million in the next five years. In present dollars, this benefit only takes into consideration employment benefits. It does not include short term construction jobs or long term increases to the tax base or associated increases in income to supply industries.

Table 1

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/Equip/Other</u>	<u>Total</u>
Grading/Track Removal	Lump Sum	--	\$30,580	\$ 30,580
Aggregate	650 Cu. Yd.	\$ 9,100	1,300	10,400
Track	1062 T.F.	33,350	26,550	59,900
Turnout	3 Ea.	--	16,500	49,500
Crossing	251 L.F.	11,295	3,765	15,060
Scale				100,000
Other				<u>34,560</u>
Total Estimate				<u>\$300,000</u>

The total project cost is reduced by the residual value of the material life remaining beyond the 5-year benefit stream as illustrated below.

The cost for the benefit/cost (B/C) analysis is as follows:

	<u>Ties</u>	<u>Rail/OTM</u>	<u>Total</u>
Material Costs	\$26,850	\$ 35,190	
Life Remaining	<u>x 67%</u>	<u>x 75%</u>	
Residual Value	\$17,900	\$26,392	<u>\$ 44,292</u>
		Discount Factor	<u>x .621</u>
		Total Residual Value	\$ 27,505
	Total Project Cost	\$	300,000
	Minus Residual Value		<u>27,505</u>
	Cost for B/C	\$	272,495

BENEFIT/COST

The benefits discounted over 5 years are \$2,207,580. The appropriate cost for the benefit cost formula is \$272,495. The benefit/cost ratio is developed as:

$$\frac{B}{C} = \frac{\text{Benefits}}{\text{Cost for B/C}} = \frac{\$2,207,580}{\$272,495} = 8.1$$

LINE: Taylorville to Cimic
OWNER: Chicago & Illinois Midland Railway Company (C&IM)
OPERATOR: Chicago & Illinois Midland Railway Company (C&IM)

PROBLEM STATEMENT:

In order to comply with the more restrictive emissions requirements of the Clean Air Act Amendments of 1990, a major electric utility (Commonwealth Edison) must utilize a lower-sulfur coal than currently available at one of its "mine mouth" power plants. This power plant is served by the C&IM Railway via a line that would require significant upgrading to handle unit train shipments of coal. The following analysis, using the Federal Railroad Administration's Standard Benefit Cost methodology, determines whether the benefits of a track rehabilitation and construction project exceed the costs, making it eligible for funding under the Local Rail Freight Assistance (LRFA) Program.

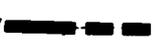
BACKGROUND

Commonwealth Edison (ComEd) is a major electric utility in the state serving Chicago and northeastern Illinois. Responding to the lower emissions requirements of the Clean Air Act Amendment of 1990, ComEd has decided to switch to a lower sulfur coal source at its "Kincaid" power plant. This shift to lower sulfur content coal for Kincaid is in lieu of installing very costly scrubbers to reduce emissions from the plant's stacks.

The C&IM Railway, which until 1987 was owned by ComEd, is a regional rail carrier that extends 121 miles from the Taylorville, Illinois area west past the Kincaid plant and north to the Illinois River near Havana and further north to Peoria. The C&IM system in relation to other lines in the region, is illustrated in Figure 1. Although the railroad has diversified its traffic base somewhat, the C&IM relies to a great extent on transporting coal for its revenues. The proposed project analyzed here would expand and enhance its coal transport capabilities.

- FIGURE 1 -

Regional Rail Network

Chicago & Illinois Midland Rwy 
All other railroads 



CURRENT CONDITIONS

The Kincaid power plant is actually located six miles west of the city of Kincaid, near the Christian/Sangamon County border. The power plant is cited adjacent to the C&IM's Taylorville Division at MP 113.5. The location of the power plant and the rail line proposed for rehabilitation in this analysis is shown in Figure 2.

Physical Condition:

The Taylorville Division is a 21 mile single tracked non-signalized line laid predominately with 115 lb. jointed rail which is 40 years old. It currently meets minimum FRA Class III standards. As such, maximum freight trains speeds are 40 mph. At its eastern terminus in Taylorville, the line connects to the Norfolk & Western's Brooklin District line between Decatur, Illinois and St. Louis, Missouri; on the west, the line meets the Illinois Central Railroad's Springfield District line. The C&IM has overhead trackage rights over the latter from Cimic north to Springfield.

Service:

The C&IM currently provides service to rail users on the Taylorville Division daily up to 6 days per week: trains originate in Springfield, operate to Taylorville and return.

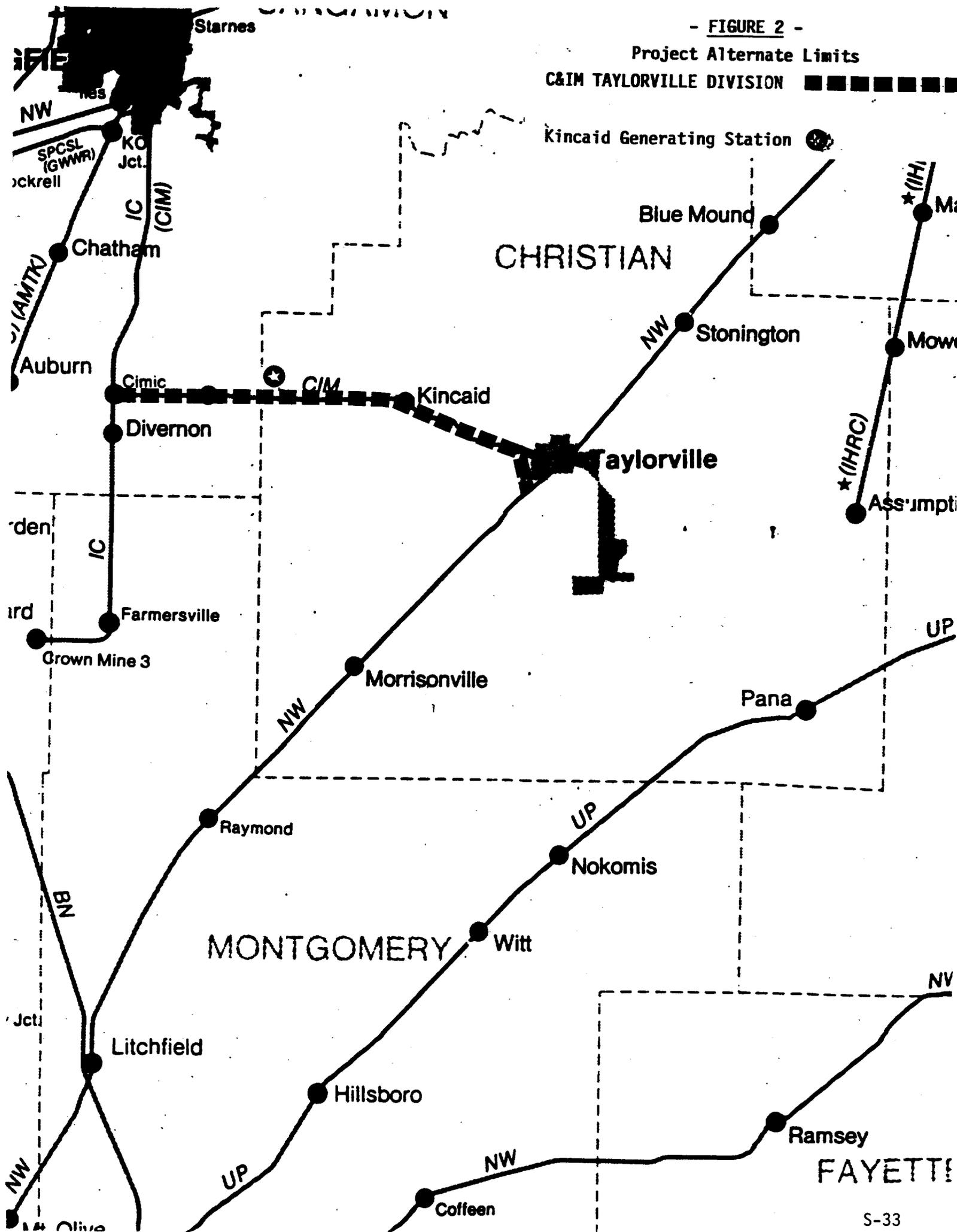
Alternate Transportation:

The power plant currently relies principally on coal supply from Peabody Coal Company #10 Mine just east of Ellis near the Christian/Sangamon County border. This mine currently provides all of the coal to the Kincaid power plant via a direct conveyor. When the power plant shifts to a lower sulfur source, it will either bring it in by rail or truck. At present production, the plant consumes approximately 2.25 million tons of high BTU coal each year.

- FIGURE 2 -

Project Alternate Limits

C&M TAYLORVILLE DIVISION 



Investment Options - Project Alternatives:

For the purpose of determining whether financing any proposed track project is feasible under LRFA's requirements, two investment options are examined:

- A No Investment Option - the Null Alternative, which would maintain the status quo, eliminating the possibility of any rail deliveries of coal to the Kincaid power plant.
- A \$3,156,155 Investment Option-Project Alternative, which would construct the necessary dump facilities at the plant, rehabilitate the Taylorville-Cimic line and construct or rehabilitate connections to the C&IM's Class I connections at both Taylorville and Cimic.

NO INVESTMENT/NULL ALTERNATIVE

The absence of any capital investment to upgrade the Taylorville to Cimic line or construct rail car unloading facilities at the Kincaid power plant would force the utility to utilize a higher cost, less efficient truck mode for coal deliveries. It is projected that when the Clean Air Act Amendment requirements take effect in January of 1995, the Kincaid plant will need to receive up to 1 million tons of lower sulfur coal on an annual basis. The Investment Option-Project Alternative analysis that follows quantifies the benefits of avoiding this less efficient means of transport. The impact on the overall viability of the railroad is also addressed.

INVESTMENT OPTION/PROJECT ALTERNATIVE

\$3,156,155 for Line Rehabilitation and Coal Transfer Facility

This investment option envisions the construction of the necessary bottom-dump coal unloading facility adjacent to the power plant to allow unit trains of coal to transfer product from rail cars to the utility's existing mine-to-plant conveyor system. It further involves the renewal of approximately 25 percent of the Taylorville to Cimic line's crossties, adding ballast, surfacing and lining track to retain Class III track structure under the stress of adding

approximately 100 unit coal trains per year. The routing of these trains is at present uncertain (they could come via Burlington Northern at Taylorville or via IC at Cimic). The C&IM has therefore assumed in its planning that the utility, which controls the routing, would split the tonnage between the two Class I carriers to maintain as competitive a rate posture as possible. A detailed cost estimate of this options's investment is shown in Table 1.

**- Table 1 - Project Alternative -
\$3,156,200 Investment Option**

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/Equip.</u>	<u>Other</u>	<u>Total</u>
I. <u>Coal Dump Facility</u>					
	L.S.	--	--	\$1,600,000	\$1,600,000
II. <u>Track Rehabilitation:</u>					
Crosstie Renewal (7"x9")	16,672 Ea.	\$525,170	\$124,920	60,200	710,240
OTM	Lot	28,010	--	--	28,010
Ballast & Surfacing	500 Ton 21 T.M.	78,750	56,080	10,340	145,170
Salvage (Credit)	L.S.	(1,020)	--	--	(1,020)
<u>Subtotal - Track Rehabilitation:</u>					\$ 882,400
III. <u>BN/C&IM Connection:</u>					
Grading	L.S.	--	--	\$100,000	\$100,000
Skeleton Track	7,100 T.F.	--	\$72,152	34,138	106,290
Rail - 112#	14,200 L.F.	\$ 61,131	--	--	61,131
Ties	3,875 Ea.	122,063	--	--	122,063
OTM	Lot	49,634	--	--	49,634
Skeleton T.O.	1 Ea.	--	8,020	3,793	11,813
Steel	1	18,900	--	--	18,900
Ties	Set	--	--	--	--
Ballast, Spread	6,390 Ton	100,642	14,468	6,827	121,937
Surface & Align	7,100 T.F.	--	2,568	1,214	3,782
<u>Subtotal - BN Connection:</u>					\$595,550
IV. <u>Cimic Siding - Rehabilitation:</u>					
Crosstie Renewal (6" x 8")	1,350 Ea.	\$ 35,438	\$23,467	\$10,694	\$ 69,599
OTM	Lot	1,155	--	--	1,155
Ballast & Surfacing	200 Ton T.F.	3,465	3,062	965	3,465 4,027
Scrap (Credit)	L.S.	(41)	--	--	(41)
<u>Subtotal - Siding Rehabilitation:</u>					\$ 78,205
<u>Total Project Alternative Cost:</u>					<u>\$3,156,155</u>

Salvage Value:

The facilities constructed and rehabilitated by this investment have an economic life extending beyond the 10-year FRA standard planning horizon used for this analysis. Therefore, this analysis includes, as a project benefit, an estimated salvage value, which approximates the remaining economic value of the improvement at the end of the 10 years. In this case, the project alternative has an estimated salvaged value of \$830,841, which, discounted to its present worth (@ 3.5% discount rate) yields a benefit of \$589,066, as detailed in Table 2.

- Table 2 -
Project Alternative Salvage Value

<u>Item</u>	<u>Quantity/Unit Salvage Value</u>	<u>Total Salvage Value</u>
Rail & OTM	14,200 L.F. @\$5.58/L.F.	\$ 79,236
Crossties (7x9)	20,547 Ea. @\$10.00 Ea.	205,470
Crossties(6x8)	1,350 Ea. @\$8.00 Ea.	10,800
Unloading Equip.	L.S.-Book Value	\$535,335
	Total Salvage:	\$830,841
	Discount (3.5%-10):	<u>0,709</u>
	Present Worth:	\$589,066

Project Alternate Benefits:

In the absence of this capital investment, the C&IM would not participate in any deliveries of lower sulfur coal to the Kincaid power plant. Financial data submitted by the C&IM indicate that they would continue to operate this branch line, as there are other shippers on the branch and their traffic contributes to its net revenues. However, the inability to move coal could seriously affect the C&IM's ability to maintain the line and operation at its current standard: abandonment is not a near-term possibility, but it is an outcome that might prevail near the end of the 10-year analysis framework if this project is not undertaken.

Transportation Efficiency Benefits:

As defined in the FRA Methodology, Transportation Efficiency Benefits derived from implementing a project are based upon: 1) reduced transportation costs to the shipper on "base" traffic; plus, 2) profits earned by the shipper in producing shipping and selling incremental traffic, and the branchline profits of the rail carrier. In this case, even though the expected coal traffic to the power plant is new traffic, the methodology treats it as "base traffic" because it is assumed that the new coal will have to be transported to the plant, regardless of the mode used. Transportation Efficiency Benefits in this case correspond to the reduced costs of the coal delivered by rail versus truck. These are summarized in Table 3. Table 4 presents a calculation of these benefits over 10 years, discounted to their present value.

- Table 3 -
Coal Shipment Rate Savings (Rail vs. Truck)

<u>Year</u>	<u>Tons Shipped</u>	<u>Rail vs. Truck Rate*</u>	<u>Annual Savings</u>
1	500,000	\$1.40/Ton	700,000
2	700,000	\$1.40/Ton	980,000
3	800,000	\$1.40/Ton	1,120,000
4	1,000,000	\$1.40/Ton	1,400,000
5	1,000,000	\$1.40/Ton	1,400,000
6	1,000,000	\$1.40/Ton	1,400,000
7	1,000,000	\$1.40/Ton	1,400,000
8	1,000,000	\$1.40/Ton	1,400,000
9	1,000,000	\$1.40/Ton	1,400,000
10	1,000,000	\$1.40/Ton	1,400,000

* Rail vs. truck differential in constant 1993 dollars, based upon current truck and rail rates from data furnished by C&IM.

Railroad Viability:

With an expanded traffic base, the overall financial condition of the C&IM will improve. Coal revenues account for approximately 84 percent of total revenue for the carrier. Even when accounting for some anticipated reductions in other coal movement revenues, the addition of coal by rail to the Kincaid plant is anticipated to increase net income to the carrier by nearly 120 percent. The

**- Table 4 -
Present Value - Transportation Efficiency Benefits:**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Shipper Savings (Table 3)	\$700,000	\$980,000	\$1,120,000	\$1,140,000	\$1,400,000	\$1,400,000	\$1,400,000	\$1,400,000	\$1,400,000	\$1,400,000
Total Efficiency Benefits	700,000	980,000	1,120,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000	1,400,000
Discount Factor (@ 3.5%)	<u>x 0.966</u>	<u>x 0.934</u>	<u>x 0.902</u>	<u>x 0.871</u>	<u>x 0.842</u>	<u>x 0.814</u>	<u>x 0.786</u>	<u>x 0.759</u>	<u>x 0.734</u>	<u>x 0.709</u>
Present Value of Benefits	\$676,200	\$ 915,320	\$1,010,240	\$1,219,400	\$1,178,800	\$1,139,600	\$1,100,400	\$1,062,600	\$1,027,600	\$ 992,600
Sum of Present Values:	<u>\$10,322,760</u>									

railroad's operating ratio (operating expense as a percent of total revenue) is forecast to improve from a current 77 percent to about 66 percent. A 16 percent reduction in this ratio would not be possible if the railroad had to expend additional funds to keep the Taylorville-Cimic line at its current condition in lieu of rehabilitation. However, because the actual revenue and cost data are confidential, the net benefit to the railroad is not included in the calculation of Table 4.

Secondary Benefits:

A significant potential secondary benefit of this project alternative accrues to the State of Illinois as a whole; this benefit is the avoidance of increased highway maintenance needs. The most-likely coal source for this project is located in Southern Illinois, approximately 140 highway miles distant from Kincaid. If moved by truck, transported coal in 5-axle 80,000 pound, tractor- semi-trailer configuration would generate an estimated \$2.8 million in pavement consumption costs per year when the maximum estimated 1 million ton amount is moved. In order to assess the net cost to the public highway system, this amount is reduced by the incremental contribution in road fund fees collected from these trucks for highway repair and maintenance. This amount, currently at \$0.038 per truck-mile, is deducted from the pavement consumption cost to yield a net cost. When applied to this option, the net benefit of avoiding additional truck traffic is \$17,505,000 as shown in Table 5.

- Table 5 -
Highway Maintenance Costs Avoided
In Thousands of Dollars (Current)

Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Anticipated Tons: (thousands)	500	700	800	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Loaded truck miles: 1/ (thousands)	2,800	3,920	4,480	5,600	5,600	5,600	5,600	5,600	5,600	5,600
Pavement Consumption Cost: (@ 0.50/LTM)2/	\$1,400	\$1,960	\$2,240	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800	\$2,800
Fund Offset:	213	298	341	426	426	426	426	426	426	426
Net Highway Cost:	1,187	1,662	1,899	2,374	2,374	2,374	3,274	3,274	3,274	3,274
3.5% Discount Factor:	<u>x 0.966</u>	<u>x 0.934</u>	<u>x 0.902</u>	<u>x 0.871</u>	<u>x 0.842</u>	<u>x 0.814</u>	<u>x 0.786</u>	<u>x 0.759</u>	<u>x 0.734</u>	<u>x 0.709</u>
Present Value:	\$1,147	1,552	1,713	2,068	1,999	1,932	1,866	1,802	1,743	1,683
Sum of Net Present Values:	<u>\$17,505</u>									

1/ Sesser, Illinois to Pawnee, Illinois

2/ FHWA cost allocation '81 updated to current dollars.

Summary: Benefit/Cost:

As detailed in the preceding pages, this project alternative benefits are:

Transportation Efficiency:	\$10,322,760	(Table 4)
Secondary Benefits	\$17,505,000	(Table 5)
Project Salvage Value	<u>\$ 589,066</u>	(Table 2)
Total-10 Year Benefits:	\$28,416,826	

With the project costs of \$3,156,200, as detailed in Table 1, this Project Alternative has a B/C ratio of:

$$\begin{array}{l} B - \underline{\$28,416,826} \\ C - \underline{\$ 3,156,200} \end{array} \quad \underline{9.00}$$

LINE: Wann to Granite City
OPERATOR: Gateway Eastern Railway Company (GWWE)
OWNER: Gateway Eastern Railway Company (GWWE)

PROBLEM STATEMENT

Gateway Eastern Railway Company (GWWE) owns and maintains the eastbound No. 2 track of a segment of double track operated as a joint facility between Wann and Granite City. The GWWE has requested funding from the Illinois Rail Freight Assistance Program to rehabilitate the No. 2 eastbound track. Improvements to the ties, surfacing, and crossings on 13.2 miles of track would increase track speed for passenger and freight trains and decrease vehicular delay time at crossings. This analysis determines whether the benefits of a publicly financed rehabilitation exceed the project's estimated costs.

BACKGROUND

The GWWE purchased No. 2 track from Conrail in January, 1994. This track currently serves six railroads including the SPCSL, GWWR, Amtrak, Union Pacific, Illinois Central, and Burlington Northern. The westbound side of this paired track (No. 1 track) is jointly owned by SPCSL and Gateway Western Railway Company (GWWR). The SPCSL performs maintenance on No. 1 track. Both No. 1 and No. 2 tracks are dispatched by GWWR under contract with GWWE and SPCSL.

The GWWE has made some improvements on No. 2 track between Lenox and WR Tower. As a result, track speeds have increased from 15 MPH for passenger and 10 MPH for freight to 30 MPH for passenger and 25 MPH for freight trains.

By further rehabilitating the No. 2 track, GWWE will increase the Wann to Lenox track speed from 30 MPH for passenger and 25 MPH for freight to 79 MPH for passenger and 50 MPH for freight trains except at MP 7.1 where a subgrade problem exists. In addition, the portion of track between Lenox and WR Tower in Granite City will be increased to 79 MPH for passenger and 50 MPH for freight trains. Also, increasing track speeds will reduce Amtrak passenger travel time by about one-half hour each day.

In addition, the increase in train speed between Wann and WR Tower will reduce train occupancy of the various at-grade crossings (including approach times), and hence vehicular traffic delay time, by over an hour each day. Based on current vehicle counts and assuming a \$9.00 per hour value-of-time for each vehicular passenger calculated at an average vehicle occupancy of 1.4 persons, an annual savings of over \$68,000 will be realized by rehabilitating the crossings between Wann and WR Tower.

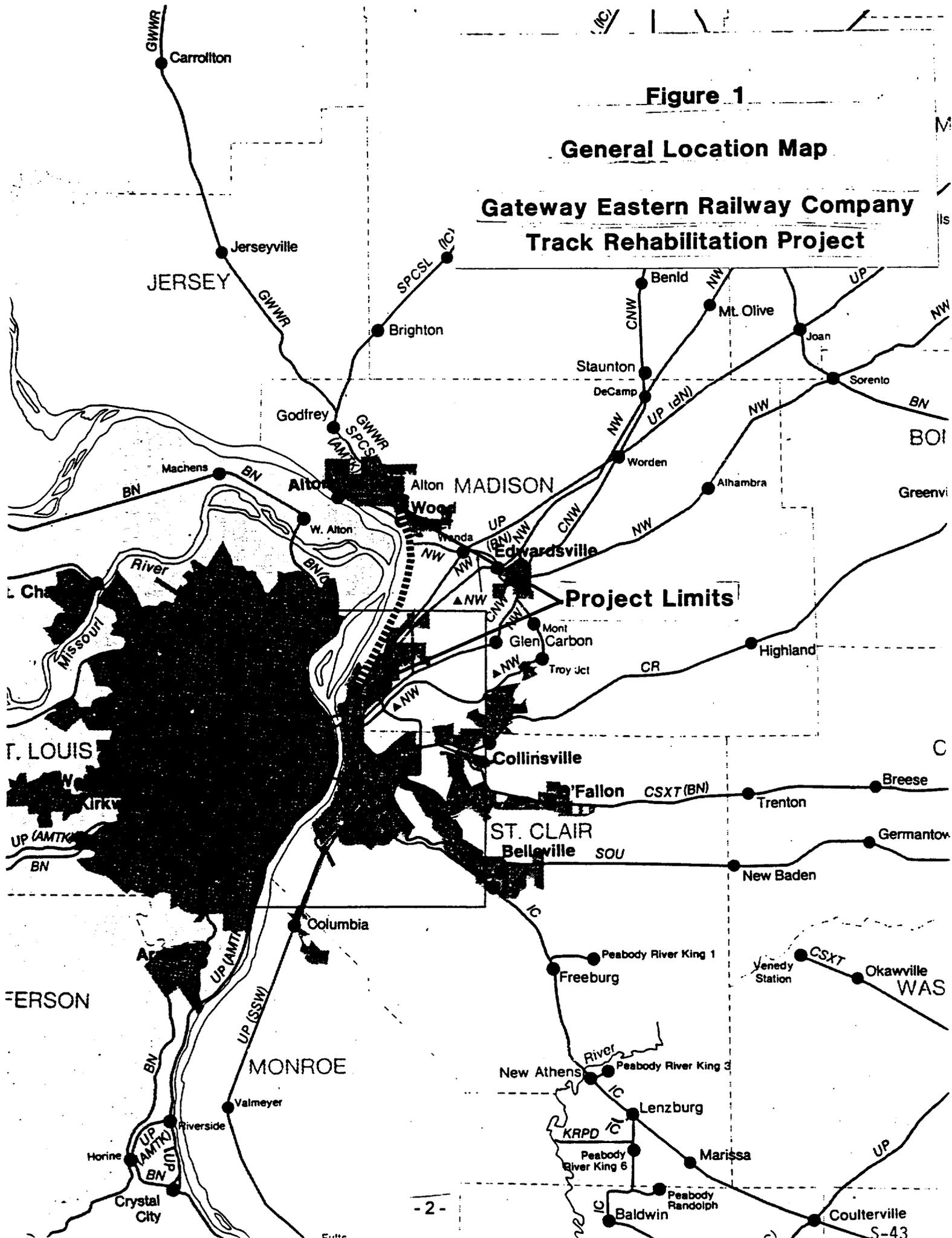
LOCATION

The proposed project is located between Wann and Granite City in Madison County, Illinois. This track feeds into the St. Louis gateway. The project location and project limits are shown in Figures 1 and 2.

Figure 1

General Location Map

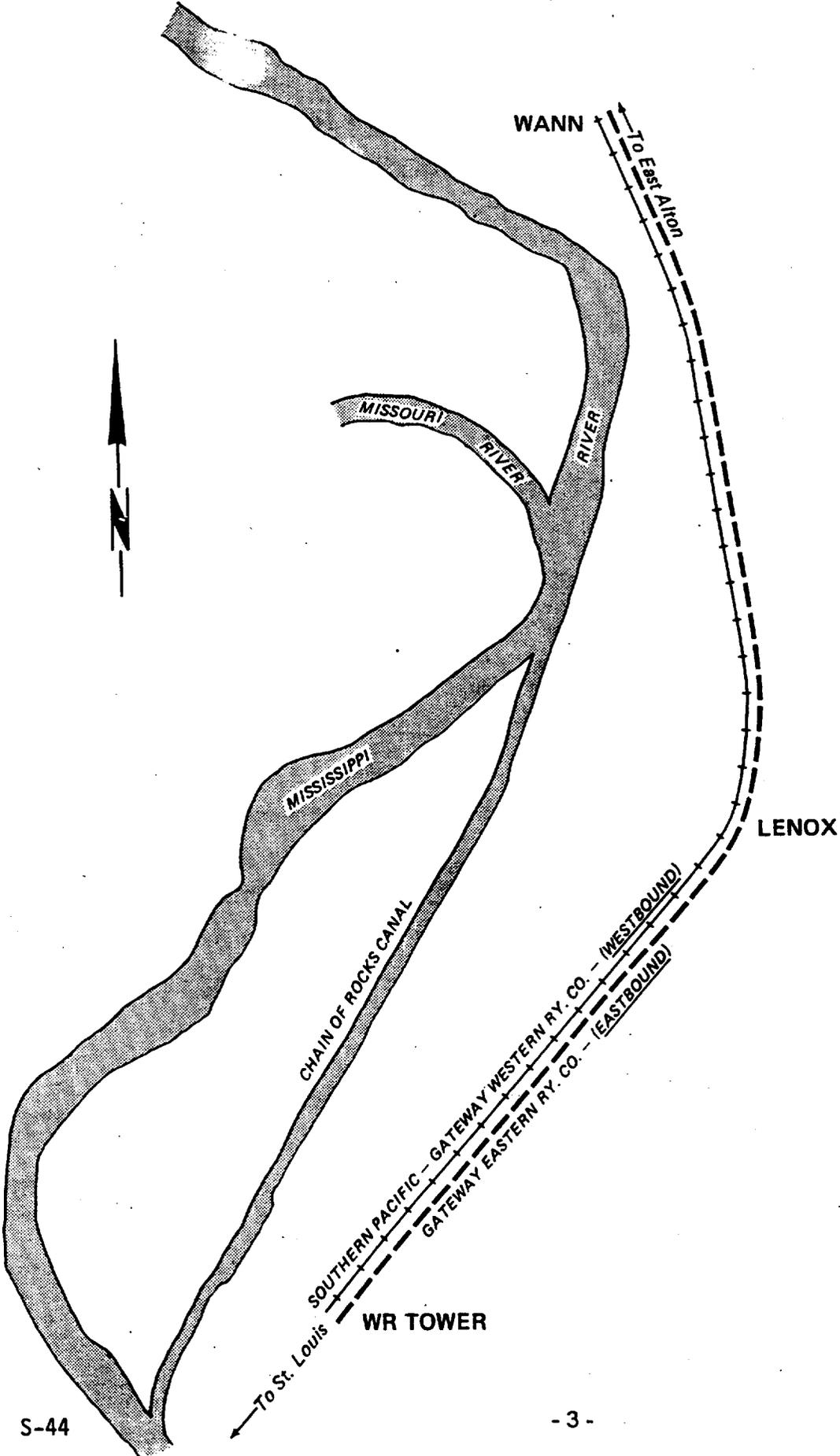
Gateway Eastern Railway Company
Track Rehabilitation Project



Project Limits

Figure 2

Project Limits
Wann to Granite City
Madison County



LEGEND

- Repair Existing Track
- Existing Track

Not to scale

INVESTMENT OPTIONS

Two investment options are considered in determining whether a track and crossing rehabilitation project between Wann and Granite City is eligible for state funds.

No investment, which would maintain existing track speeds limiting GWWE from providing cost-efficient passenger and freight service and continuing vehicular traffic delays on 13.2 miles of track between Wann and Granite City.

Invest \$3,490,050 to rehabilitate rails and ties along with 11 crossing surfaces on 13.2 miles of No. 2 track between Wann and WR Tower to increase passenger and freight rail speed and decrease vehicular traffic delays.

NO INVESTMENT OPTION

With the no investment option, GWWE owned trackage will continue to hinder passenger and freight service in the St. Louis gateway area and delay vehicular traffic at crossings.

INVESTMENT OPTION

The investment option examines the rail, ties, signal, and surface improvements to allow increased passenger and freight rail speeds along 13.2 miles of existing track. Estimated project cost detail is shown in Table 1.

Table 1
Estimated Project Rehabilitation Costs

Phase 1

ITEM	QUANTITY	MATERIAL	LABOR/ EQUIPMENT	TOTAL
Crosstie Renewal	11,011	\$419,927	\$139,834	\$559,761
Wann-Lenox, Switch Tie Renewal	444	22,239	27,268	49,507
Surface Main + Interlockings	73,920	123,480	120,681	244,161
Grade Crossing Rehabilitation	424 (LF)	63,381	62,242	125,623
Geotechnical Investigation MP 7.1	1 (LS)		25,000	25,000
Electrocode No. 2 Lenox-WR	1 (LS)	<u>65,000</u>	<u>15,000</u>	<u>80,000</u>
PHASE I SUBTOTAL		\$694,027	\$390,025	\$1,084,052

PHASE 2

Relay Rail Lenox-WR	59,136 (LF)	966,336	353,032	1,319,368
Subgrade Stabilization	1 (LS)	94,500	206,463	300,963
Electrocode No. Wann-Lenox	1 (LS)	80,000	20,000	100,000
Lenox Interlocker	1 (LS)	<u>370,262</u>	<u>315,405</u>	<u>685,667</u>
Phase II Subtotal		\$1,511,098	\$ 894,900	\$2,405,998
Total		\$2,205,125	\$1,284,925	\$3,490,050
Total Estimated Project Costs				<u>\$3,490,050</u>

To determine the benefit/cost ratio for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the 10 year project life. The residual value of \$666,473, when discounted to its present worth of \$257,259, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$3,232,791 as shown below.

	<u>Rail + OTM</u>	<u>Ties</u>	<u>Total</u>
<u>Cost</u>	\$1,012,968	\$470,556	
% Life Remaining:	<u>x50%</u>	<u>x34%</u>	
Residual Value (10 yrs):	506,484	159,989	= \$ 666,473
Present Worth Factor (10%-10yr):			<u>.386</u>
Present Worth of Residual Value:			\$ <u>257,259</u>

In summary: Project Cost:	\$3,490,050
Less Present Worth Residual:	<u>257,259</u>
Net Project Cost for B/C:	<u>\$3,232,791</u>

Transportation Benefits

Under existing conditions, the maximum allowable train speed is 30 MPH for passenger and 25 MPH for freight trains from Wann to Lenox, and 15 mph passenger and 10 mph freight from Lenox to WR Tower. These speeds do not permit cost-efficient train movements over this segment of line. Implementing the investment option would allow GWWE to improve train speeds up to 79 MPH for passenger and 50 MPH for freight on portions of the line. This increase in speed, together with the proposed signal improvements, would save crew, engine, and trouble call hours which will produce monetary savings in the annual amount of \$409,782.

In addition, passengers riding Amtrak trains experience delays in travel time due to the existing slow speeds. With the improvements, passengers could save approximately 25 minutes per eastbound (northbound) passenger per day. Current ridership eastbound out of St. Louis is 78,116 passengers annually. Assuming a value-of-time of \$0.15 per minute (\$9.00 per hour), with a savings of 2,183,341 passenger minutes, this represents over \$327,501 in passenger time savings per year. The present worth of this benefit is presented in Table 2.

Public Benefits

The reduction in crossing occupancy due to increased passenger and freight train speeds (using average rail traffic and train lengths) is estimated at nearly one hour and nine minutes per day. Daily vehicular traffic totals 32,497 spread over the 11 affected crossings. Therefore, if we assume an even distribution of rail and highway traffic, approximately 896 vehicle minutes will be saved daily. Using average vehicle occupancy of 1.4 persons and an average value of time of \$0.15 per minute (\$9.00 per hour), there will be an annual savings of \$68,678 as the public benefit.

Table 2

Transportation Efficiency Benefits

Project Year	Annual Savings in fuel, crew costs & trouble calls	Ten Year Factor	Total Discounted Benefit
1-10	\$409,782	6.145	\$2,518,110

Project Year	Annual Benefit to Amtrak	Ten Year Factor	Total Discounted Benefit
1-10	\$327,501	6.145	\$2,012,494
Total Transportation Benefit			<u>\$4,530,604</u>

Public Benefits: Vehicular Traffic Time Savings

Project Year	Annual Time Savings	Ten Year Factor	Total Discounted Benefit
1-10	\$68,657	6.145	\$421,897

BENEFIT/COST

The benefits discounted over 10 years are \$4,952,501. The appropriate cost for the benefit cost formula is \$3,232,791. The Benefit/Cost Ratio is therefore 1.5. This formula is as follows:

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Public Benefits}}{\text{Project Net Cost} - \text{Residual Value}}$$

$$\frac{B}{C} = \frac{\$4,530,604 + \$421,897}{\$3,490,050 - (-\$257,259)} = \frac{\$4,952,501}{\$3,232,791} = 1.5$$

LINE: At Pekin (Crystal Lake), Illinois
OWNER: Chicago & Illinois Midland Railway (C&IM)
OPERATOR: Chicago & Illinois Midland Railway (C&IM)

ISSUE:

Are there sufficient transportation, economic and public benefits to justify an investment in developing a rail-to-barge facility and direct rail to industry connections for the C&IM at this location adjacent to the Illinois River? The Department has been asked to provide low interest loan financing to assist in the construction of this facility. The following analysis examines the costs and benefits of the proposal to determine if funds from the state's Local Rail service Assistance program can be used.

BACKGROUND:

In late 1993, the Chicago & Illinois Midland Railway purchased a 38.5 acre tract of land around and including an 11 acre lake with access to the Illinois River immediately south of Pekin. The railroad has cleared abandoned structures from the area, which is bounded on the west by the Chicago & NorthWestern (C&NW) and on the east by the C&IM. The railroad now wishes to complete development of a rail-to-barge transfer facility located within this area: a bridge has been constructed over the inlet to the lake, and now a bridge deck and track work are necessary. This project would also allow the C&IM to have direct access to certain industries immediately north of the facility.

The rail-to-barge facility would be utilized primarily to alleviate congestion at more southern bulk transfer points during winter months: with ports above Pool 19 on the Mississippi River (near Keokuk) closed to barge traffic, grain originating in Iowa on the C&NW now moves to open water on the Mississippi near East St. Louis. When East St. Louis is congested, the C&NW cannot make efficient use of its grain car fleet. The Crystal Lake facility, switch by the C&IM, would be an alternate outlet for this grain.

LOCATION:

The project is located immediately south of Pekin in Tazewell County. Its location in relation to the C&IM system and other railroads is shown in Figure 1. Highway access is provided via Illinois Route 29.

INVESTMENT OPTIONS:

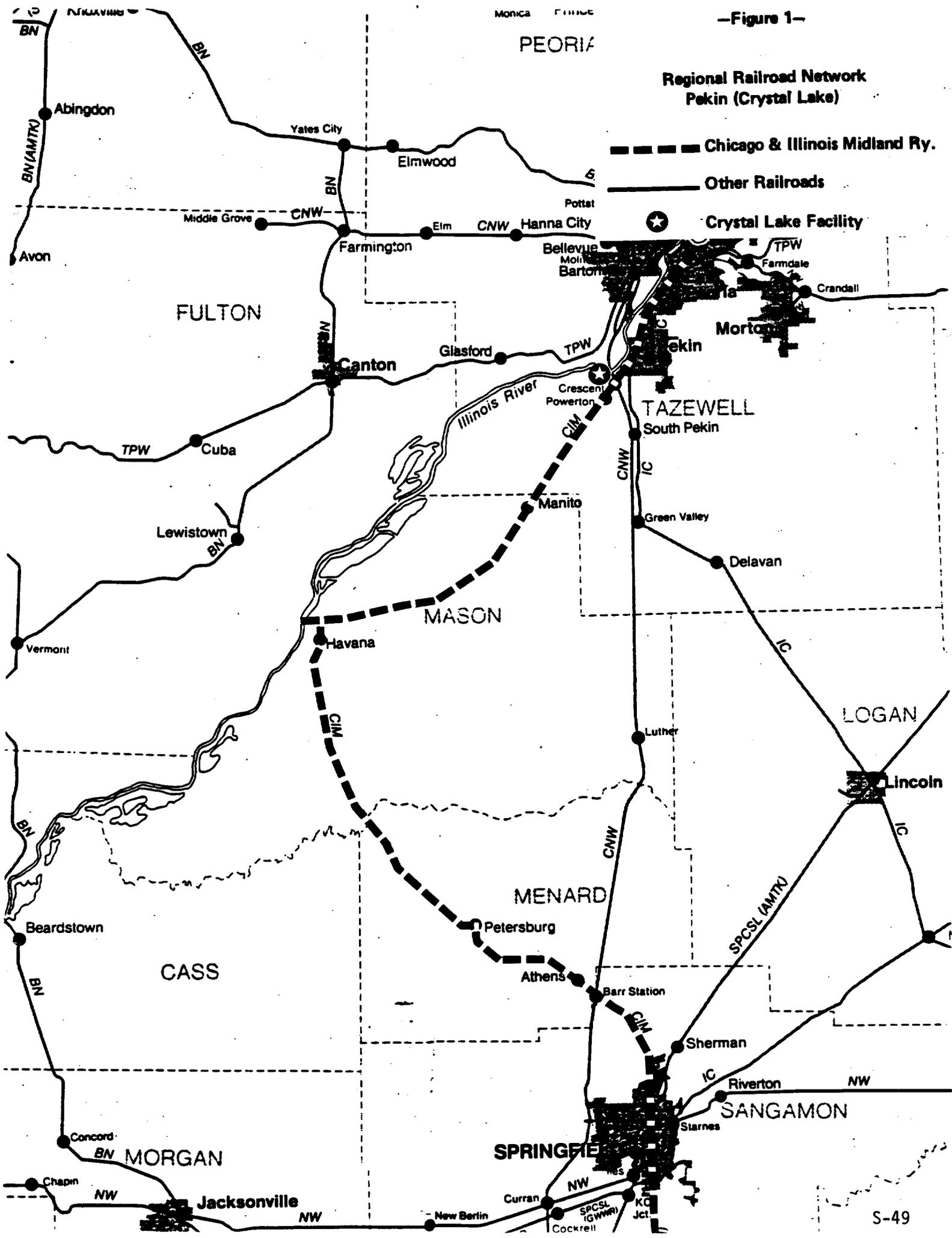
For the purpose of determining whether the proposed rail facility is eligible for program funding, two options are reviewed:

- No Investment, which would retain the site in current state; and
- A \$412,485 capital investment to construct the necessary tracks and bridge deck to utilize the site for rail-to-barge transfer.

-Figure 1-

**Regional Railroad Network
Pekin (Crystal Lake)**

- Chicago & Illinois Midland Ry.
- Other Railroads



NO INVESTMENT:

Without further investment to complete the Crystal Lake facility, a significant investment in land acquisition, clearing and trestle construction would be lost. A total of \$2.3 million has been invested to date. The facility could not open for traffic, and the potential to diversify and expand the C&IM's traffic and revenue base would be lost. In addition, significant transportation efficiency benefits for both railroad and shippers, quantified in next section, would fail to materialize.

INVESTMENT OPTION: \$412,485

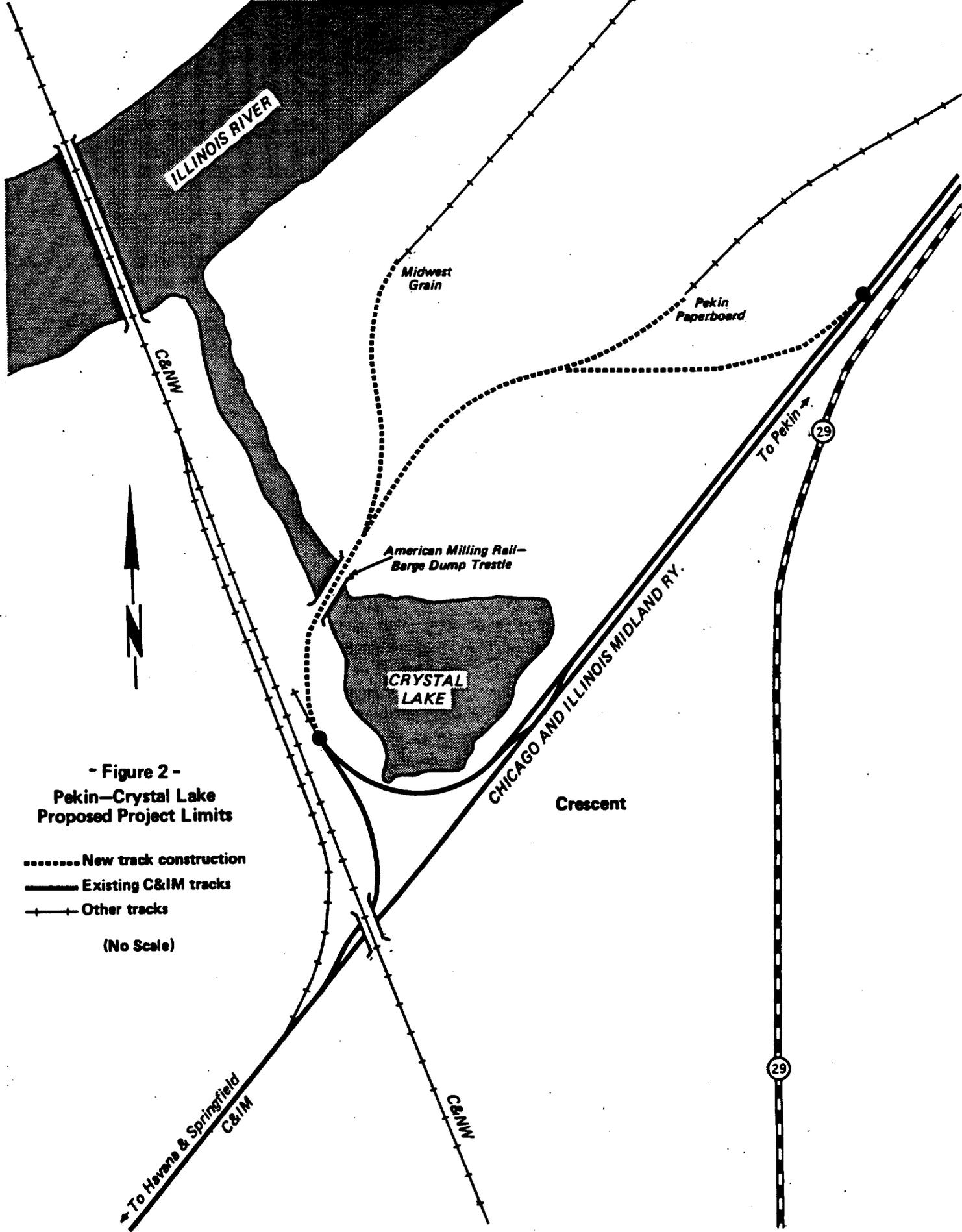
The scope of this investment option includes construction of 4,330 feet of track, including associated turnouts and connections as depicted in Figure 2. The proposed track configuration is basically a loop allowing C&IM to move traffic over the rail to barge dump facility in units of up to 25 cars. Typically, the railroad would receive grain cars for switching from its C&NW connection in 75 car units. In addition to the track work, the detailed estimate in Table 1 includes a 210' bridge deck over the existing trestle.

- TABLE 1 -

Investment Option Cost Estimate				
<u>Item</u>	<u>Quantity</u>	<u>Material Cost</u>	<u>Labor/ Equipment</u>	<u>Total Cost</u>
Skeleton Track	4,000 T.F.	\$121,800	\$35,360	\$157,160
Subballast	1,600 Ton	19,200	10,700	29,900
Ballast/Surface	2,400 Ton	36,000	15,991	51,591
Bridge Deck	210 T.F.	15,101	8,030	13,131
Turnouts	3 Ea.	60,000	11,603	71,603
Timber/Grade Crossings	32 L.F.	160	998	1,158
Overhead, Supervision & Clerical	17.5%	-	-	58,300
Construction Contingency	5%			<u>19,642</u>
Total Estimated Cost:				<u>\$412,485</u>

For the purpose of determining the benefit/cost ratio of this investment, the estimated project cost is reduced by a residual value, approximating the remaining value of the improvement at the end of a 10 year project life. A residual value of \$85,053 in the tenth year, reduced to its present worth of \$32,788 when applied to the cost detailed in Table 1, results in a cost of \$379,697 to be used in the benefit cost calculation, as follows:

Item:	<u>Rail & OTM</u>	<u>Ties</u>	<u>Total</u>
Cost:	\$113,161	83,740	
% of Life Remaining:	<u>50%</u>	<u>34%</u>	
Residual Value @ 10th year:	\$ 56,581	28,472	\$85,053
	Discount (10%-10 year):		<u>x.3855</u>
	Present worth Residual:		\$32,788



- Figure 2 -
 Pekin-Crystal Lake
 Proposed Project Limits

- New track construction
- Existing C&IM tracks
- + + + Other tracks

(No Scale)

Transportation Benefits:

The development of the rail to barge facility contemplated by this investment provides the C&IM an opportunity to diversify and expand its traffic base, while at the same time alleviating congestion and inefficiencies currently encountered during the winter months when ports on the upper Mississippi are not able to take grain from origins on the C&NW. In addition to the grain traffic transferred to barge, the C&IM has identified other traffic which, with the building of connections to other industry tracks, can be diverted from over the road truck transport to direct rail delivery. The benefits are enumerated as follows:

- Rail to barge grain traffic moving to Crystal Lake from C&NW will generate savings in rail car costs and transit times, when compared to the alternative route to East St. Louis. A conservative estimate of car cost savings @ \$42/car would generate \$126,000 in annual savings.
- This project will open up existing milling operations to direct access for C&IM. Inbound Iowa grain in 75 car units can be broken into smaller blocks for existing mills, at a net cost reduction of approximately \$173 per carload. Carloads are to vary from 400 carloads per year in the first year, to an estimated 3,285 carloads per year in the 10th year. The annual and 10-year benefit of this traffic is detailed in Table 2.
- Direct access to mills provides an opportunity for C&IM to divert truck-hauled grain from stations on its line to direct rail delivery, at a rate savings of \$45 per carload. C&IM estimates that approximately 100 carloads per year can be handled in this fashion.
- C&IM projects that with the completion of this project providing direct access to mills will allow flour to move by rail versus truck, at a rate savings of \$140 per carload. As with direct movements of grain, flour traffic is expected to vary from an initial 100 carloads/year to 700 carloads in the 10th project year. The benefits are detailed in Table 2.

Economic Benefits:

Local employment in the region will increase slightly, with the C&IM projecting that by the beginning of the fourth project year, crews that are now part-time will be moved to full-time status. Total wage and fringe benefits generated by this expansion are estimated at \$183,600 per year in the 4th through 10th year. Using a present worth discount factor for 10%, this equates to \$671,548 in current dollars benefits.

While not specifically quantified in this analysis, the project contemplated opens up additional markets for shippers in the Pekin/Crystal Lake area. For example, the property has six 50' diameter storage tanks that can be used for bulk storage and transfer of liquid commodities: C&IM is currently trying to develop a line of business to utilize these tanks.

-TABLE 2-
- INVESTMENT OPTION TRANSPORTATION BENEFITS -

Benefit Category/	Project Year:	1	2	3	4	5	6	7	8	9	10
Cost Savings-Rail-to-Barge Carloads:		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
\$:		126,000	126,000	126,000	126,000	126,000	126,000	126,000	126,000	126,000	126,000
Cost Savings-Rail to Mill Carloads:		400	700	1,200	1,600	2,100	2,600	3,000	3,285	3,285	3,285
\$:		69,000	121,100	207,600	276,800	363,300	449,800	519,000	568,305	568,305	568,305
Rate Savings-Grain Carloads:		100	100	100	100	100	100	100	100	100	100
(direct rail access) \$:		4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
Rate Savings-Flour Carloads:		100	200	300	500	700	700	700	700	700	700
(single line haul) \$:		14,000	28,000	42,000	70,000	98,000	98,000	98,000	98,000	98,000	98,000
Total Annual Benefit:		\$213,500	\$279,600	\$380,100	\$477,300	\$591,800	\$678,300	\$747,500	\$796,805	\$796,805	\$ 796,805
Discount Factor (10%):		0.909	0.826	0.751	0.683	0.621	0.565	0.513	0.467	0.424	0.386
Present Worth of Benefit:		\$194,072	\$230,950	\$285,455	\$325,996	\$367,508	\$383,240	\$383,468	\$372,108	\$337,845	\$ 307,567

TOTAL 10-YEAR BENEFIT:

\$3,188,209

SUMMARY-BENEFIT COST RATIO:

In summary, the total present worth of benefits from this investment are as follows:

Transportation Benefits:	\$3,188,209
Economic Benefits:	<u>671,548</u>
<u>Total:</u>	<u>\$3,859,757</u>

Comparing this benefit level to the costs derived from Table 1, a benefit-to-cost ratio of 10.16 to 1.0 is derived.

$$\begin{array}{l} B = \frac{\$3,859,757}{\$379,697} = \underline{10.16} \\ C \end{array}$$

LINE: Coal City, Illinois
OPERATOR: Atchison, Topeka and Santa Fe Railway Company (ATSF or Santa Fe)
OWNER: ATSF/Industry

PROBLEM STATEMENT

Given the potential benefits of the expansion of the area's work force and the introduction of rail service, this analysis will examine these benefits compared to the costs of new construction.

BACKGROUND

An official request for construction assistance was received by the Department from an industry in need of railroad service. This assistance would provide for the necessary rail service to an existing industry with serious expansion plans. The site selected for the construction would be served by the Santa Fe.

Since this project concerns one user, traffic volumes will not be discussed, as this is privileged information. The benefits will be determined by employment expansion and transportation cost savings determined by the difference in the existing rail and truck rates.

LOCATION

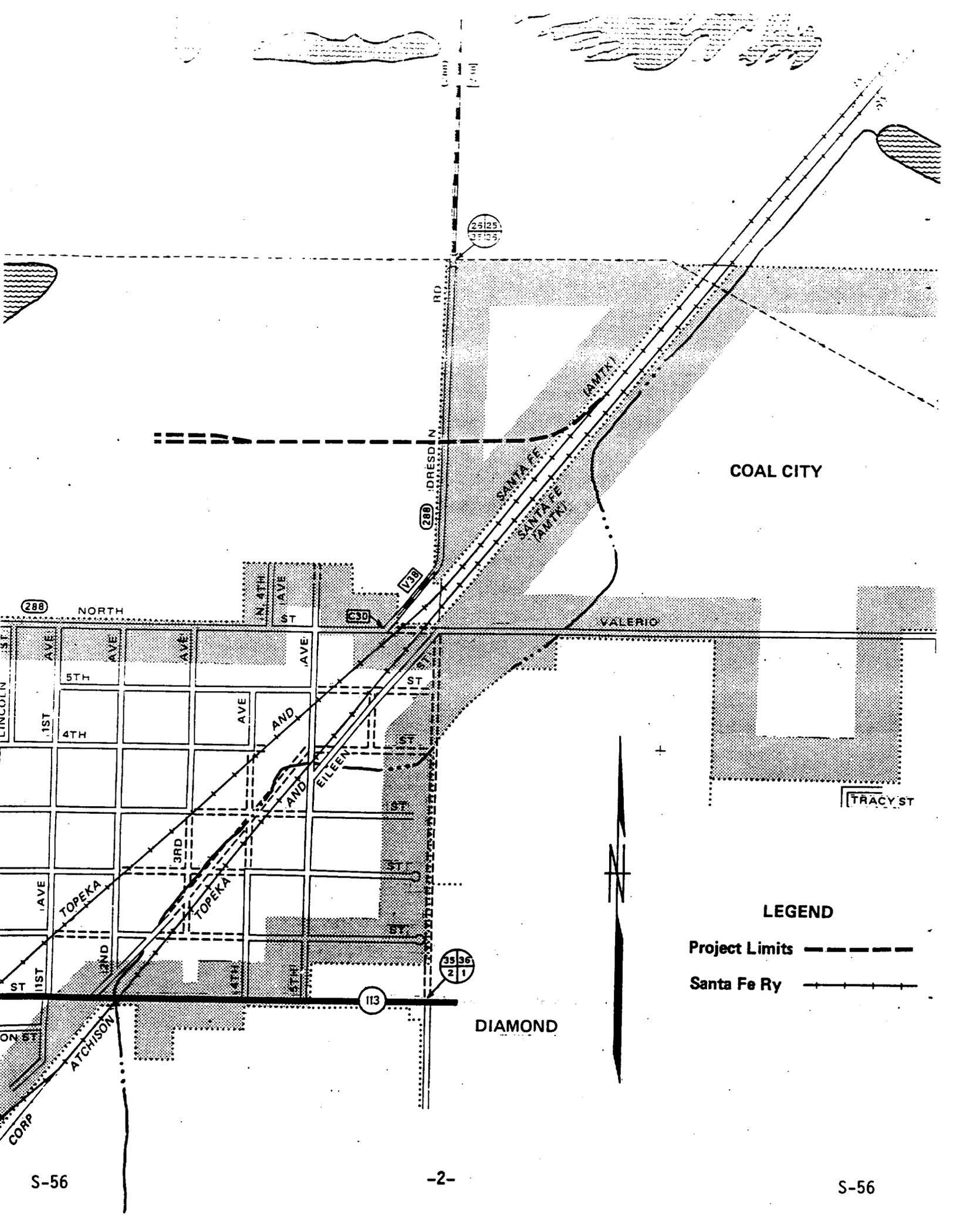
This potential project is located in the northwest quadrant of North Street and Dresden Road in Coal City, Illinois. Coal City is located in east central Grundy County.

INVESTMENT OPTIONS

Two options are compared in this analysis.

- o No Investment - which means that no new employment will be created nor will the existing business enjoy a reduction in freight rates on commodities conducive to rail shipment.

- o \$840,000 for new construction.



COAL CITY

VALERIO

TRACY ST

LEGEND

- Project Limits
- Santa Fe Ry

DIAMOND

NO INVESTMENT OPTION

Without an investment the area's job market will not expand and thereby will not create new employment opportunities. New opportunities amount to 37 jobs. This is due to planned expansion the company has considered, however, without rail service at this site the planned expansion would not be economically viable.

The introduction of rail freight service is projected to save the industry \$160,000 annually in transportation costs. This amount is the incremental cost below that of using highway transport.

The impacts of no investment for lost income to the region and lost transportation cost savings to the plant are as follows:

Table 1
Lost Wages to the Region

<u>Project Year</u>	<u>Increased Employment</u>	<u>Wages & Benefits</u>	<u>Present Worth</u>	<u>Lost Income 5-Years</u>
1-5	37	\$1,094,515	3.791	\$4,149,300

Table 2
Lost Transportation Cost Savings

<u>Project Year</u>	<u>Annual Transportation Savings</u>	<u>Present Worth</u>	<u>Lost Savings 5-Years</u>
1-5	\$160,000	3.791	\$606,560

INVESTMENT OPTION

An estimated \$840,000 is necessary for new construction. If this investment is made, the region's economy would show an increase in income of over \$4.1 million over five years. The added benefit of transportation cost savings to the company are projected to be \$606,560 in the same period. Both of these benefit groups are discounted into present dollars over a five year period for use in the benefit/cost formula.

The following table provides the estimated costs.

Table 3
Estimated Project Cost

<u>BID ITEM</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>MATERIAL COST</u>	<u>LABOR/EQUIP COST</u>	<u>TOTAL PROJECT COST</u>
New Construction					
Engineering	Lump Sum	1	--	--	\$ 50,000
Clearing & Grub.	Lump Sum	1	--	--	\$ 10,000
Grading	Lump Sum	1	--	--	\$250,000
Seeding & Mulching	Lump Sum	1	--	--	\$ 15,000
Subballast	Cubic Yard	2,300	\$34,500	\$11,500	\$ 46,000
Skeleton Trk. Const.	Track Foot	3,500	--	52,500	\$ 52,500
Rail	Lineal Foot	7,000	\$42,000	--	\$ 42,000
Ties	Each	2,154	\$47,390	--	\$ 47,390
OTM	Track Foot	3,500	\$14,000	--	\$ 14,000
Skeleton T.O. Const.	Each	1	--	\$ 4,000	\$ 4,000
Timber #8	Turnout	1	\$ 3,300	--	\$ 3,300
Steel #8-100#	Turnout	1	\$ 8,200	--	\$ 8,200
Ballasting	Cubic Yard	1,900	\$26,600	\$ 3,800	\$ 30,400
Surf./Align & Dress	Track Foot	3,700	--	\$10,915	\$ 10,915
Timber/Asphalt Cross.	Lineal Foot	24	\$ 4,800	\$ 2,400	\$ 7,200
Farm Crossings	Each	2	\$ 2,400	\$ 2,400	\$ 4,800
Bumping Post-Steel	Each	2	\$ 3,000	\$ 840	\$ 3,840
Spill Containment	Lineal Foot	120	\$12,000	\$ 3,000	\$ 15,000
Culvert 36"	Lineal Foot	200	\$ 8,000	\$ 4,000	\$ 12,000
Culverts 24"	Lineal Foot	75	\$ 2,250	\$ 1,500	\$ 3,750
Loading Ramp	Job	1	\$ 5,000	\$ 2,500	\$ 7,500
ATSF Mainline T.O.	Job	1	--	--	\$117,000
Gate	Each	1	\$ 1,000	\$ 500	\$ 1,500
Bonds and Insur.	Lump Sum	1	--	--	\$ 7,500
Sub Total New Const.					\$763,795
Contingencies					\$ 76,205
Total Estimated Cost					\$840,000

BENEFIT/COST

The benefits, discounted over a five year period, are increased regional income of \$4,149,300 and transportation cost savings of \$606,560. These benefits total \$4,755,860.

The costs for the benefit/cost formula is reduced by the residual value of the material life remaining beyond the 5-year benefit stream. This reduction in effect then discounts the costs to a similar value as the discounted total benefits. The cost for the benefit/cost formula is as follows:

	<u>Ties</u>	<u>Steel</u>	<u>Total</u>
Material Costs	\$50,690	\$67,200	
Life Remaining	67%	75%	
Residual Value	\$33,962	\$50,400	\$84,362
		Discount Factor	x .621
		Total Residual Value	\$52,390
		Total Project Cost	\$840,000
		Minus Residual Value	<u>52,390</u>
		Cost for B/C	\$787,610

The B/C ratio is completed as follows:

$$\frac{B}{C} = \frac{\text{Economic Benefits} + \text{Transportation Benefits}}{\text{Cost for B/C}}$$

$$\frac{B}{C} = \frac{\$4,149,300 + \$606,560}{\$787,610}$$

$$\frac{B}{C} = \frac{\$4,755,860}{\$787,610} = 6.04$$

LINE: At Carrollton
OWNER: Carrollton Farmers Elevator (CFEC)
OPERATOR: Gateway Western Railway (GWR)

PROBLEM STATEMENT

A Carrollton grain elevator is seeking to expand its existing rail facilities within a limited space. The company has identified a plan to more effectively use rail freight service. To accomplish this, however, the company must construct new trackage, relocate a portion of its existing trackage, rehabilitate an existing rail spur and erect an additional storage bin. Carrollton Farmers Elevator Company (CFEC) has requested a loan from the State's Rail-Freight Assistance Program for this project. The following analysis examines the benefits and costs of the proposal.

BACKGROUND

CFEC currently utilizes rail service as a primary source for outbound shipments of corn and soybeans. Involved in the storage and sale of agricultural food products, CFEC relies on rail service to deliver its commodities to waterway ports, major distribution points, as well as processing facilities.

CFEC can currently handle four rail cars at a time, and ships out approximately 340 cars per year. Because of the physical constraints of its current layout and storage capacity, CFEC relies on truck transportation when it cannot move a sufficient volume of grain in short periods of peak demand by rail. Truck rates are higher than rail rates, which means reduced margins and prices paid to farmers. CFEC can increase rail car loadings and pay higher prices for grain if the proposed improvements are made.

LOCATION

The project site is located in Carrollton in south central Greene County, which is in the southwest region of Illinois. Carrollton is served by the Gateway Western Railway, with local trains operating 5 times per week. The location of the project in relation to southwest Illinois' regional rail network is shown in Figure 1.

INVESTMENT OPTIONS

For the purpose of determining whether the proposed rail expansion and improvement project is eligible for program funding, two options are reviewed:

- o No investment, which would maintain current capacity and operating conditions for CFEC; and
- o \$400,325 capital investment to including rehabilitation of existing rail facilities, construction of added storage and construction of new trackage to expand rail loadings from four to eight carloads in a single switch.

NO INVESTMENT

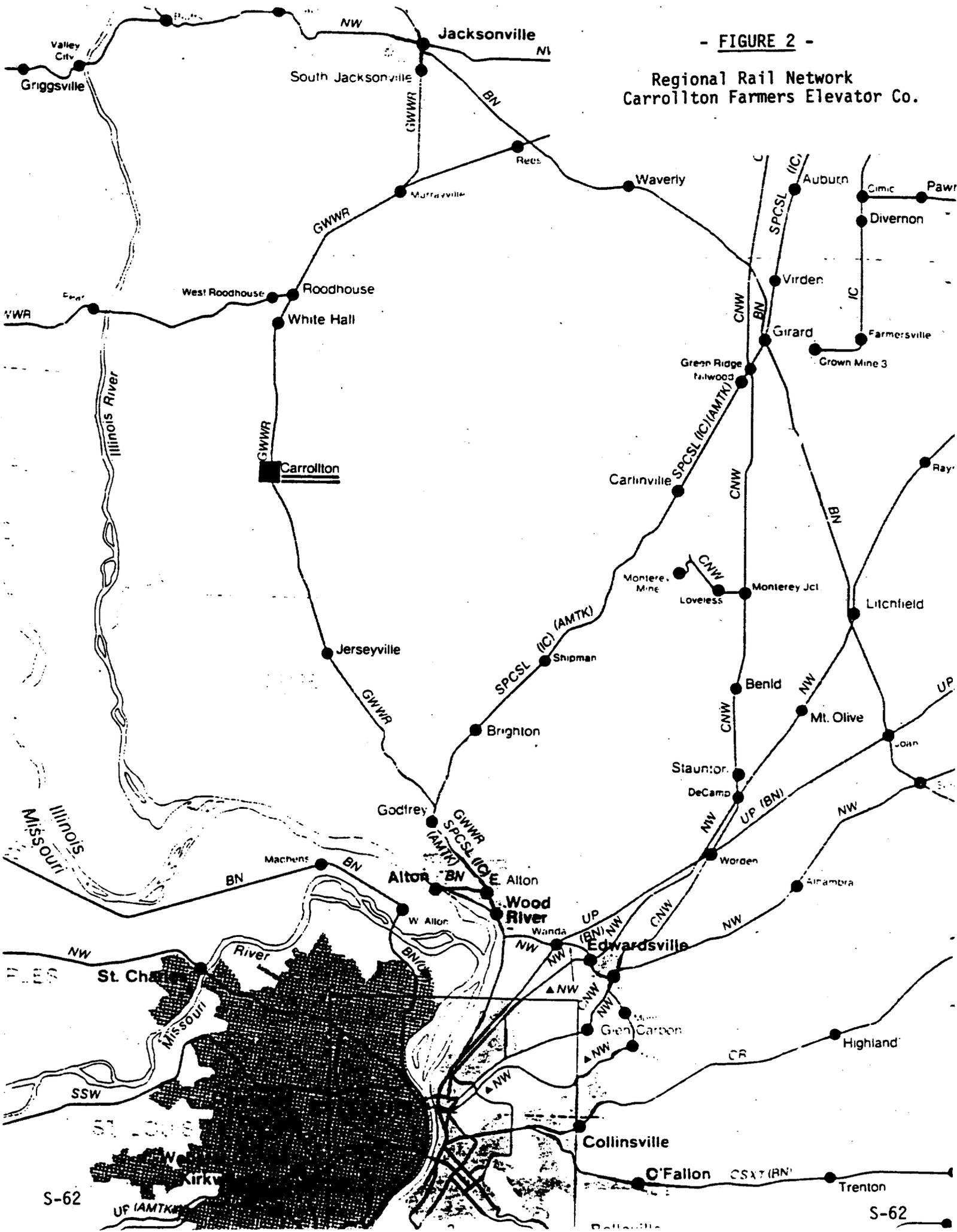
No investment to upgrade existing facilities would prevent CFEC from making more efficient use of its plant. Additional business volume would not be generated, constraining the company's ability to offer its customers better prices and limiting new employment opportunities.

INVESTMENT OPTION

The investment option includes the rehabilitation of existing rail facilities, and construction of fifty feet additional trackage. To support track expansion, CFEC proposes to construct 185,000 bushels of additional grain storage capacity with a new bin. The estimated project cost detail is shown in Table 1. Figure 2 provides a graphic illustration of this improvement.

- FIGURE 2 -

Regional Rail Network
Carrollton Farmers Elevator Co.



S-62

S-62

TABLE 1

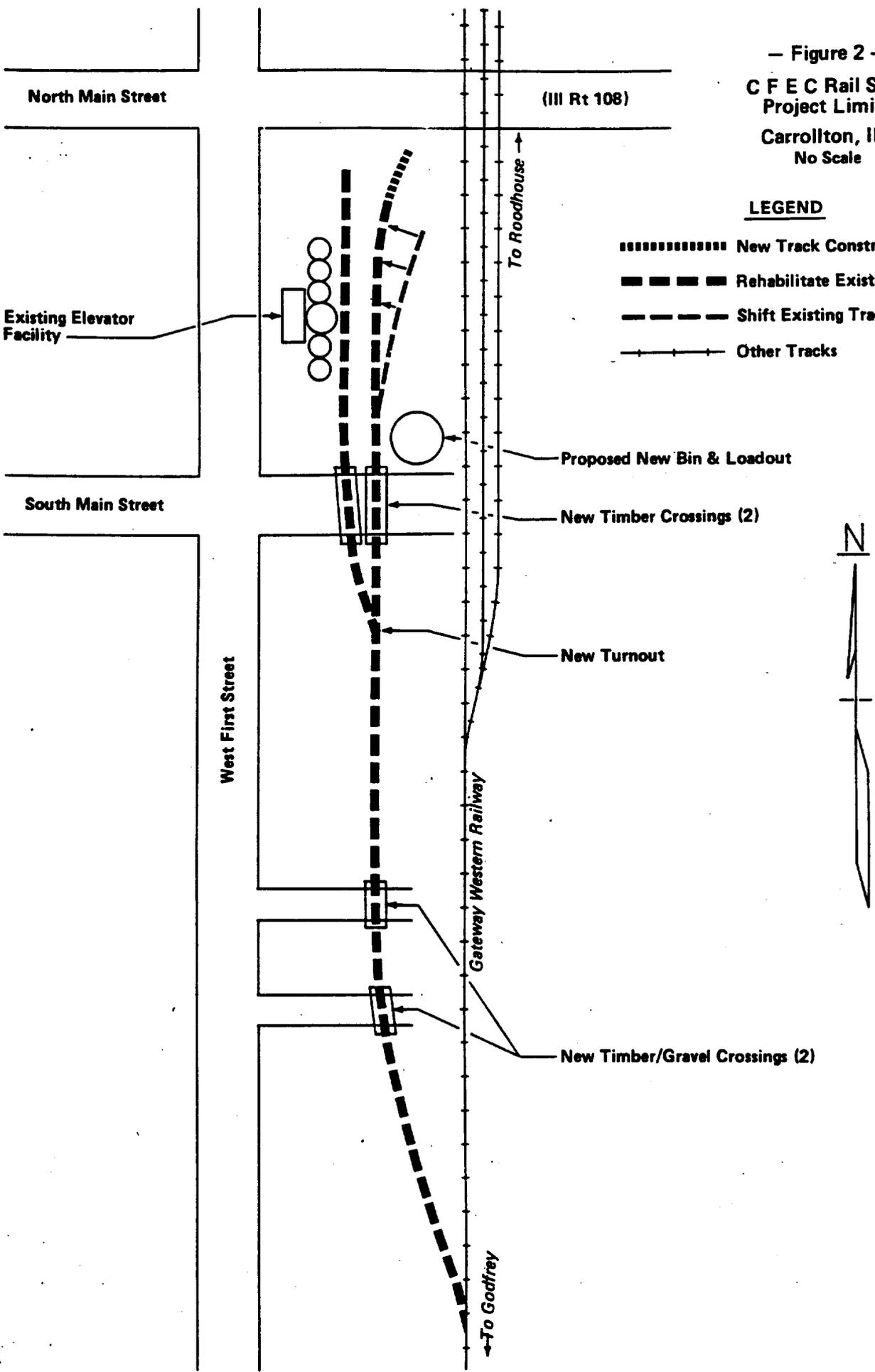
Estimated Project Cost - Carrollton Rail Spur

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Cost Labor/Equip</u>	<u>Other</u>	<u>Total</u>
<u>Track Rehabilitation:</u>					
Crosstie Renewal	400 Ea.	\$11,600	6,000	\$1,200	18,800
Switch tie Renewals	1.30 MBF	1,170	1,040	--	2,210
Turnout Rehab	1 Ea.	200	200	--	400
Upgrade Rail (90#)	675 T.F.	--	2,363	--	2,363
Rail	1,314 L.F.	6,439	--	--	6,439
OTM	675 T.F.	1,890	--	--	1,890
Shift Existing Track	400 T.F.	--	1,000	--	1,000
<u>New Track Construction:</u>					
Grading	L.S.	--	500	--	500
Skeleton Track	51 T.F.	--	663	--	663
Rail-100#, SH	102 L.F.	510	--	--	510
Ties-6"x8"	31 Ea.	853	--	--	853
OTM	51 T.F.	153	--	--	153
Skeleton Turnout #8	1 Ea.	--	3,536	450	3,986
Switch Ties/Fabric	Set	3,100	--	300	3,400
Steel	Lot	5,500	--	--	5,500
Ballast & Surface	1,817 T.F.	5,400	5,943	--	11,343
Bumping Posts	2 Ea.	--	--	3,100	3,100
Bonds, Insurace & Flagging	L.S.	--	--	--	2,848
<u>Grade Crossing Renewals:</u>					
Timber Crossings	64 T.F.	13,988	11,840	--	25,828
Rail/Gravel Crossing	32 T.F.	3,190	1,216	--	4,406
Scrap Credit	L.S.	(500)	--	--	(500)
Bolt Tightening/Bar Repair	700 T.F.	288	280	--	568
			<u>Subtotal, Track Work:</u>		<u>\$ 96,260</u>
<u>Storage/Handling Equip:</u>					
Grain Storage Bin w/Conveyor & Spouts	1 Ea.	\$189,650	80,350	--	\$270,000
Electrical Work	Job	--	15,000	--	<u>15,000</u>
			<u>Subtotal, Storage & Handling:</u>		285,000
Construction Contingencies (5%):					19,065
<u>TOTAL ESTIMATED PROJECT COST:</u>					<u>\$400,325</u>

— Figure 2 —
 C F E C Rail Spur
 Project Limits
 Carrollton, Ill.
 No Scale

LEGEND

- New Track Construction
- — — — — Rehabilitate Existing Track
- - - - - Shift Existing Track
- + + + + + Other Tracks



For the purpose of determining the benefit/cost ratio for the investment option, the estimated project cost is reduced by a residual value, approximating the remaining value of the improvement at the end of the five year project life. A residual value of \$183,297, reduced to its present worth of \$_____, when applied to the cost detailed in Table 1, results in a cost for the benefit/cost calculation of \$286,514 as shown below:

	<u>Rail & OTM</u>	<u>Ties</u>	<u>Other *</u>	<u>Total</u>
Cost:	\$13,635	\$9,183	\$189,650	
% of Life Remaining:	<u>75%</u>	<u>67%</u>	<u>88%</u>	
Residual Value @ 5 yrs.	\$10,226	\$6,153	\$166,892	\$183,271
			Present Worth Factor (10%-5)	x <u>0.621</u>
Residual Value - Present Worth:				\$113,811

In Summary:

Project Cost	\$400,325
Less Residual (PW)	<u>113,811</u>
Project Cost for B/C:	<u>\$286,514</u>

* Other includes cost for storage bin, with an assumed economic life of 40 years.

TRANSPORTATION/ECONOMIC BENEFITS:

The track expansion and rehabilitation plans envisioned by CFEC will help to reduce transportation costs for commodity shipments. Currently, CFEC ships approximately 340 rail cars per year. Following the proposed expansion, CFEC estimates its rail usage will increase twofold. This increase in rail use will reduce its dependence on truck transportation, reducing its transportation costs. Any reduction in transportation costs will be reflected in better prices for its customers. The company further projects that expanded use of rail transportation will create additional part-time employment at the elevator. Tables 2 and 3 below quantify these benefits for a 5-year period.

TABLE 2

Transportation Benefits

<u>Project Year</u>	<u>Annual Increased Production</u>	<u>Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$110,000	3.791	\$ 417,000

TABLE 3

Economic Benefits

<u>Project Year</u>	<u>Annual Added Wages & Fringe Benefits</u>	<u>Discount Factor</u>	<u>Total Discounted Benefit</u>
1-5	\$10,000	3.791	\$38,000

BENEFIT/COST ANALYSIS

Those benefits applicable to this project include transportation cost savings and increased employment. These benefits amount to a total of \$455,000 over the five year project.

When compared to the estimated project costs, less residual value, the economic benefits yield a benefit/cost ratio of 1.52 as shown below:

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Economic Benefits}}{\text{Net Project Cost}}$$

$$\frac{B}{C} = \frac{\$445,000}{\$286,514} = \underline{1.55}$$

LINE: Rockdale Branch
OPERATOR: Joliet Junction Rail Road (JJRR)
OWNER: Relco Locomotives, Inc. dba JJRR

PROBLEM STATEMENT

This line has been out of service for over two years. A wooden bridge suffered damage from a fire in 1991 and rail-rail interchanges at each termini have been removed.

BACKGROUND

This line was once owned by the Elgin Joliet and Eastern Railway Company (EJ&E). Service was terminated on this route in July 1991 due to a fire on a timber bridge which severed the movement of overhead traffic. On January 30, 1992, the line was filed for abandonment with the Interstate Commerce Commission because the EJ&E determined that repair of the bridge and subsequent operation was too costly. The branch was officially abandoned on April 10, 1993, leaving six users with no direct rail service.

A locomotive repair and leasing company has now purchased the Rockdale Branch and wishes to commence operations on the line as soon as possible. Some track rehabilitation and, of course, bridge repair and reconstruction of the north and south interchanges will be necessary to physically return the trackage to full operation.

According to shipper surveys the need for the return of rail service is evident. This analysis will determine the justification of the rehabilitation project by the comparison of the transportation savings with the estimated cost of the project.

DESCRIPTION OF THE LINE

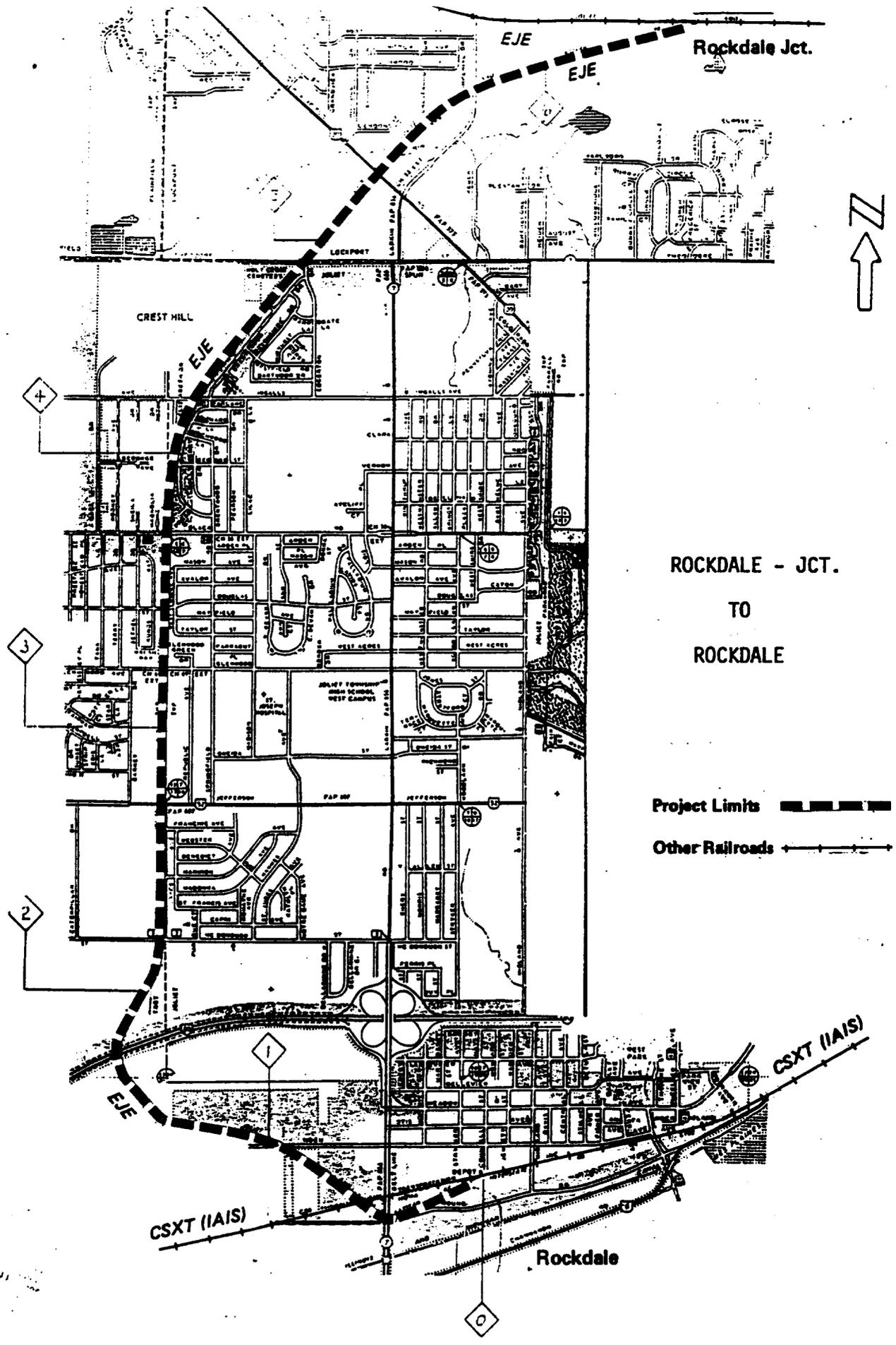
Location:

The branch is located entirely in Will County, Illinois. It extends 6.52 miles from Rockdale Junction on the EJ&E at the north side of Joliet south to Rockdale on the CSX Transportation (CSX) line. The Rockdale termini is on the very south edge of Joliet. (See Map).

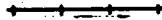
Physical Condition:

Given that this section of track has been out of service for over two years, some rehabilitation will be necessary. Due to heavy rains in 1993 some washouts will need to be corrected. The bridge, damaged by fire, will need structural repair.

The necessary cost for repairs, reinstallation of the interchanges and other operational construction is estimated at \$620,300. These costs are provided in more detail in the Investment Option under Table 2.



ROCKDALE - JCT.
TO
ROCKDALE

Project Limits 
Other Railroads 

ALTERNATIVE TRANSPORTATION

Since the branch has been abandoned for over two years, the various users have adjusted by using available alternatives to rail transport. The result of this change of mode for the movement of various commodities is an increase in transportation charges. Some users have reported increases as high as \$900 per car in having to use trucks over rail. Not all of this cost is due to rates alone, but it includes incremental costs associated with having to unload 4 trucks at various times of the day as opposed to unloading one rail car. In this case, the costs to unload one rail car within a given 24 hour period rather than unloading four trucks at the time of arrival only adds to labor costs causing a decrease in daily productivity to unload the same amount of commodity. If rail service could be restored, unloading could be scheduled in off peak times and not cut into a given production level.

INVESTMENT OPTIONS

Two options are compared in this analysis:

- o No Investment -
With no investment, the six existing rail users would not enjoy a decrease in transportation charges.
- o Investment Option -
Invest \$620,300 for rehabilitation and reconstruction.

IMPACT OF NO INVESTMENT

Without the required investment to restore the rail line into operable condition, the existing users will remain at a competitive disadvantage. The existing increased transportation costs will continue to be borne.

Associated with the increased transportation charges, however, not quantified in this analysis, is the economic potential of new industries locating in this area. If rail service was restored, and given the transportation cost savings a short line railroad can provide, this area could very easily realize economic growth through expansion of existing businesses and the introduction of new companies.

The following table provides the economic loss to existing businesses over a ten year period. The total economic loss due to increased transportation charges is discounted over this study period.

TABLE 1
NO INVESTMENT
INCREASED TRANSPORTATION CHARGES

<u>Project Year</u>	<u>Increased Costs</u>	<u>Present Worth Factor</u>	<u>Increased Costs Discounted 5-Years</u>
1-10	\$108,000	6.145	\$663,660

INVESTMENT OPTION

With an investment to restore rail service, the existing increased transportation charges would be eliminated. In fact, transportation costs could be reduced from what the users were charged prior to the abandonment. This is due to lower operating costs associated with short-line operation.

Service should also improve over the previous situation, simply because of the short-line being based on the branch. The crew would not have to be "called in" from other spots on the connecting railroad.

The following table presents the estimated costs of returning the branch to service.

TABLE 2
ROCKDALE BRANCH
ESTIMATED REHABILITATION AND RECONSTRUCTION COSTS

<u>Item</u>	<u>Unit</u>	<u>Material</u>	<u>Labor/Other</u>	<u>Total</u>
Crossing Renewal	64 T.F.	\$10,000	\$12,395	\$ 22,395
Tie Renewal	2859 Ea.	82,340	34,595	116,935
Switch Tie Renewal	12.04 MBF	10,790	9,630	20,420
Rail Repair	40 Ea.	6,800	4,400	11,200
T.O. Rehab.	10 Ea.	1,000	2,000	3,000
Ballast & Surface	1000 C.Y.	11,000	10,425	21,425
Bolt & Bar Repair	6.35 T.M.	6,910	13,335	20,245
Washouts	Lump	--	2,250	2,250
Connect CSX	225 T.F.	4,585	5,485	10,070
New Track	Lump	47,410	32,050	79,460
EJ&E T.O.	Lump	1,200	24,160	25,360
Bridge Rehab.	Lump	--	--	272,400
			Sub Total	\$605,160
			Bonds & Ins.	15,140
			TOTAL	\$620,300

For the benefit/cost analysis, the total project cost is reduced by the residual value of the material life remaining at the end of the ten year project life. The present worth of the residual value is depicted below:

	<u>Steel</u>	<u>Ties</u>
Material Cost	\$51,188	\$125,144
Life Remaining	<u>50%</u>	<u>34%</u>
Residual Value	\$25,594	\$ 42,550
Present Worth	<u>.386</u>	<u>.386</u>
Residual Value		
Discounted	\$9,880	\$16,425
Total Residual Value	\$ 26,305	
Estimated Project Cost	\$620,300	
Minus Total Residual Value	<u>(26,305)</u>	
Net Project Cost	\$593,995	

BENEFIT/COST ANALYSIS

The benefits applicable to this investment are the transportation cost savings that would be realized by the existing users on the branch if rail service is restored. The present worth of these benefits is \$663,660 over a ten year period. When compared to the projects discounted cost of \$593,995 the resultant Benefit/Cost ratio is as follows:

$$\frac{B}{C} = \frac{\$663,660}{\$593,995} = 1.11$$

LINE: At Marseilles, Illinois
OWNER: Independence Tube Corporation
OPERATOR: CSX Transportation

PROBLEM STATEMENT

A Chicago based manufacturer of structural steel tubing and channel is planning to expand its production. Limited space at its current location in Chicago has led it to purchase a vacant facility in Marseilles, adjacent to the Illinois River. This site is also adjacent to a CSX rail line.

Rail service is essential for this company's expansion plans, as it relies principally on rail for receipt of raw material.

The following analysis examines the benefits and costs associated with the construction of a new rail spur and the expansion and conversion of the vacant plant.

BACKGROUND

Independence Tube Corporation (ITC) manufactures structural steel tubing using coil steel from mills in a process that converts the material into square, rectangular or round thick-walled tubing. This product is used primarily in construction, with distribution of finished goods primarily throughout the United States. Inbound product is hot-rolled coil steel, from mills in Illinois and Indiana.

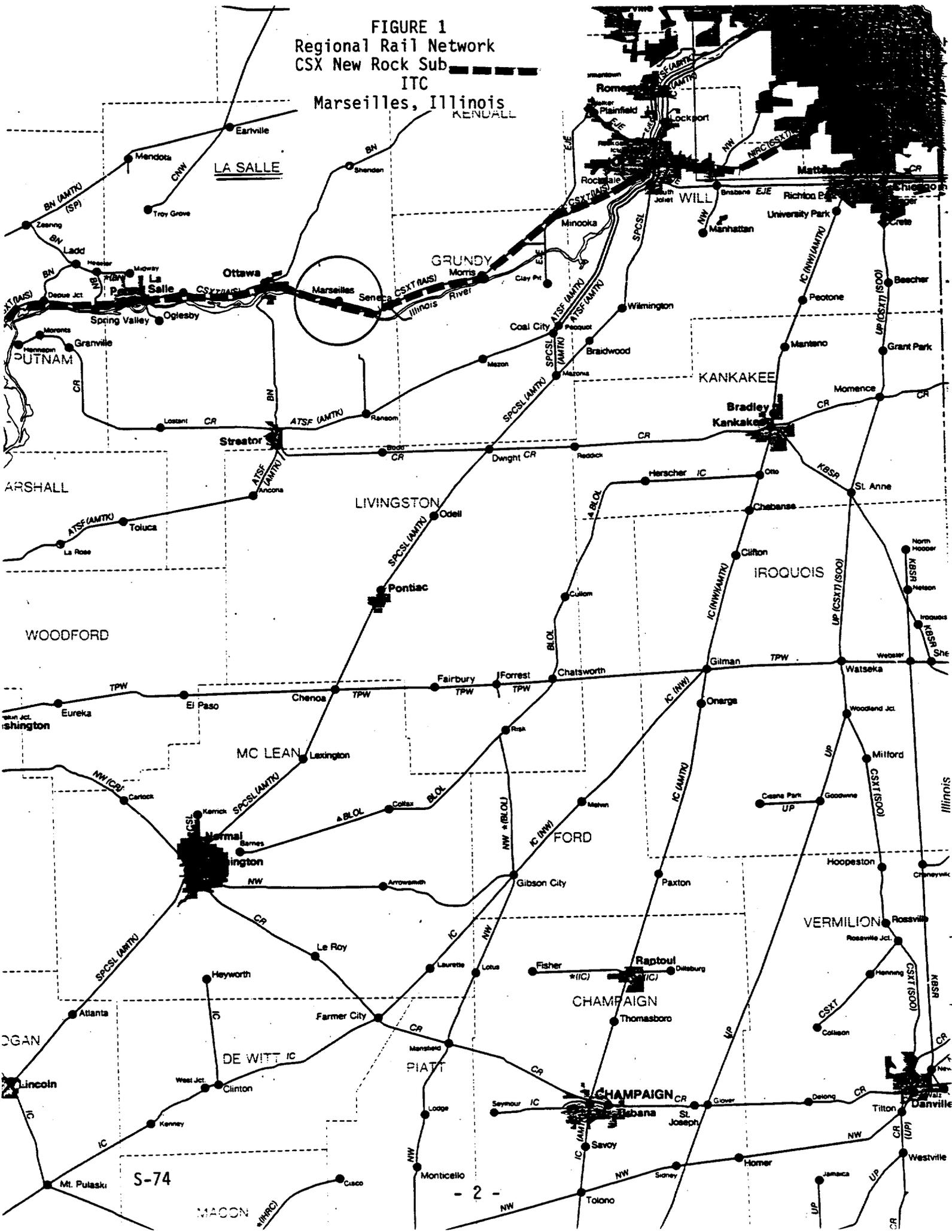
LOCATION

The new manufacturing facility will occupy the former General Rail Corporation site in Marseilles. Marseilles, located in LaSalle County is approximately 75 miles west of Chicago on the CSXT's New Rock Subdivision. (See Figure 1.) The plant has access to barge service, as it is located on the Illinois River. Highway access to Marseilles is via U.S. Route 6 or Interstate 80, approximately 4 miles north of the site.

ALTERNATE TRANSPORTATION

Direct access to rail transportation is critical for this business. Suppliers ship in large and sometimes overweight quantities from mills by rail, and distant markets for finished product can only be reached economically by the lower rate service provided by rail. Rail is preferred for outbound shipments that are over-sized as well.

FIGURE 1
 Regional Rail Network
 CSX New Rock Sub
 ITC
 Marseilles, Illinois



INVESTMENT OPTIONS

For the purpose of determining whether financing the proposed rail spur is eligible for program funding, two options are reviewed:

- No Investment, which would preclude the location and expansion of the operation; and
- \$20,725,000 for site improvement, equipment acquisition and construction of the rail spur track at Marseilles.

- No Investment -

Under this option, the company would stay in operation at its existing locations in Chicago and Alabama. ITC would not be able to expand its operation or take full advantage of expanding markets for structural steel tubing. Without additional capacity, the inability to generate additional business would result in limits to the company's profitability and new employment opportunities. These impacts, avoided by implementing the investment option, are quantified in the following section.

- \$20,725,000 Expansion and Construction Option -

This level of investment will redevelop and expand the existing 80,000 square foot plant to 200,000 square feet. The land is currently zoned for industry and will require additional infrastructure development by the city of Marseilles to support the industry. The city proposes to repave access roads to the site as well as improve the I&M Canal for a total investment of \$460,000. The project costs considered here include approximately \$695,000 for the construction of a 4,810 foot rail spur from an existing siding served by CSXT. A second existing siding to the site will undergo minor rehabilitation and relocation. A site layout diagram of this proposal is shown in Figure 2.

A detailed estimate of the project cost is shown in Table 1.

- Table 1 -

Estimated Investment Option Costs

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/Equip</u>	<u>Other</u>	<u>Total</u>
Bldg. Expansion	200,000 SF	--	--	\$5,000,00	\$ 5,000,000
Tube Mill	1 Ea	--	--	10,000,000	10,000,000
Other Equipment	Lot	--	--	5,000,000	5,000,000
Rehab Barge Slip	Job	--	30,000	--	30,000
New Rail Spur	4,810 T.F.	\$305,463	314,480	75,057	695,000
			<u>TOTAL OPTION COST:</u>		<u>\$20,725,000</u>

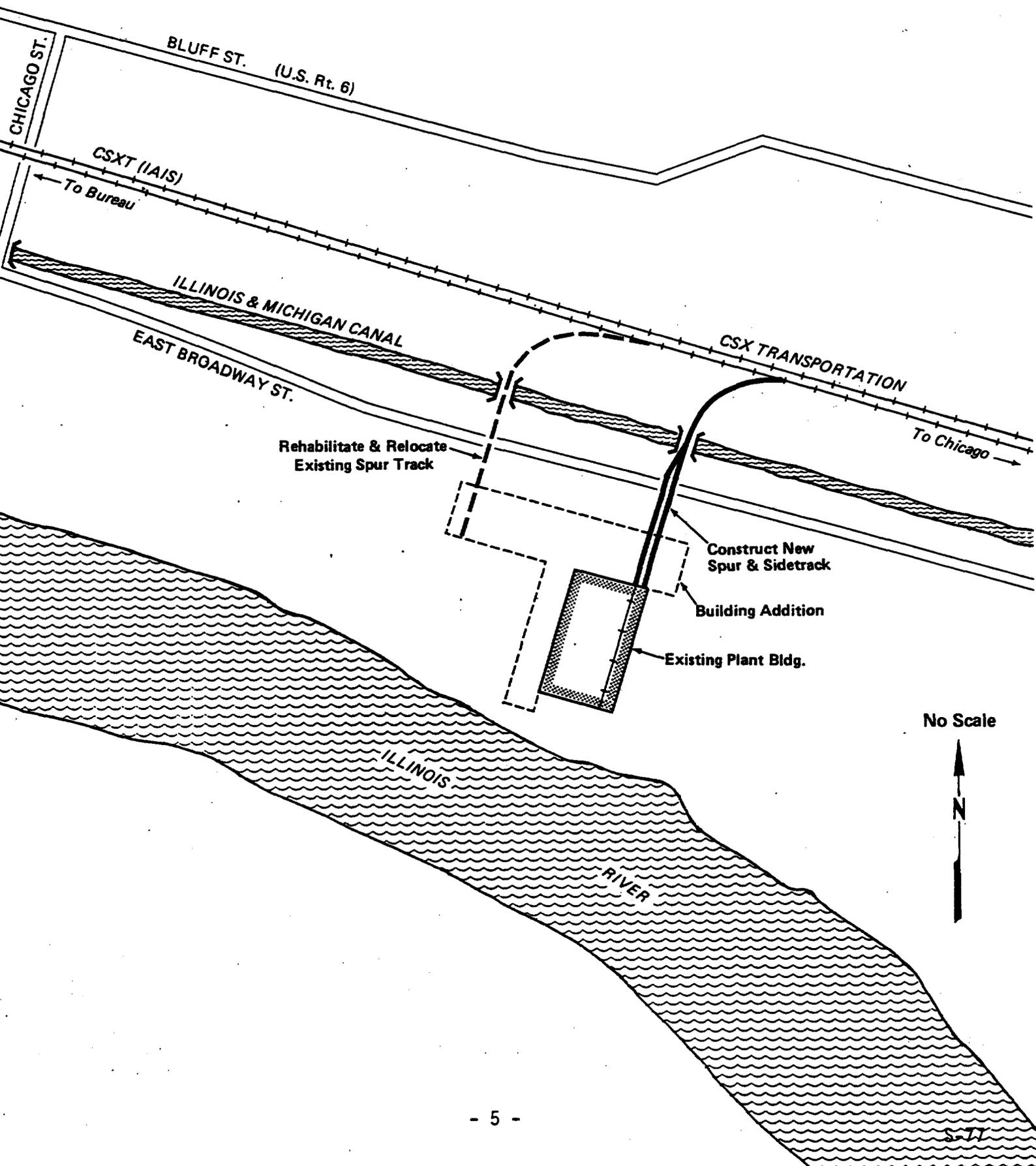
A more detailed estimate of the cost to make modifications to the existing rail spur and construct the new rail spur is shown below in Table 1A.

-TABLE 1A-
Detail Estimate - Rail Spur

<u>Item</u>	<u>Quantity</u>	<u>Material</u>	<u>Labor/Equip</u>	<u>Total</u>
Engineering	1 LS			\$ 24,000
Track Removal	850 FT		\$ 5,950	5,950
Clearing and Grubbing	1 LS			15,000
Grading	1 LS			60,000
Seeding and Mulching	1 LS			3,000
Canal Work	1 LS			65,000
Subballast	3,550 CY	\$42,458	18,318	60,776
Skeleton Track Const.	4,500 TF		59,085	59,085
Rail 100#	7,600 LF	68,400		68,400
Ties 6"x8"	2,770 EA	69,250		69,250
OTM	4,500 TF	21,375		21,375
Skeleton Turnout Const.	1 EA		5,000	5,000
Timber #8	1 Set	3,000		3,000
Steel #8-100#	1 Lot	8,000		8,000
Ballasting	5,800 CY	68,730	22,388	91,118
Surface, Align & Dress	4,810 TF	--	14,190	14,190
Timber Crossing	106 TF	15,900	15,900	31,800
Culvert-30" CSP Coated	230 LF	3,450	3,450	6,900
Culvert-36" CSP Coated	40 LF	1,000	600	1,600
Culvert End Sections	13 EA	3,900	2,600	6,500
CSX Main Line Turnout	1 LS			37,000
Bonds and Insurance	1 LS			3,500
		Subtotal		660,444
		Contingencies		34,556
		Total Rail Cost		\$695,000

Because the improvements being proposed have an economic life longer than the 10-year time period used for this benefit/cost analysis, the total project cost is reduced by a residual value which approximates the value of improvements after 10 years. The custom made tube mill, the largest component of the investment, has an economic life of 40 years; other equipment is assumed to have a useful economic life of 20 years, using a straight line depreciation. The building expansion is depreciated over 50 years. Residual value for the rail spur is based on a composite weighted value of the

- FIGURE 2 -
Proposed Rail Spurs
Independence Tube
at Marseilles



remaining life of rail (20 year life) and ties (15 year life). In this investment, a residual value of \$5,438,000 when applied to the costs in Table 1, yields a cost for the B/C calculation of \$15,287,000 as shown below:

<u>Residual Values - 10th Year:</u>					
(\$ in thousands)					
Item:	<u>Building</u>	<u>Tube Mill</u>	<u>Other Equip</u>	<u>Rail Spur</u>	<u>Total</u>
Cost:	\$5,000	\$10,000	\$5,000	\$212	
Remaining Life:	<u>80%</u>	<u>75%</u>	<u>50%</u>	<u>42%</u>	
Residual Value:	\$4,000	\$7,500	\$2,500	89	\$14,089
					Discount Factor: 0.386
					<u>Residual Value @ Present Worth: \$ 5,438</u>

Total Project Cost:	\$ 20,725
Less Residual Value:	- 5,438
<u>Project Cost for B/C</u>	<u>\$ 15,287</u>

INVESTMENT OPTION BENEFITS

Based on the shipper survey conducted as part of this analysis, the investment proposed will have a significant positive impact on rail freight usage and the local economy. Inbound and outbound rail freight traffic is estimated at approximately 525 carloads per year to start. Increases in rail traffic during the first five years bring expected traffic levels to around 1,500 per year.

Transportation Efficiency Benefits

A principal and primary benefit of including the rail mode in this investment option is rail's ability to deliver large, heavy hot-rolled steel coil used in the milling process. Typically, these coils weight between 55,000 and 80,000 pounds: while some of this product could move by truck, there are premiums and overweight penalties involved to do it. Based upon data provided by the shipper on inbound quantities and rate differentials (rail vs. truck) a total 10-year Transportation Efficiency Benefit of \$9,269,600 is derived, as detailed in Table 3.

-TABLE 3-
-INVESTMENT OPTION TRANSPORTATION BENEFITS-
(\$ in thousands)

<u>Project Year</u>	<u>Inbound Tons*</u>	<u>Rail Cost Savings</u>	<u>Discount Factor</u>	<u>Present Worth Benefit</u>
1	75.58	\$650.00	0.909	590.9
2	111.63	960.00	0.826	793.0
3	151.16	1,299.99	0.751	976.2
4	188.83	1,619.40	0.683	1,106.1
5	226.75	1,950.10	0.621	1,211.0
6	226.75	1,950.10	0.565	1,101.8
7	226.75	1,950.10	0.513	1,000.4
8	226.75	1,950.10	0.467	910.7
9	226.75	1,950.10	0.424	826.8
10	226.75	1,950.10	0.386	<u>752.7</u>

Total Transportation Benefits: \$9,269.6

*Tons in thousands

Economic Benefits:

As noted earlier, this project entails a substantial increase in business activity by the shipper. The data obtained for this analysis indicate the company expects to expand employment up to 45 full-time positions at the end of the first full year in production. Initial employment is targeted at around 35 full-time employees.

The total value of wage and fringe benefits generated directly by this expansion are estimated by the shipper initially at \$1,250,000. The total economic benefit on a 10-year time frame is as calculated in Table 2.

-Table 3-
Investment Option Economic Benefits

<u>Project Year</u>	<u>Added Employment</u>	<u>Discount Factor</u>	<u>Present Worth</u>
1	\$1,250	0.909	\$1,136
2	1,607	0.826	1,327
3	1,607	0.751	1,207
4	1,607	0.683	1,098
5	1,607	0.621	998
6	1,607	0.565	908
7	1,607	0.513	824
8	1,607	0.467	751
9	1,607	0.424	681
10	1,607	0.386	620
		Total:	<u>\$9,550</u>

BENEFIT/COST RATIO

Using benefits derived in Table 2 and 3 compared to costs developed in Table 1, a B/C ratio of 1.23 is derived:

$$\frac{B}{C} = \frac{\$9,269,600 + \$9,550,000}{\$15,287,000} = \underline{1.23}$$

This investment option is, therefore eligible for consideration under the guidelines established for the State's Rail Freight Assistance Program.

LINE: At Elwood
OWNER: James Tyler & Sons, Incorporated
OPERATOR: Southern Pacific Lines (SP)

PROBLEM STATEMENT

A country grain elevator near Elwood, Illinois has decided to expand its railroad shipping facilities by increasing track (load out) capacity and by installing a bulk weighing system. To accomplish this expansion, it will be necessary for the elevator to lease railroad right-of-way from the Southern Pacific Transportation Company, install a new turnout, move an existing turnout and construct some 900 feet of additional trackage. In addition, it will be necessary to upgrade 870 feet of existing trackage with heavier rail, to accommodate expected traffic increases, and install a bulk weighing system to quantify the movement of outbound product. To accomplish this, the elevator has requested a loan from the state's Rail Freight Assistance Program. The following analysis compare the costs associated with the proposal to the expected benefits.

BACKGROUND

The Elwood elevator facility currently ships out about two million bushels of corn and soybeans per year, primarily to Illinois destinations. Eighty percent of this product moves by truck. The elevator company has identified a market for Illinois corn in Texas. This market would become accessible only if the elevator can ship in 25 rail car units. To accomplish this, additional rail storage capacity is essential. In addition, the installation of a bulk weighing system is necessary or the weigh change assessed by the railroad would wipe out the rate advantages gained by shipping in 25 rail car units.

The Elwood elevator can presently load out 10 to 15 cars (depending on car size and inbound fertilizer traffic) utilizing the existing awkward track layout. Additional trackage must be constructed and segments of the existing trackage must be shifted and rebuilt to make it physically possible to load 25 rail cars without requiring a switch by the railroad. A scale capable of weighing product moving by rail is also essential. The reduced rail shipping rates thus obtainable will increase the price of grain paid to local producers and will enable this elevator to serve profitably more distant markets.

LOCATION

The project site is south of the town of Elwood in the western part of Will County. The elevator is served by the Southern Pacific Transportation Company with switching service provided three days per week. The location of the project relative to the northern Illinois rail network is shown in Figure 1.

INVESTMENT OPTIONS

For the purpose of establishing the eligibility of this project for funding from the state's Rail Freight Assistance Program, two options are examined:

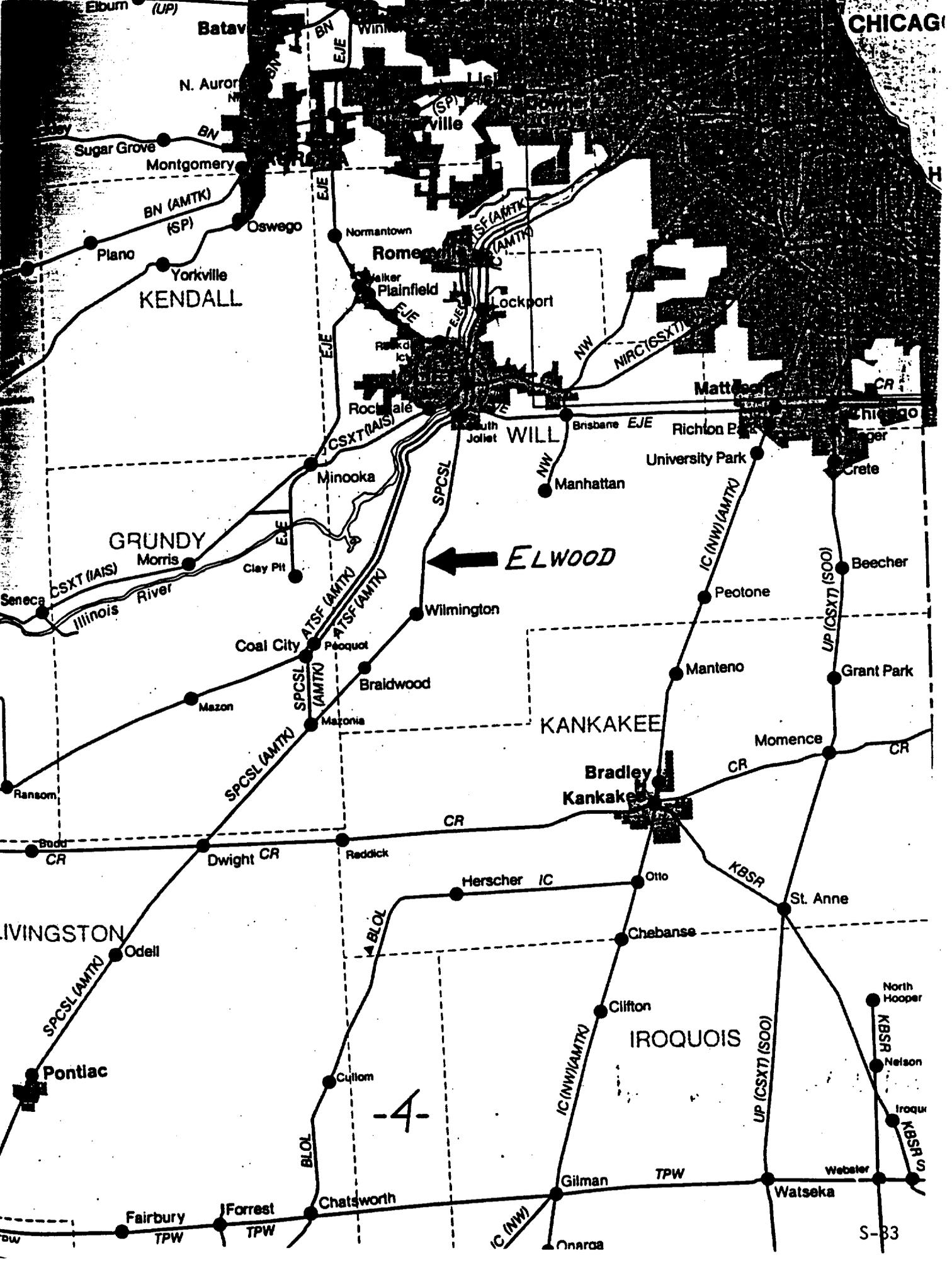
- o No investment which would maintain the existing track layout and capacity at the Elwood elevator; or
- o Invest \$290,000 for additional trackage, necessary upgrade of existing trackage and a new bulk weighing system permitting the loading of 25 rail car units.

NO INVESTMENT

Failure to invest in rail plant improvements will prevent the Elwood elevator from taking advantage of the 25 car unit rate. This in turn will effectively limit the ability of this elevator to expand into the Texas market with the concomitant increases in volume and price to the local grain producers.

INVESTMENT OPTION

The investment option would provide for the plant improvements described above. A schematic drawing of these changes is included as Figure 2. Estimated project cost detail is shown in Table 1.



-Figure 2-

James Tyler Rail Spur
Project Limits

Elwood, IL.
(No Scale)

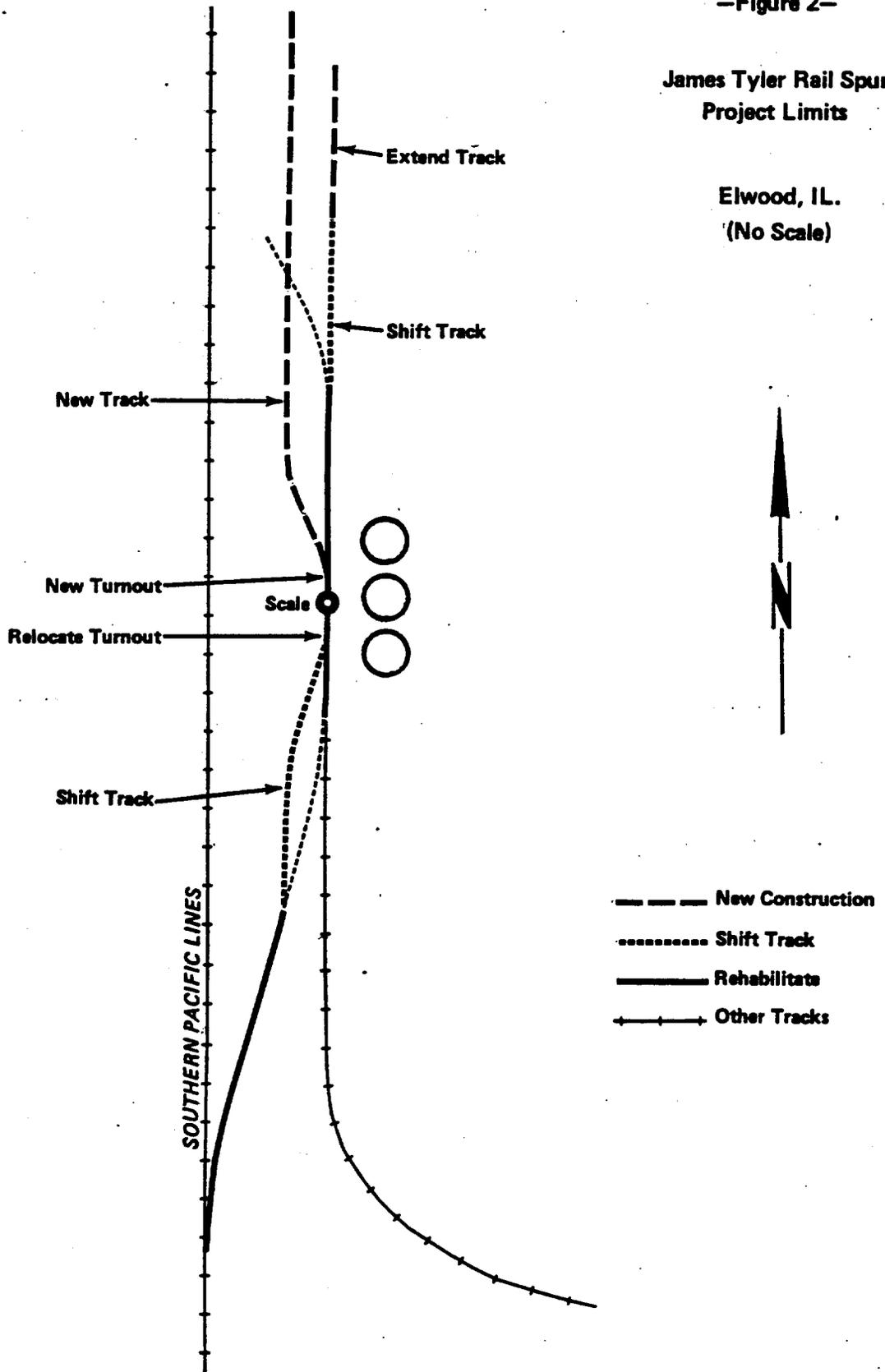


TABLE 1

ESTIMATED PROJECT COST - ELWOOD RAIL SPUR

<u>ITEM</u>	<u>QUANTITY</u>	<u>MATERIAL</u>	<u>LABOR/EQUIP</u>	<u>OTHER</u>	<u>TOTAL</u>
Clearing & Grubbing	L.S.	--	--	\$2,100	\$2,100
Grading	L.S.	--	--	22,500	22,500
Seeding & Mulching	L.S.	--	--	800	800
Ballast	370 YD. ³	\$4,995	\$ 999	1,332	7,326
Skeleton Track	890 T.F.	23,598	9,790	3,782	37,170
Skeleton Turnout	1 Ea.	9,000	2,400	1,000	12,400
Surface, Align, Dress	1,070 T.F.	6,660	2,665	1,491	10,816
Chump Post (steel)	3 Ea.	7,500	1,080	66	8,646
Bolt/Bar Repair	L.S.	--	--	500	500
Crosstie Renewal	300	6,360	6,000	2,010	14,370
Turnout Reconstruction	1 Ea.	3,000	2,400	1,000	6,400
Pit Removal	Job	--	750	--	750
Rail Repair 90#	70 L.F.	--	266	105	371
Rail Upgrade 100#	870 T.F.	13,234	6,612	2,610	22,456
Surface, Align, Gauge	1,600 T.F.	9,620	2,900	885	13,405
Bonds, Insurance	L.S.	--	--	3,000	3,000
Install Weigh System	L.S.	--	--	110,000	110,000
			Subtotal		273,010
			Contingencies		16,990
					<u>290,000</u>
			Total Estimated Project Cost		290,000

For the purpose of determining the benefit/cost ratio for the investment option, estimated project cost is reduced by the residual value which approximates the remaining value of this improvement at the end of the five year project life. This residual value of \$79,526 when reduced to its present worth of \$49,386 is subtracted from the cost detailed in Table 1 to provide a cost for the benefit/cost calculation of \$240,614 as shown below:

	<u>Rail & OTM</u>	<u>Ties</u>	<u>Bulk Weigh</u>	<u>Total</u>
Cost:	\$35,437	\$17,460	\$55,000	
% of Life Remaining:	<u>x75%</u>	<u>x67%</u>	<u>x75%</u>	
Residual Value (5 yrs.):	26,578	11,698	41,250	79,526
				Present Worth Factor (10%-5 yr.) <u>0.621</u>
Present Worth of the Residual Value:				\$49,386

In Summary: Project Cost: \$290,000
 Less Present Worth Residual: 49,386
 Project Cost for Analysis: \$240,614

TRANSPORTATION/ECONOMIC BENEFITS

The expansion project for the Elwood elevator includes the increase in load out capacity to 25 rail cars and the installation of a bulk weighing system. These improvements will: 1) reduce transportation costs by an average of \$100 per car because of the economics of scale through shipping to a single destination in 25 car units; and 2) will save the elevator an additional \$125 per car by avoiding the need for the railroad to weigh each shipment at an intermediate point or at destination. These reductions in transportation costs will be reflected in better prices being paid to area grain producers. It is anticipated that the Elwood elevator will load out a minimum of 1000 rail cars per year. In addition to the transportation savings described above, it is anticipated that the overall increase in throughput at the Elwood elevator will require the addition of one full-time and one part-time position. Tables 2 and 3 quantify these benefits for a 5 year period.

Table 2
Transportation Benefits

<u>Project Year</u>	<u>Annual Rail Shipments x \$100 Unit Rate Svgs.</u>	<u>Discount Factor</u>	<u>Total Discounted Unit Rate Benefits</u>
1-5	1000 cars x \$100 = \$100,000	3.791	\$379,100

<u>Project Year</u>	<u>Annual Rail Shipments x \$120 Unit Chg. Svgs.</u>	<u>Discount Factor</u>	<u>Total Discounted Weigh Chg. Benefits</u>
1-5	1000 cars x \$120 = \$120,000	3.791	\$454,920

Table 3
Economic Benefits

<u>Project Year</u>	<u>Additional Annual Wage & Fringe Benefits</u>	<u>Discount Factor</u>	<u>Total Discounted Economic Benefits</u>
1-5	\$42,000	3.791	\$159,222

BENEFIT/COST ANALYSIS

The transportation and economic benefits directly attributable to this project over a five year time frame amount to \$993,242. These benefits when compared to the net project costs of \$240,614, yield a benefit cost ratio of 4.13, thereby qualifying this project for program funding.

B Transportation Benefits + Economic Benefits
C Net Project Cost

$$\frac{B}{C} = \frac{(\$379,100 + \$454,920) + \$159,222}{\$240,614} = \frac{\$993,242}{\$240,614} = 4.13$$

LINE: At Peoria, Illinois
OWNER: O'Brien Steel Service Company
OPERATOR: Peoria and Pekin Union Railway Company

PROBLEM STATEMENT

A steel distributing Company in Peoria, Illinois is expanding its operation. The Company plans to construct a rail spur, expand its craneway, and relocate existing track. At the present time, the Company uses the Keller Branch of the Peoria and Pekin Union Railway Company (P&PU) for unloading inbound rail traffic. The construction of the spur and the relocation of the P&PU main line would provide improved rail access allowing more inbound traffic to be unloaded with less interruption of service. This analysis determines whether the benefits of a publicly financed rail spur construction funded by the state's Rail Freight Assistance Program exceed the project's estimated costs.

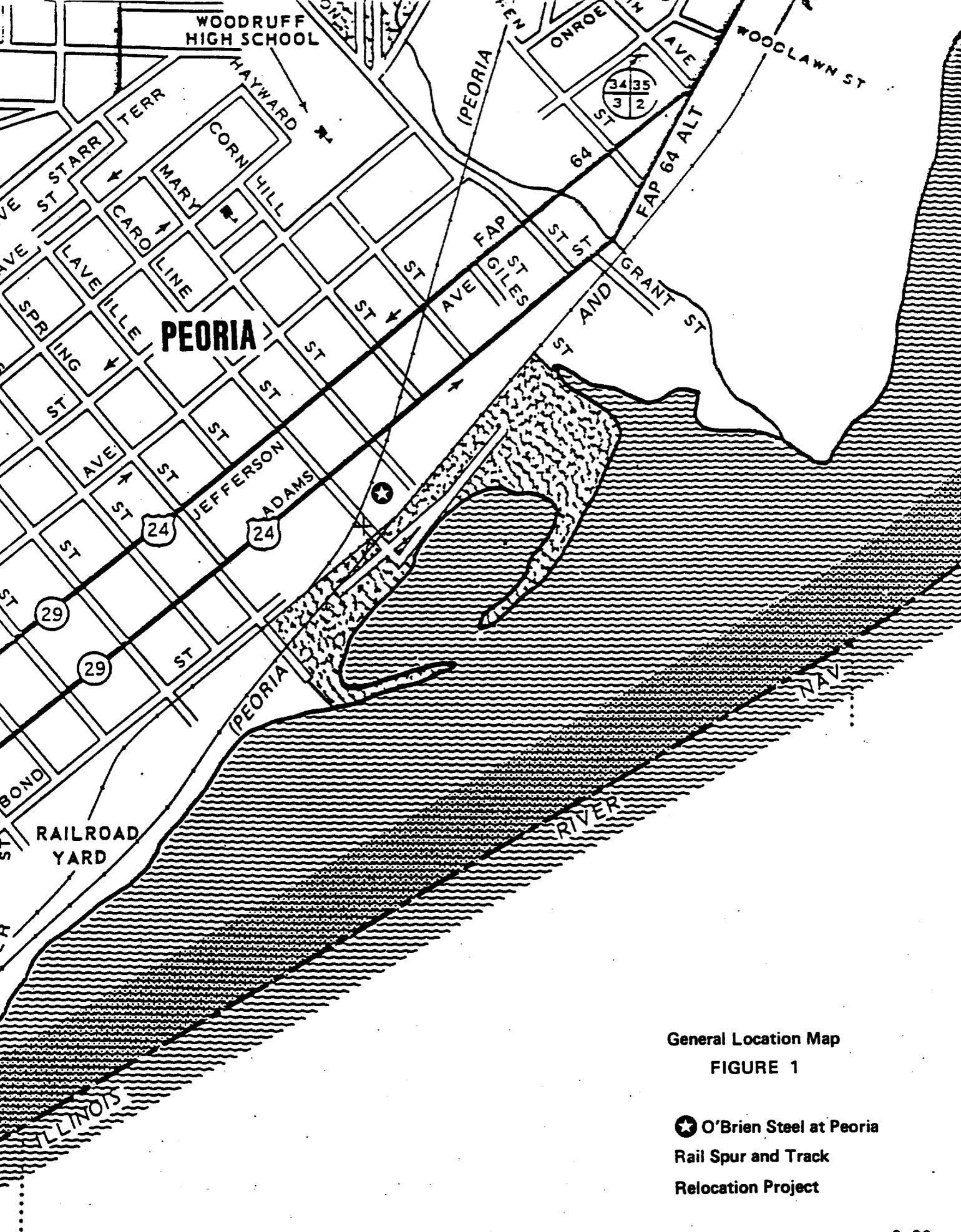
BACKGROUND

Since 1975 the Company has been supplying raw steel used in the manufacture of buildings, construction equipment, and agricultural equipment to customers in a five-state area located within a 250 mile radius of Peoria. Currently, large shipments of steel are received by rail on the Keller Branch of the P&PU line and smaller quantities of steel are shipped out by truck. The Keller Branch is jointly owned by the City of Peoria and the P&PU and operated by the P&PU. Unloading the Company's inbound steel on the Keller Branch is inefficient as it interferes with the P&PU's regular scheduling of cars and interrupts the Company's unloading process.

Under the proposed project, a 600' rail spur would be constructed eliminating the need to unload on the P&PU's Keller Branch line. The current craneway would be extended allowing for unloading off the spur. A portion of the P&PU property would be purchased by the Company and a segment of the P&PU mainline moved toward the river making room for the Company's expansion. It is projected that the proposed project will allow the Company to receive up to three cars at one time with an annual increase of approximately 150 inbound cars per year. This increase in service will enable the Company to compete more effectively with its out-of-state competitors.

LOCATION

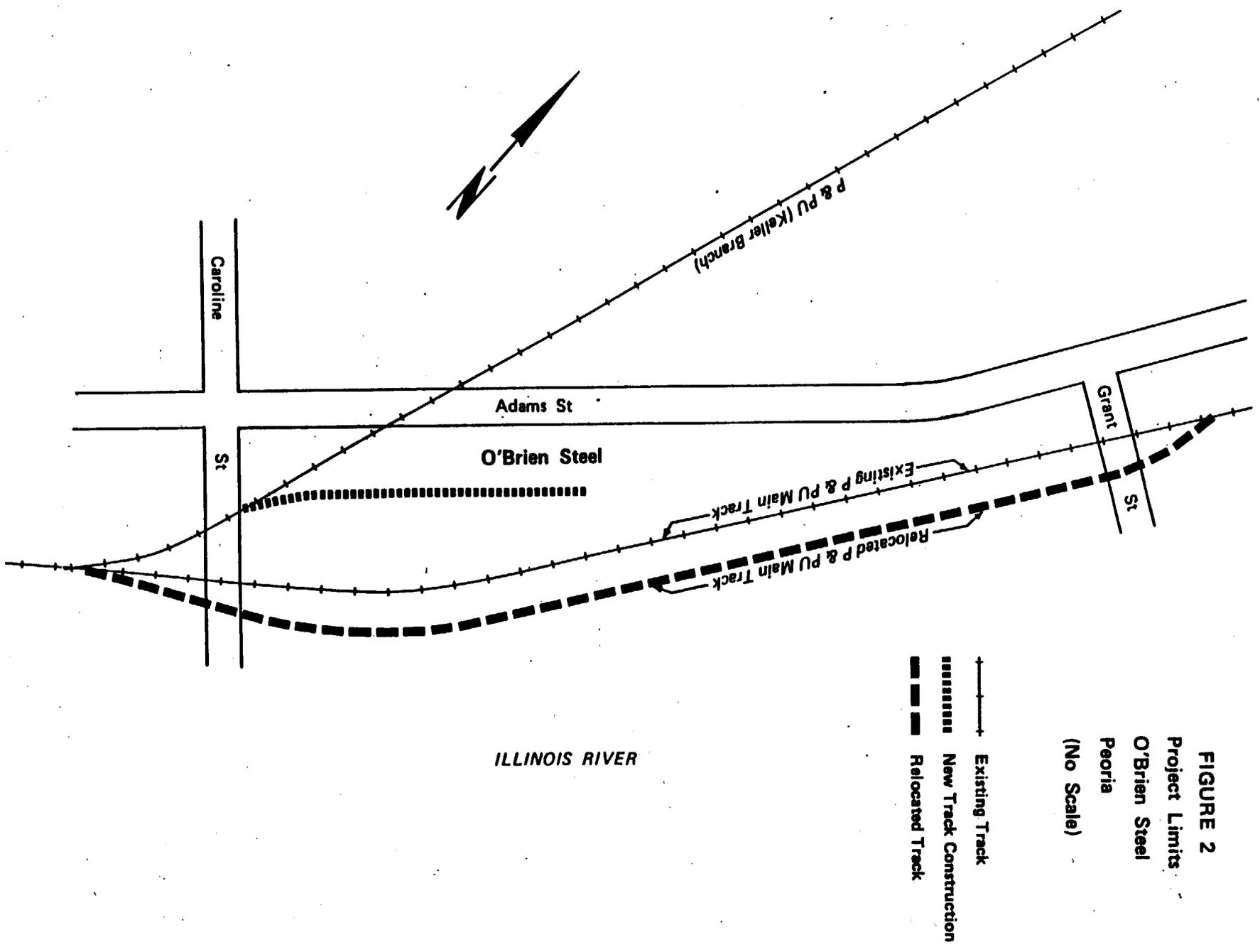
The proposed project is located on the northeast side of the City of Peoria at 1800 NE Adams Street. It is bordered by Adams Street on the northwest side, the Keller Branch of the P&PU on the southwest side, and the riverfront mainline of the P&PU on the southeast side.



General Location Map
 FIGURE 1

★ O'Brien Steel at Peoria
 Rail Spur and Track
 Relocation Project

FIGURE 2
Project Limits
O'Brien Steel
Peoria
(No Scale)



- +— Existing Track
- New Track Construction
- - - Relocated Track

ILLINOIS RIVER

O'Brien Steel

Adams St

Caroline

St

Grant

St

P & PU (Keller Branch)

Existing P & PU Main Track

Relocated P & PU Main Track

INVESTMENT OPTIONS

Two investment options are considered in determining whether a track construction and relocation project at the Company's steel distributing facility in Peoria is eligible for state funds.

No investment, which would limit the Company's ability to unload inbound rail cars.

Invest \$623,254 to construct 600' of track and to move a portion of the P&PU main line increasing inbound rail by 150 cars annually.

NO INVESTMENT

Failure to invest in rail improvements will prevent the Company from taking advantage of its expansion project by receiving more shipments of inbound steel. This will limit the Company's ability to compete with its out-of-state competition.

INVESTMENT OPTION

The investment option would enhance the expansion project described above. A schematic drawing of these changes is included as Figure 2. Estimated project costs are found in Table 1.

Table 1
Estimated Project Rehabilitation and Construction Costs

ITEM	QUANTITY	MATERIAL	LABOR/ EQUIPMENT	TOTAL
Purchase of P&PU property	LS			\$ 56,250
Relocation of boiler house	LS			40,000
Demolition of two buildings	LS			25,000
Relocation of two machine tools	LS			125,000
Engineering	LS			17,254
Purchase of additional craneway	LS			50,000
Relocation of Utilities	LS			12,000
Relocation of P&PU track	—	\$20,000	\$93,750	113,750
<u>Craneway Extension</u>				
Concrete foundations	42 yds.	6,000	14,000	20,000
Fabricated steel	40 tons	27,000	28,000	55,000
Crane rail, splice bars, hook bolts	3 tons	5,000		5,000
Steel erection	LS		20,000	20,000
<u>Rail Spur Construction</u>				
Track removal	100 (TF)		1,000	1,000
Concrete removal	257 (Sq. Yd)		5,140	5,140
Excavation	400 (Cu. Yd)		3,200	3,200
Drainage pipe	475 (LF)		1,425	2,850
Outlet	1	320	98	418
Waterline protection	LS			3,000
Sub ballast	160 (CuYd)	2,400	1,440	3,840
Skeleton Track Construction	384 (TF)		7,680	7,680
Rail #100	768 (LF)	3,840		3,840
Ties	237 Each	5,688		5,688
OTM	384 (TF)	2,304		2,304
Skeleton Turnout Construction	1		5,500	5,500
Timber #7	1	3,400		3,400
Steel #7-100#	1	7,000		7,000
Ballasting	200 (CuYd)	3,000	600	3,600
Surface Align & Dress	600 (TF)		3,600	3,600
Steel Bumping Post	1	2,300	500	2,800
Flange guard & Filler	440 (LF)	10,120	3,080	13,200
Bituminous Surface	257 (Sq.Yd)	2,056	3,084	5,140
Bonds & Insurance	LS			800
Total Estimated Project Costs		\$100,428	\$192,093	\$623,254

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the 10 year project life. The residual value of \$15,187, when discounted to its present worth of \$6,127, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$617,127 as shown below.

	<u>Rail + OTM</u>	<u>Ties</u>		<u>Total</u>
Cost	\$25,564	\$9,088		
% Life Remaining:	<u>x50%</u>	<u>x34%</u>		
Residual Value (10 yrs):	12,782	3,090	=	\$15,872
Present Worth Factor (10%-10yr):				<u>386</u>
Present Worth of Residual Value:				<u>\$ 6,127</u>

In summary: Project Cost:	\$623,254
Less Present Worth Residual:	<u>6,127</u>
Net Project Cost for B/C:	<u>\$617,127</u>

Transportation Benefits

Transportation benefits provided by this project will increase the company's annual inbound rail shipments by 150 cars. Converting the shipments of inbound steel from truck to rail transportation will result in a costs savings of at least \$10 per ton. Assuming each of the 150 cars moves 70 tons of steel, the company will realize an annual savings of \$105,000. The present worth of this benefit is presented in Table 2.

Table 2

Project Year	<u>Annual Savings in transportation costs</u>	<u>Ten Year Factor</u>	<u>Total Discounted Benefit</u>
1-10	\$105,000	6.145	\$645,225

BENEFIT/COST

The benefits discounted over 10 years are \$645,225. The appropriate cost for the benefit cost formula is \$617,127. The Benefit/Cost Ratio is therefore 1.0. This formula is as follows:

$$\begin{aligned}
 \frac{B}{C} &= \frac{\text{Transportation Benefits}}{\text{Project Net Cost - Residual Value}} \\
 \frac{B}{C} &= \frac{\$645,225}{\$623,254 - (-\$6,127)} = \frac{\$645,225}{\$617,127} = 1.045
 \end{aligned}$$

obrien

LINE: At Alorton, Illinois
OWNER: Imperial Technology Corporation
OPERATOR: Alton & Southern Railroad

ISSUE:

A new company is developing a bulk transfer/blending facility for industrial lubricants. A site has been identified and the company is seeking financing for this development, including funds from the state's Rail Freight Assistance Program for constructing a rail spur. The following analysis examines the benefits and costs of the project to determine if Program funds can be used for the spur.

BACKGROUND:

Imperial Technology Corporation (Imperial) is a new company planning to engage in the manufacture and packaging of hydraulic lubricants. The process involves receiving raw material in solid and liquid form, blending, and shipping the blended fluids to customers in bulk via rail car and tanker truck. As such, rail freight service is essential to Imperial's proposed operation.

LOCATION:

Imperial has located a site in Alorton, Illinois, adjacent to a rail line owned by the Alton & Southern Railroad (A&S). Alorton is immediately east of East St. Louis in St. Clair County. The project site location in relation to the region's rail network is shown in Figure 1.

INVESTMENT OPTIONS:

To determine whether the proposed rail spur construction, as part of the total facility improvement, is eligible for Program funding, two options are reviewed:

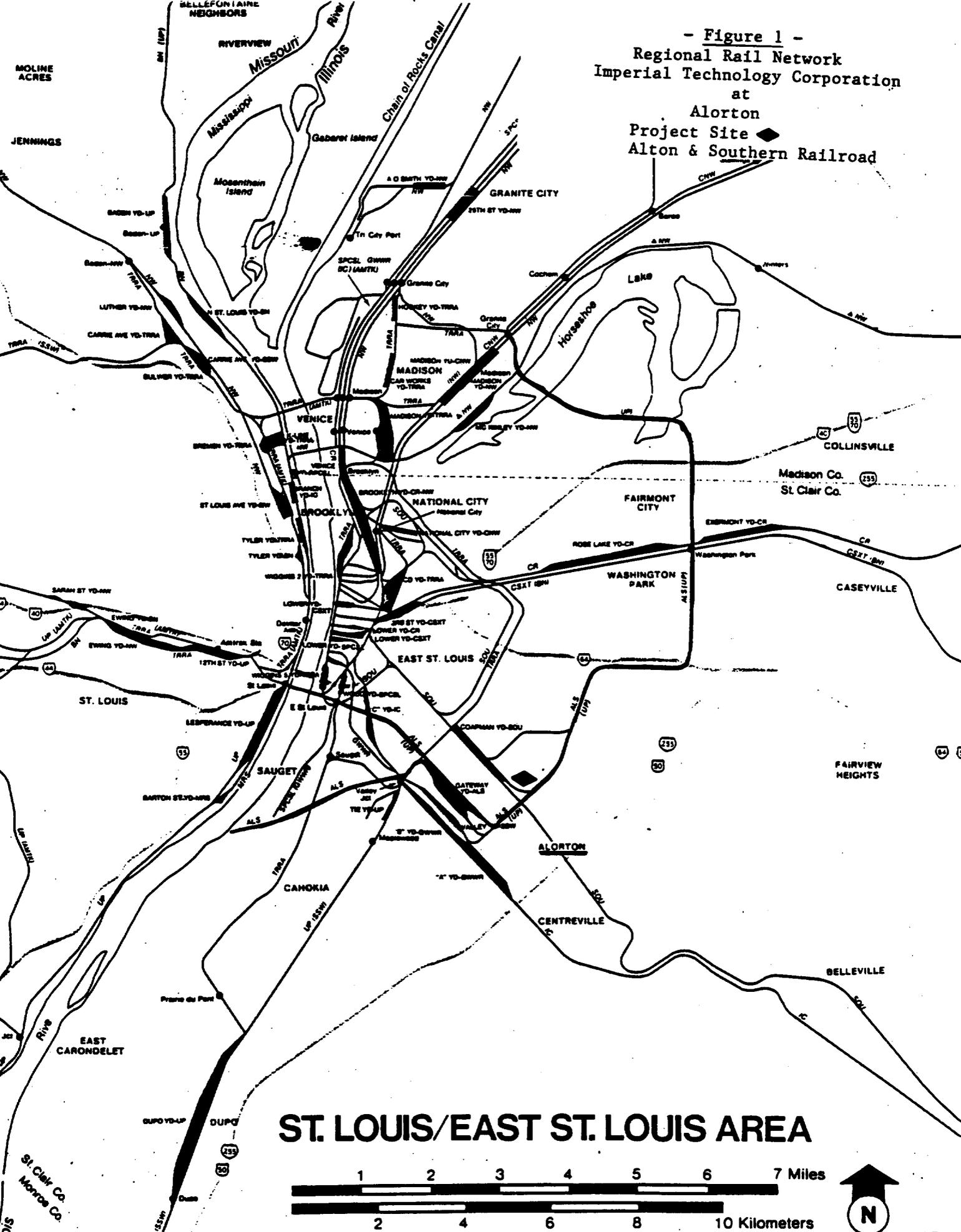
- No Investment - which retains the project site in an unimproved state, and prevents Imperial from starting operations; and
- \$773,876 for the construction of a tank farm, office and laboratory building and a 468 foot rail spur to service the tank farm and laboratory.

These investment options are detailed as follows.

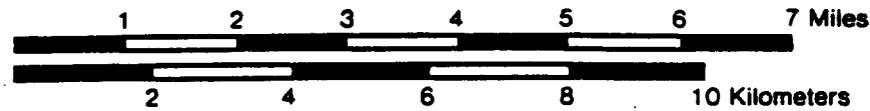
NO INVESTMENT:

The failure of Imperial to undertake any investment in Alorton would mean the loss of new economic activity and employment opportunities in a region that has historically been economically depressed. The economic benefits foregone with no investment are quantified in the discussion of the Investment Option that follows.

- Figure 1 -
 Regional Rail Network
 Imperial Technology Corporation
 at
 Alorton
 Project Site
 Alton & Southern Railroad



ST. LOUIS/EAST ST. LOUIS AREA



\$773,876 INVESTMENT OPTION

Imperial's new business venture will take an abandoned industrial site and generate on-going economic activity through the shipment, blending, testing and repackaging of hydraulic lubricants. In order to launch the new operation, the company will need to make a level of investment as detailed in Table 1. The physical layout of the facility is depicted in Figure 2.

TABLE 1
INVESTMENT OPTION ESTIMATED COST

<u>Item</u>	<u>Estimated Total Cost</u>
<u>Phase I</u>	
• Tank Farm containment system	\$282,912
• Office and Laboratory Building	60,000
• Laboratory Equipment & Inventory	49,000
• Rail Spur	134,044
<u>Phase II</u>	
• Warehouse Facility	123,960
• Packaging Equipment	<u>123,960</u>
<u>TOTAL ESTIMATED COST:</u>	<u>\$773,876</u>

Note that the Phase II warehouse facility and packaging equipment expense are estimated to be \$350,000 in total. However, because these expenses are not incurred until two years after Phase I costs are absorbed, they are discounted to their present worth, allowing cost and benefit comparisons on "current dollar" basis.

In order to compare the up front capital costs of this investment, which includes long-lived assets like the tank farm, buildings and laboratory, with a benefit stream projected for only 5 years in the future, the costs are reduced by a residual value, which approximates the investment's remaining economic value at the end of the benefit stream. A residual value of \$310,338 when deducted from the estimated costs of \$773,876 yields a cost of \$463,538 to be used in the benefit to cost ratio calculation. The calculation of the residual value is detailed in Table 2.

FIGURE 2
Project Limits
Imperial Technology Spur
at Alorton, Illinois
(not to scale)

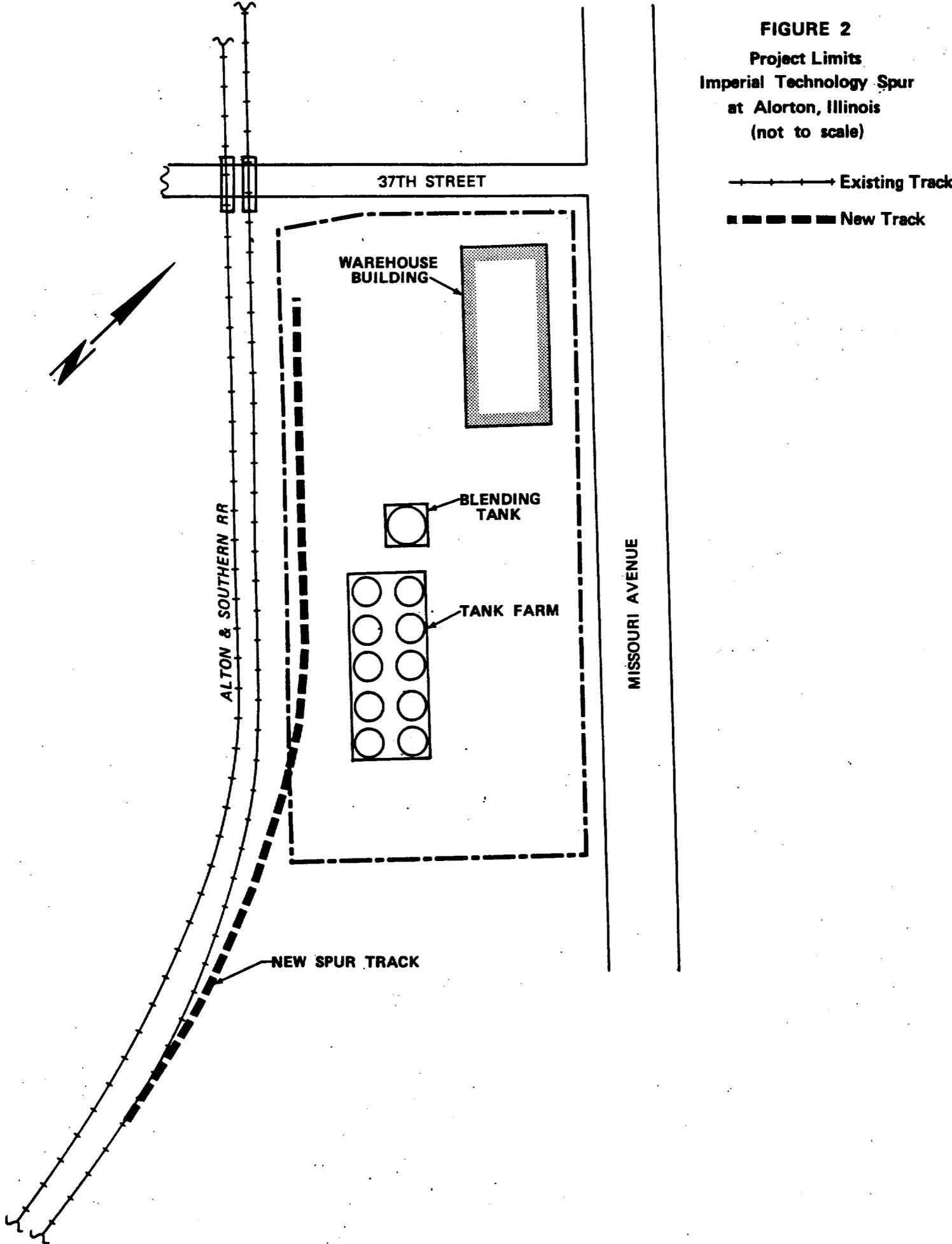


TABLE 2
5 YEAR RESIDUAL VALUE OF INVESTMENT OPTION

ITEM	RESIDUAL ECON. LIFE	PERCENT RESIDUAL	COST	RESIDUAL VALUE
Tank Farm	25	80%	\$282,912	\$226,330
Buildings	45	90%	183,960	165,565
Equipment	5	50%	172,960	86,480
Rail Spur:				
Rail	15	75%	10,536	7,902
Ties/OTM	10	67%	10,606	<u>7,106</u>
			Total 5-Year Residual:	\$493,383
			Discount Factor (10%-5):	<u>x .6290</u>
			Present Worth Residual:	\$310,338

INVESTMENT OPTION BENEFITS:

Imperial's development of their blending and transshipment facility provides local area economic benefits which can be quantified by the number of new jobs to be created. The company projects that, in the first two years - after completion of Phase I, five full time jobs will be created. After construction of the Phase II warehouse and packaging operation, 7 to 10 full time jobs will be added. The economic benefit of this increase in employment, measured by estimated total wage and fringe benefits to be paid are shown in Table 3. The total 5-year economic benefit discounted to its present worth is \$703,939.

TABLE 3
INVESTMENT OPTION ECONOMIC BENEFITS

PROJECT YEAR	ADDITIONAL EMPLOYMENT	WAGE & FRINGE BENEFIT	DISCOUNT FACTOR	PRESENT WORTH
1	5	\$ 98,280	.909	\$ 89,337
2	5	98,280	.826	49,670
3	12	252,720	.751	189,792
4	15	285,930	.683	195,290
5	15	285,930	.629	179,850
			TOTAL DISCOUNTED BENEFIT:	<u>\$703,939</u>

TRANSPORTATION BENEFITS:

Access to rail service for bulk shipments is critical for Imperial's operation: without direct rail access this plant would not be built. Company projections for a 5-year future indicate that rail costs are less than 55 percent of truck costs, and that the rail cost savings would increase from approximately \$59,000 in the first year to over \$117,000 in the company's fifth year. These benefits flow to the net income of the company and are part of the incentive to invest in the project. Because this is a start-up company, however, the transportation "benefit" is internalized and is accounted for in the economic benefit of generating new employment opportunities.

BENEFIT/COST ANALYSIS:

$$\frac{B = \text{Economic Benefits} = \$703,939}{C \quad \text{Cost for B/C} \quad \$463,538} = \underline{1.52}$$

LINE: The Belt Railway of Chicago (BRC or The Belt)
OWNER: BRC
OPERATOR: BRC

PROBLEM STATEMENT:

Given the economies of scale through the use of double stack cars to haul containers rather than conventional equipment, this analysis will examine the conversion of the clearances of two bridges on the BRC for that purpose.

BACKGROUND:

The BRC has made a formal request of the Department to provide financial assistance to correct a clearance problem which has plagued that railroad since the advent of excessive dimension equipment. Since the introduction of high clearance cars such as tri-level auto stack cars, and now double stack container cars, the Belt has not been physically able to run an operation using this type of higher efficiency equipment.

Two bridges on the BRC system are the cause of the height restriction. Compounding the problem in both instances is that the Belt's bridges are, in effect, sandwiched between a city street below and a public transportation system above. Therefore, it must be determined whether to raise the public transportation bridges or to reduce the depth of the BRC bridges thereby gaining the necessary clearances.

LOCATION:

The first bridge is located in the west side of the city of Chicago at Lake Street (near Cicero Avenue). At this location, the Belt Railway runs above Lake Street and the CTA Lake Street line runs above the Belt at the same location.

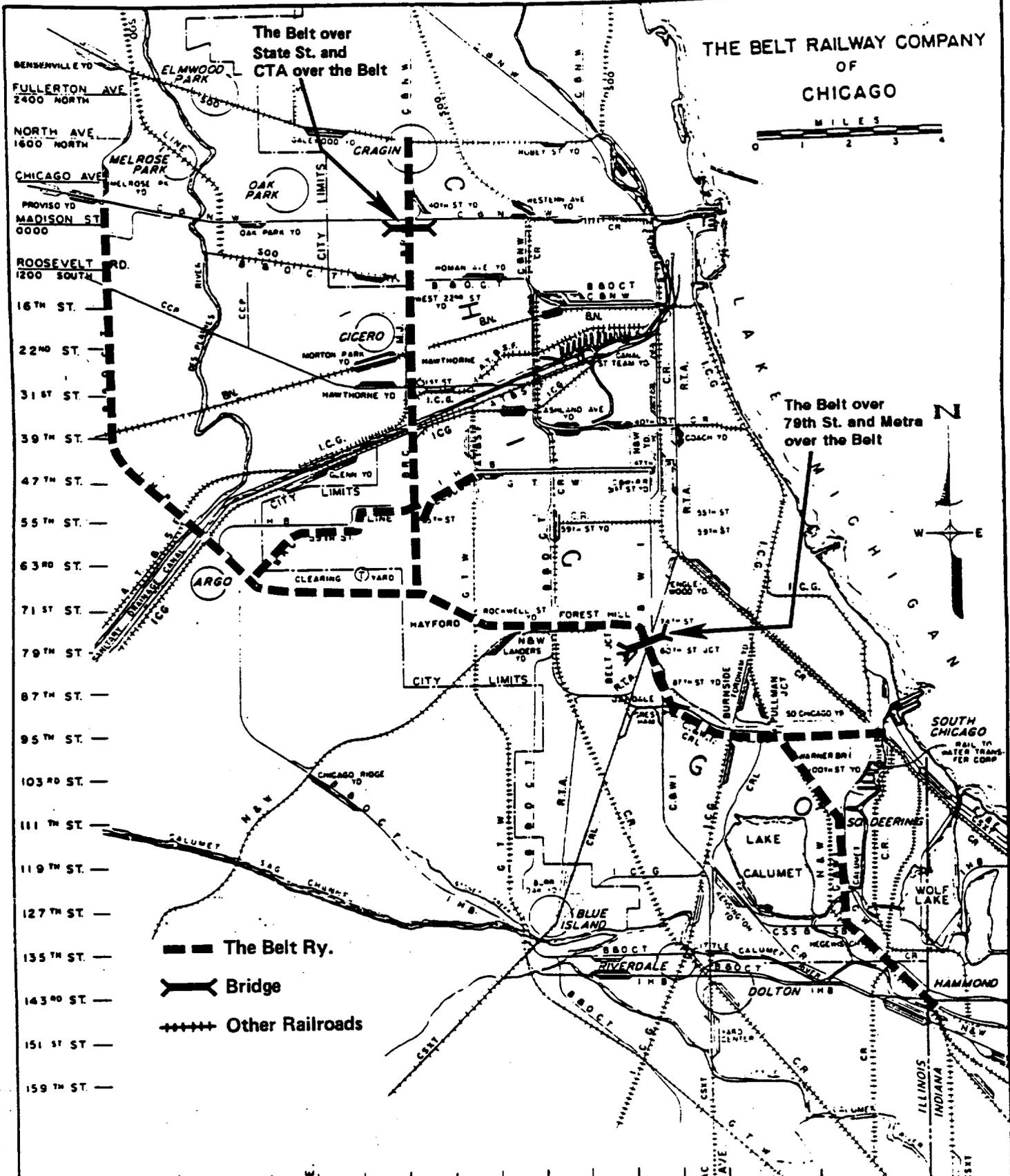
The second bridge is located in the south side of the city at 79th Street. At this location, the BRC operates over 79th Street (near Halsted Street) and the METRA line operates over the BRC at the same location.

ALTERNATE TRANSPORTATION:

Rerouting the double stacks around the two bridges is physically impossible. Operating over other routes or trucking around the bridges would be cost prohibitive for the movement of a projected annual 3.3 million gross tons of traffic. For the long term, increasing the route clearance, by removing the height restriction, is the only viable alternative for the movement of high capacity cars on this route.

Using a very conservative savings estimate of one dollar per 1000 ton miles savings by converting to a double stack operation, and given a conservative growth estimate, the conversion would yield \$3.357 million in annual transportation cost savings by the year 2004. Over the 10 year period of the analysis, the total savings are project to be \$17.8 million.

THE BELT RAILWAY COMPANY OF CHICAGO



- The Belt Ry.
- Bridge
- Other Railroads

- MANNHEIM RD.
- 25th AVE
- 9th AVE
- DESPLAINES AVE.
- 8000 WEST
- HARLEM AVE.
- 7200 WEST
- NARRAGANSETT AVE.
- 6400 WEST
- CENTRAL AVE.
- 5600 WEST
- CICERO AVE.
- 4800 WEST
- PULASKI RD.
- 4000 WEST
- MEDIE AVE.
- 3200 WEST
- WESTERN AVE.
- 2400 WEST
- ASHLAND AVE.
- 1600 WEST
- HALSTED ST.
- 800 WEST
- STATE ST.
- 0000
- MOPAC
- COTTAGE GROVE AVE.
- 800 EAST
- STONY ISLAND AVE.
- 1600 EAST
- YATES AVE.
- 2400 EAST

INVESTMENT OPTIONS:

This analysis will review the two available investment options.

- No Investment
- Invest \$2,231,990 to allow a 20' 3" vertical clearance and thereby permit the use of double stack cars.

IMPACT OF NO INVESTMENT:

If no investment is made, the BRC would not enhance its traffic base nor will other railroads, which have trackage rights on the BRC, be able to use existing energy efficient equipment.

The following table depicts the forfeiture of transportation efficiency of this rail line without an investment.

Table 1
Foregone Transportation Efficiencies
with No Investment

<u>Project Year</u>	<u>Annual Savings (\$000)</u>	<u>Present Worth Factor</u>	<u>Present Worth (\$000)</u>
1	\$ 271	.909	\$ 246,340
2	\$ 575	.826	474,950
3	\$ 914	.751	686,410
4	\$1,268	.683	866,040
5	\$1,610	.621	999,810
6	\$1,948	.564	1,098,670
7	\$2,291	.513	1,175,280
8	\$2,640	.467	1,232,880
9	\$2,995	.424	1,269,880
10	\$3,357	.386	<u>1,295,800</u>
		Total Lost Efficiencies	\$9,346,060

INVESTMENT OPTION:

- An investment would provide the necessary funds to increase the vertical clearance. An estimated \$2,231,990 would be required to obtain the additional transportation cost savings. The following table provides the estimated costs of this project.

Table 2
BRC Vertical Clearance Project

METRA Bridge	\$1,937,500
CTA Bridge	<u>\$ 294,490</u>
	\$2,231,990

BENEFIT COST ANALYSIS:

The benefits applicable to this investment are the transportation efficiencies to be gained by the use of high efficiency double stack container cars. The present worth of these benefits is \$9,346,060 over a ten year period. When compared to the project cost, the Benefit/Cost Ratio 4.18 to 1.

B = \$9,346,060 = 4.18

C \$2,231,990

LINE: Elgin Joliet and Eastern (EJ&E)
OWNER: Privately Owned
OPERATOR: EJ&E

PROBLEM STATEMENT:

A railroad locomotive rebuilding plant based in Minooka, Illinois is now in the process of expanding its existing facility due to recent commitments to rebuild locomotives over the next five years. The company made a request for financial assistance from the Rail Freight Assistance Program to construct new trackage into the facility on existing industrial property. The existing facility has rail service with the EJ&E and this would only be an expansion of that existing facility and trackage. Therefore, no environmental problems are foreseen, nor will any agricultural property be involved.

BACKGROUND:

Due to recent developments in business growth, this company, which has been rebuilding and remanufacturing railroad locomotives since 1961, will have to expand the existing operation to meet demand. Since railroad equipment moves best on rail, new portions of trackage will be necessary also to transport the equipment to the plant and within the plant through various switching movements outside the building for the various stages of a rebuild inside the building.

The business growth will demand an increase of the work force. At a minimum, some 20 new employees of various crafts will be hired.

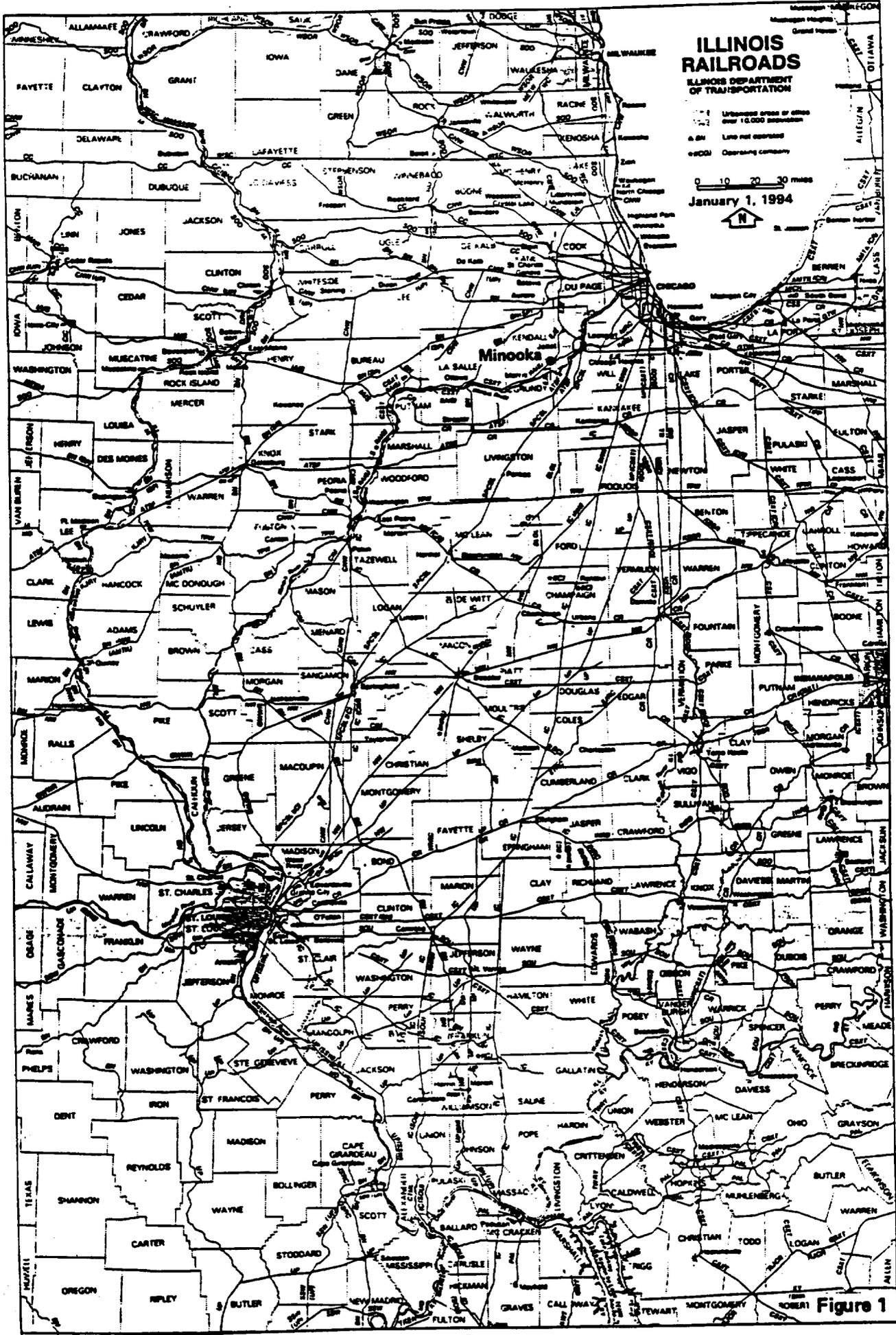
LOCATION:

The project is located in Minooka, Illinois. The location is shown on Figure 1 in relation to the state's rail network. Figure 2 depicts the actual project construction in relation to the existing facility.

INVESTMENT OPTIONS:

Two options will be explored in this analysis. The no investment option will endeavor to determine what ramifications will occur if the project is not completed. The investment option will show the benefits if the project is funded.

- No Investment: This option would not allow the movement of railroad equipment into the expanded area of the plant. Economies of scale could not come into play to meet production demands. An increase of employment would therefore not occur.
- Investment Option: \$125,000 for the construction of 600 feet of track to enable the movement of railroad equipment into the expanded facility.



ILLINOIS RAILROADS

ILLINOIS DEPARTMENT OF TRANSPORTATION

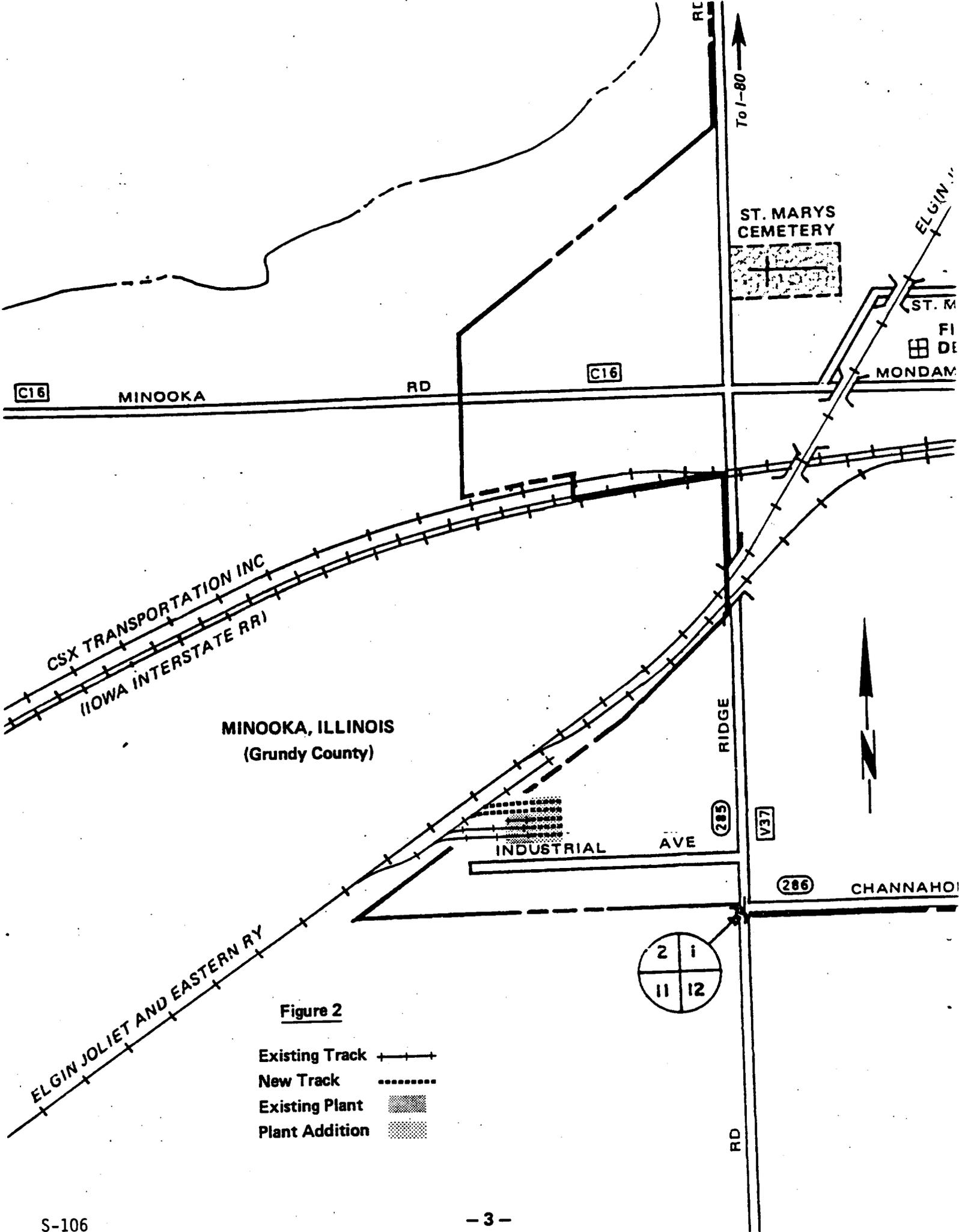
- 1" Unimodal cross of other than 16,000 installation
- 6" Line not operated
- 6000 Operating company

0 10 20 30 miles

January 1, 1994



Figure 1



IMPACT OF NO INVESTMENT:

With no investment, the newly expanded facility would have a very limited ability to receive and distribute the expected large volume of railroad equipment. With the expected capacity, the company could not fulfill its contractual obligations without the expansion of the rail and plant facilities. The following table details the lost income to the region without an investment. Simply, without the expansion employment will not increase.

**Table 1
No Investment
Regional Income Loss**

Project Year	Lost Employment	Average Annual Wage and Benefits	Present Worth Factor	Total Economic Loss
1-10	20	\$608,900	6.144	\$3,741,080

INVESTMENT OPTION:

The investment option examines the expected results of construction to plant production and economies of scale. An investment will be made in the plant expansion. The company will go ahead with that portion of the project. Those costs, for analysis purposes will be included as a part of the total project cost. The estimated cost for the track construction is as follows:

**TABLE 2
MINOOKA RAIL SPUR**

Item	Units	Material	Labor/other/ Equipment	Totals
Clear & Grub	Lump	—	\$ 2,000	\$ 2,000
Grading	Lump	—	5,000	5,000
Seed & Mulch	Lump	—	1,000	1,000
Trk. Dismbly.	250 T.F.	—	2,500	2,500
Subballast	300 C.Y.	\$3,600	3,000	6,600
Skl. Trk.	600 T.F.	—	12,000	12,000
Rail 90 lb.	700 L.F.	3,500	—	3,500
Crossties	270 Ea.	5,940	—	5,940
OTM	400 T.F.	2,600	—	2,600
Skl. T.O.	2 Ea.	—	12,000	12,000
Ties #8	1 Set	3,000	—	3,000
Ties #6	1 Set	2,500	—	2,500
Steel #8-90 lb.	1 Ea.	7,500	—	7,500
Steel #6-90 lb.	1 Ea.	6,500	—	6,500
Ballast	650 C.Y.	9,750	1,950	11,700
Surface	1,470 T.F.	—	12,350	12,350
Wheel Stops	4 Pr.	1,600	400	2,000
Slab Trk.	325 T.F.	—	3,250	3,250
Rail 90 lb.	650 L.F.	3,900	—	3,900
Gage Rods	25 Ea.	625	—	625
Flange Grd.	650 L.F.	4,550	—	4,550
Bonds/Ins.	Lump	—	3,000	3,000
			Contingencies	11,085
			Total Estimated Cost	\$125,000

BENEFIT COST ANALYSIS:

For the benefit/cost analysis, the total project cost is reduced by the residual value of the material life remaining in the spur at the end of the ten (10) year project life. The present residual value is as follows:

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$33,775	\$11,440
% of Material Life Remaining	<u>.50</u>	<u>.34</u>
Residual Value	16,890	3,890
Present Worth Factor	<u>.386</u>	<u>.386</u>
Residual Value (Discounted)	\$ 6,520	\$ 1,500
Total Residual Value for B/C	\$8,020	

Project Cost	\$125,000
Building Addition	325,000
Less Residual Value	<u>(8,020)</u>
Net Project Cost	\$441,980

The benefit applicable to this investment is an increase of jobs to the region if the spur is constructed and the building expanded. As described under the No Investment Option, the present worth of that benefit is \$3,741,080. When compared to the total cost of the project, track and building construction, the resultant Benefit/Cost Ratio is 8.46 to 1.

$$B = \frac{\$3,741,080}{C} = 8.46$$

C \$ 441,980

FACILITY: At E. Peoria, Illinois
OWNER: Peoria & Pekin Union Railway Company
OPERATORS: Peoria & Pekin Union Railway Company;
Toledo, Peoria & Western Railway Company;
Norfolk Southern Corporation; and
Consolidated Rail Corporation

PROBLEM STATEMENT

The Farm Creek Bridge in E. Peoria is in need of structural repair. Four railroads use this bridge to transport freight easterly and westerly across Illinois. Without rail service over the bridge, rail traffic would have to use an alternative route increasing transportation costs. The Peoria & Pekin Union Railway Company (P&PU) has asked for financial assistance to repair the bridge under the Illinois Rail Freight Assistance Program. This analysis determines whether the benefits of a publicly financed bridge rehabilitation project exceed the project's estimated costs.

BACKGROUND

In a 1991 inspection, the bridge's Cooper rating was downgraded approximately thirty-three percent from an E-90 to an E-61.9 Cooper rating. It is projected that without the needed repairs, there will be further deterioration to the bridge's steel floor system. At the next inspection, the bridge's rating may be reduced another thirty-three percent to an E-20.4 Cooper rating. With this decrease in the load carrying capacity, the bridge will be virtually unusable for rail traffic. New railroad bridge construction is designed for a E-80 Cooper rating minimum.

The four railroad companies currently using the Farm Creek Bridge include the Peoria & Pekin Union Railway Company; Toledo, Peoria & Western Railway Company; Norfolk Southern Corporation; and Consolidated Rail Corporation. These railroads are traveling easterly and westerly across Illinois.

LOCATION

The proposed project is located in East Peoria approximately one-third mile from the north entrance of the P&PU's main yard. The project location and limits are shown in Figures 1 and 2.

INVESTMENT OPTIONS

Two investment options are considered in determining whether a reconstruction project on farm creek bridge is eligible for state funds.

No investment, which would require an annual increase of 17,976,700 car miles via various detour routes at an increased cost of \$6,291,845 per year.

Invest \$491,530 to repair structural bridge deficiencies to avoid \$6,291,845 in increased transportation costs.

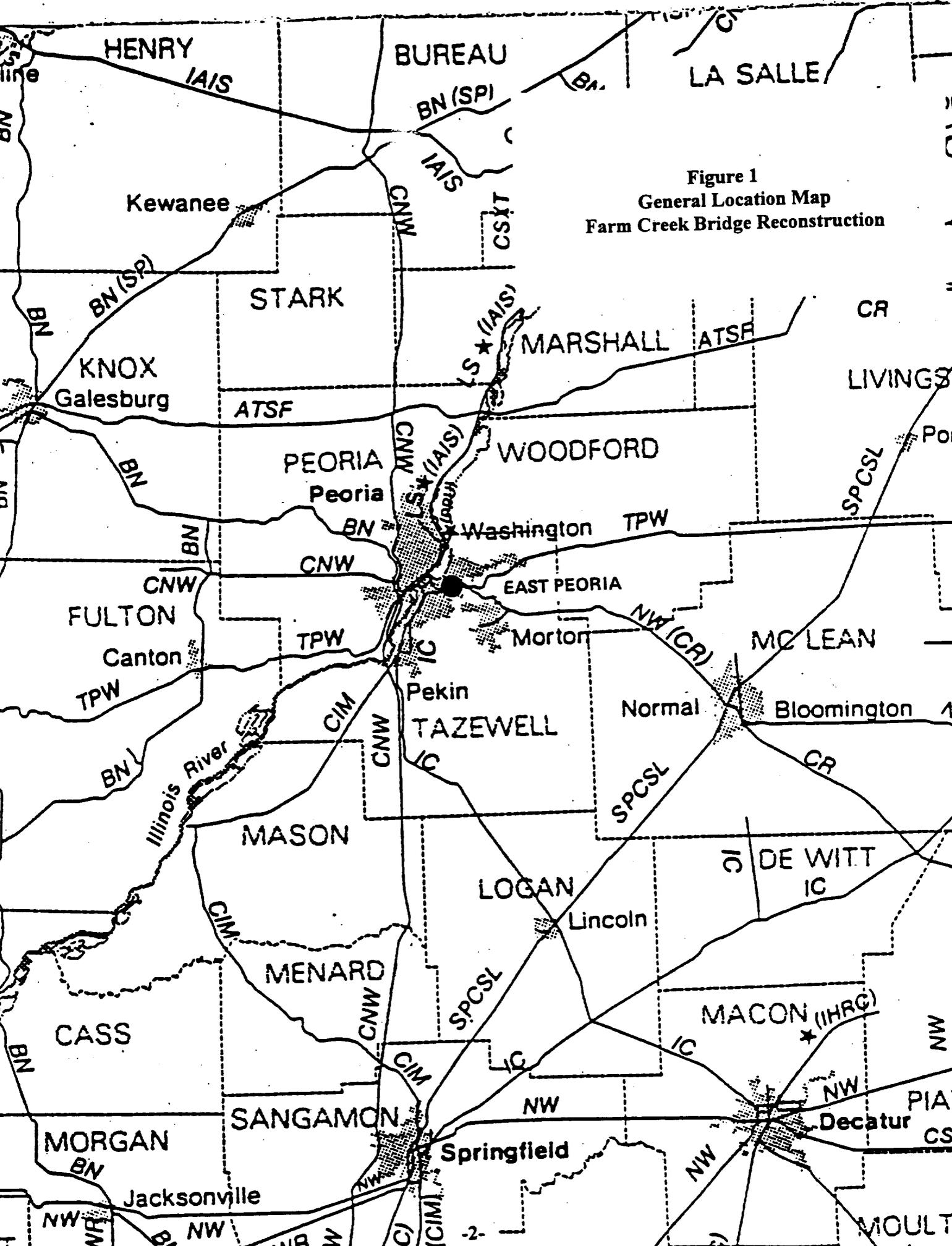
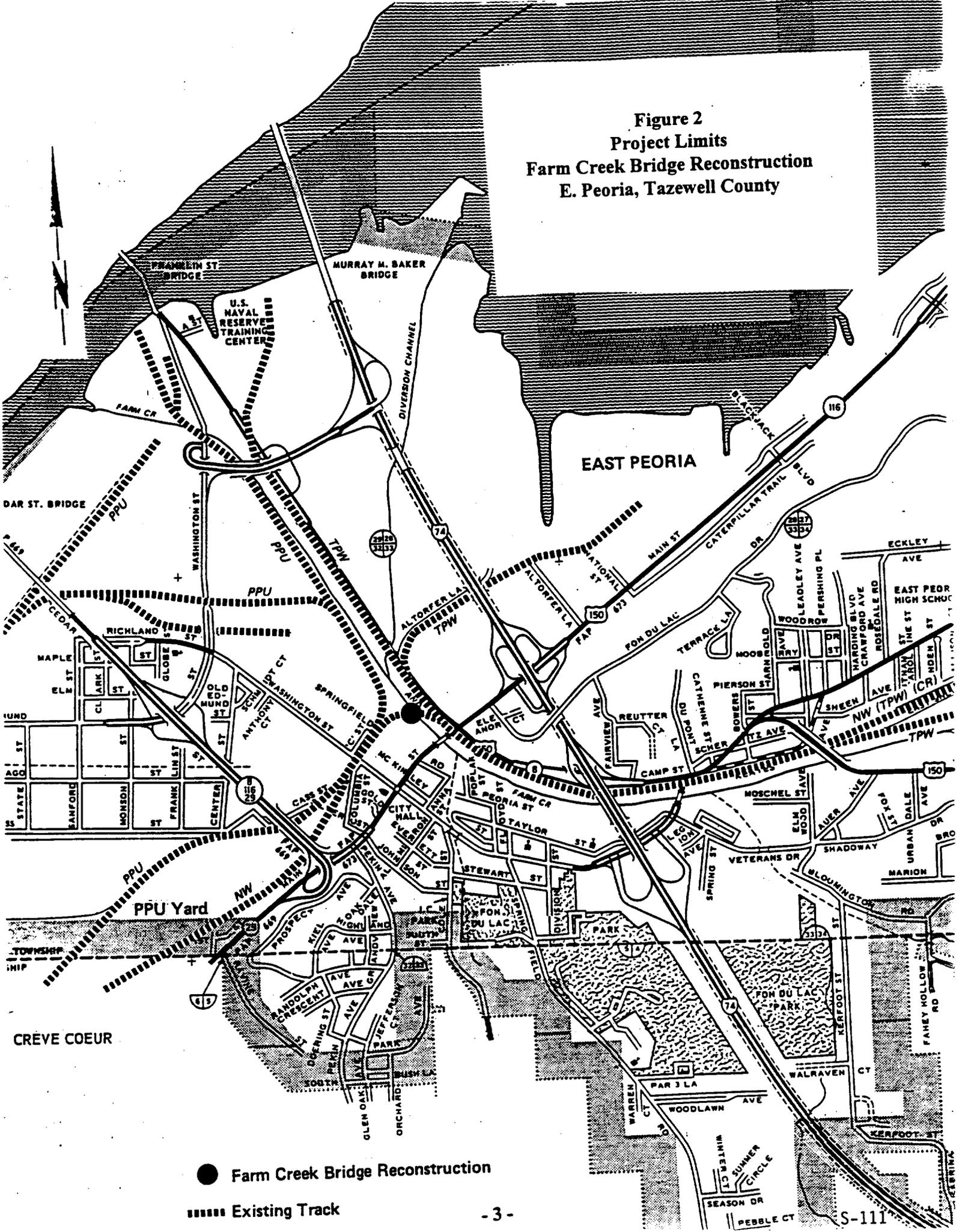


Figure 1
 General Location Map
 Farm Creek Bridge Reconstruction

Figure 2
Project Limits
Farm Creek Bridge Reconstruction
E. Peoria, Tazewell County



NO INVESTMENT

Failure to invest in rail improvements will prevent the direct flow of goods easterly and westerly across Illinois. This will in turn increase the transportation costs to shippers along these rail lines.

INVESTMENT OPTION

The investment option would allow for the continued transportation of goods without adding costly detour miles.

**Table 1
Estimated Project Rehabilitation Costs**

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>COST</u>
TRUSS SPAN			
T-1	Replace stringer connecting angle	2	\$12,000
T-2	Replace broken fasteners	5	250
T-3	Tighten fasteners	5	100
T-4	Replace bridge casting and pin joint	1	30,000
T-5	Replace stringer and bracing	1	10,000
T-6	Replace stringer	10	85,000
T-7	Rehabilitation expansion bearing	2	5,000
T-8	Replace fasteners	5	250
GIRDER SPAN			
G-1	Replace bottom floorbeam angles	3	18,000
G-2	Replace stringer and bracing	6	48,000
G-3	Replace hold-down bolts	1	50
G-4	Replace center lateral connection plates	4	40,000
G-5	Replace floorbeam web	1	12,000
SUBSTRUCTURE			
S-1	Repair spalled areas	100 S.F.	3,000
TIES			25,000
Mobilization			26,370
Repair Design			50,000
Field Construction Engineering			25,000
Contingency			101,510
TOTAL ESTIMATED PROJECT COSTS			\$491,530

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the 10 year project life. The residual value of \$8,500, when discounted to its present worth of \$3,281, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$488,249 as shown below.

	<u>Ties</u>	<u>Total</u>
<u>Cost</u>	\$25,000	
% Life Remaining	<u>x34%</u>	
Residual Value (10 yrs):	\$ 8,500	\$8,500
Present Worth Factor (10%-10 yr)		<u>.386</u>
Present Worth of Residual Value:		<u>\$3,281</u>

In summary: Project Cost:	\$491,530
Less Present Worth Residual:	<u>3,281</u>
Net Project Cost for B/C:	<u>\$488,249</u>

TRANSPORTATION BENEFITS

Transportation benefits provided by this project are the avoided transportation costs to railroads. Without the bridge reconstruction, a total of 17,976,700 detour car miles per year (at current traffic levels) will have to be operated at an average cost per car mile of \$.35. This will increase transportation costs born by the four railroads and ultimately by area shippers in the amount of \$6,291,845 per year. Over a ten year period, the present worth of this added transportation cost amounts to \$38,663,387. The present worth of this avoided cost is presented in Table 2.

Table 2

<u>Project Year</u>	<u>Annual Savings in Transportation Costs</u>	<u>Ten Year Factor</u>	<u>Total Discounted Benefit</u>
1-10	\$6,291,845	6.145	\$38,663,387

BENEFIT/COST

The benefits discounted over 10 years are \$38,663,387. The appropriate cost for the benefit cost formula is \$488,249. The benefit/Cost Ratio is therefore 79.2. This formula is as follows:

$$\frac{B}{C} = \frac{\text{Transportation Benefits}}{\text{Project Net Cost - Residual Value}}$$

$$\frac{B}{C} = \frac{\$38,663,387}{\$491,530 - \$3,281} = \frac{\$38,663,387}{\$488,249} = 79.2$$

LINE: In Chicago @ South Kostner Avenue
OWNER: Alvarez Cold Storage & Distribution Systems
OPERATOR: Illinois Central Railroad

PROBLEM STATEMENT:

A Chicago based cold storage and distribution plant is in need of direct rail access for inbound and outbound shipments. The plant was rail served by the Belt Railway in the past, but those tracks and the connection were removed. The following analysis examines the benefits and costs of re-establishing rail service to the facility via a connection to the Illinois Central Railroad, and the possibility of using the state's Rail Freight Program to fund its construction.

BACKGROUND:

The plant in question is operated by Alvarez Cold Storage & Distribution Systems (Alvarez). This company provides frozen food inventory and shipping for various companies. Alvarez has an agreement with a major frozen food distributor to provide both cross-dock and break bulk services. Rail service is essential for Alvarez to meet this commitment.

LOCATION:

The facility is located in near southwest Chicago, just east of Cicero Avenue and 1/2 mile north of the Stevenson Expressway. Its location in relation to the rail system in the area is shown in Figure 1. Service would be provided by the Illinois Central from its Bridgeport District line.

INVESTMENT OPTIONS:

The project presented is compared to a no investment option, which provides no capital improvement for rail access to the Alvarez plant.

No Investment

The impact of no investment would be to limit the expansion and growth of the company. As it relates to the funding guidelines of the program, it restricts the ability of this company to expand, reducing new employment opportunities. The impact of the expanded employment is quantified in the detailed description of the investment option that follows.

INVESTMENT OPTION: \$125,000 Track Construction and Utility Relocation

This level of investment provides for the construction of approximately 780 feet of new track, the relocation of 120 feet of existing track, the installation of a turnout and associated electrical utility work to extend an existing industrial lead to the Alvarez plant. The scope of work required is detailed in Table 1 and depicted in Figure 2.

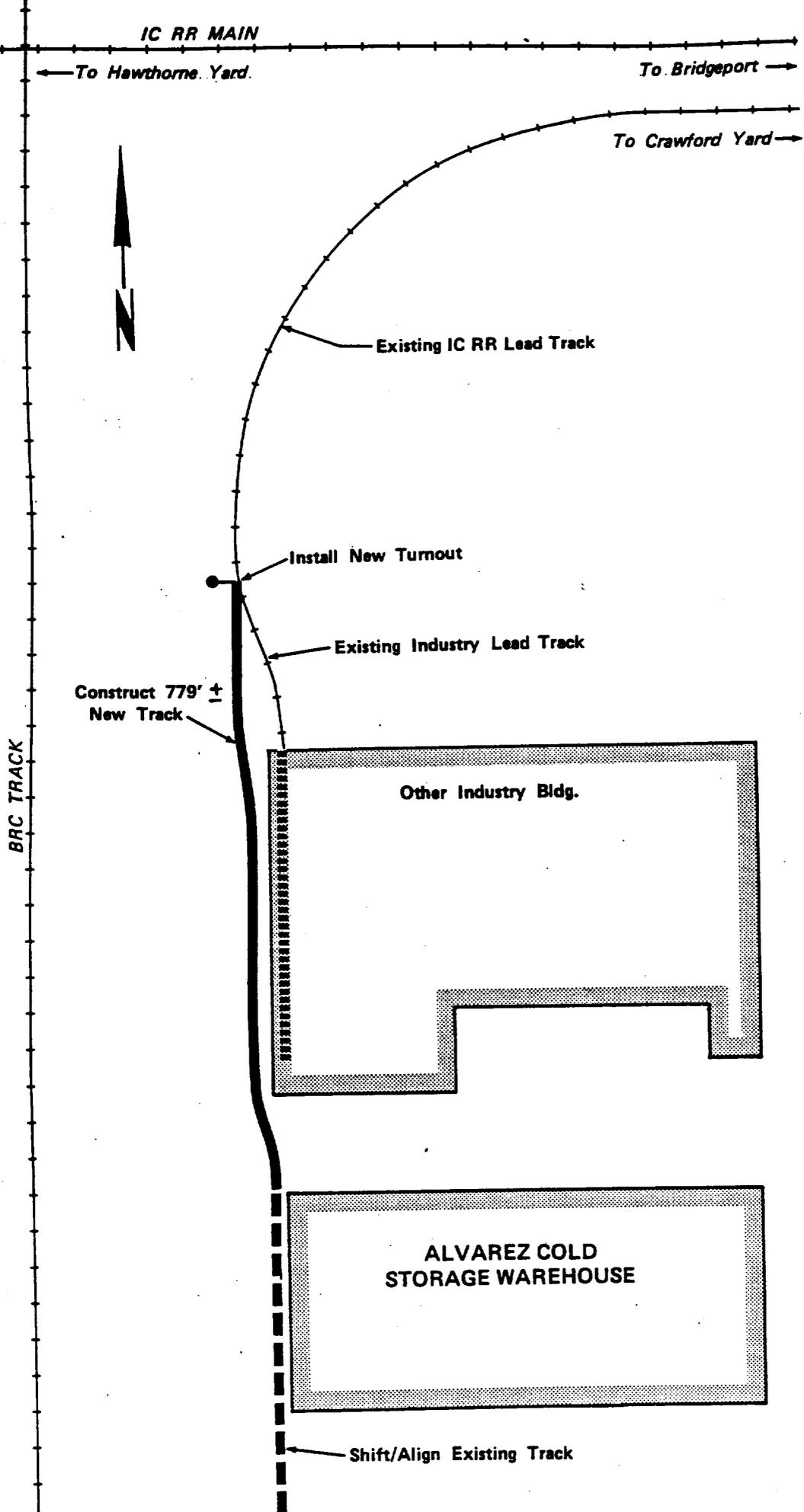
TABLE 1
INVESTMENT OPTION ESTIMATED COST

ITEM	QUANTITY	MATERIAL COST	LABOR/EQUIP.	TOTAL
Fence Removal	600 LF		\$3,000	\$ 3,000
Pole Relocation	1 LS			15,000
Site Prep	1 LS			10,000
Subballast	250 CY	\$ 2,500		2 500
Track Disassemble/ Relocation	120 TF		660	660
Skeleton Track Construction	700 TF		8,470	8,470
Rail 90#	1,300 TF	7,280		7,280
Ties 6"x8"x8'6"	431 EA	10,344		10,344
OTM	700 TF	3,500		3,500
Ballasting	730 CY	3,034		3,034
Surface, Align and Dress	800 TF		7,000	7,000
Bumping Post Relocation	1 EA		880	880
Fence Installation	300 LF	4,200	3,000	7,200
Gate Installation	1 EA	700	500	1,200
Guard Rail	650 LF	5,850	1,950	7,800
Bonds & Insurances	1 LS	5,850	1,950	2,500
IC RR Turnout #8-115#	1 EA			29,199
Construction Contingencies	1 LS			5,443
<u>TOTAL ESTIMATED PROJECT COST:</u>				<u>\$125,000</u>

For the purpose of determining the benefit/cost ratio for this investment option, the estimated project cost is reduced by a residual value, approximating the remaining economic value of the improvement at the end of a five year project life. The cost for the benefit/cost is summarized as follows:

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$16,630	\$10,344
% of Material Life Remaining	<u>x 0.75</u>	<u>x 0.67</u>
Present Worth Factor	<u>x0.6290</u>	<u>0.6209</u>
	\$ 7,745	\$ 4,303
Total Residual Value for B/C	\$12,048	
Project Cost (Table 1)	\$125,000	
Less Residual Value	<u>12,048)</u>	
Net Project Cost (Cost for B/C)	<u>\$112,952</u>	

Figure 2
Project Limits
Alvarez Cold Storage
Track
(not to scale)



INVESTMENT OPTION BENEFITS:

Rail transportation provides superior economies for long distance transport: a key factor for the food distributor selecting the Alvarez plant. These efficiency benefits are important in generating the need for expanded employment detailed and quantified in the following section.

Economic Benefits

Alvarez estimates that the increased business volume generated by having access to direct rail service will expand its employment base by 25 full-time employees. On the basis of an average wage and fringe benefit level of \$10.75 per hour per employee, the total annual economic benefit is estimated to be \$559,000. Over a period of 5 years, this annual benefit has a present worth of \$2,119,057 as shown below.

Table 2
Economic Benefits - Employment

<u>Project Year</u>	<u>Wage/Fringe Benefit</u>	<u>Discount Factor</u>	<u>Total 5-Year Economic Benefit</u>
1-5	\$559,000	3.791	\$2,119,057

B/C Ratio:

Comparing the costs derived in Table 1 to the Benefits of Table 3 yields a B/C ratio of 18.67 as shown:

$$\frac{B}{C} = \frac{\$2,119,057}{125,000 - \$12,048} = \frac{\$1,119,057}{\$ 112,952} = 18.67$$

LINE: Crest Hill Phase IV
OWNER: Seeler Industries, Inc.
OPERATOR: Elgin, Joliet and Eastern Railway Co. (EJ&E)

PROBLEM STATEMENT:

Given an increase in area employment and transport cost savings as a result of a newly constructed barge to rail transfer dock, this analysis will compare the benefits to the cost of a new track to serve this newly constructed dock.

ENVIRONMENTAL CONCERNS:

Historical Preservation, Agricultural or Wetlands

- No wetlands will be taken.
- No agricultural property will be used.
- Only .6 (six tenths) of an acre will be used to construct the new trackage.

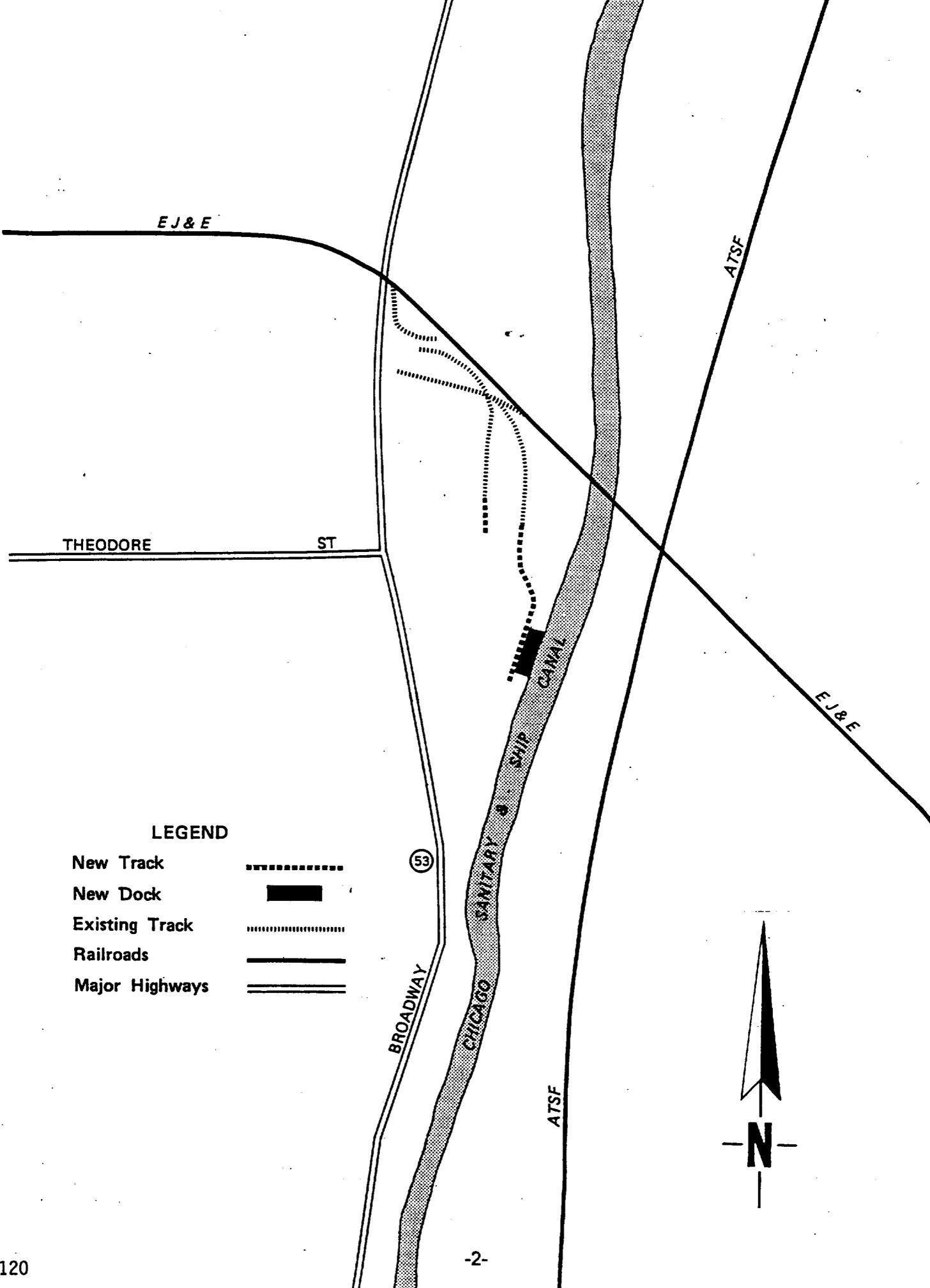
This industrial property, where the dock will be constructed, is located on the Chicago Sanitary and Ship Canal. Any possibility of historical or archaeological finds, due to the construction of the canal many years ago, would be slim at best.

BACKGROUND:

This project is the forth stage of the rail construction at this site. The Department, through its Bureau of Railroads, has been working with this newly established site since 1989. The Department has completed the first three phases at or under the budgeted amounts and the company has prospered with the rehabilitated and expanded rail facilities. With the new barge/rail loading dock, the company will be better able to provide increased transportation services and savings to its customers. A steady increase in employment has been the result of an investment over the past six years.

LOCATION:

The site is near the east corporate limits of Crest Hill. The EJ&E crosses at the north end of the site with Illinois Route 53 to the west and the Chicago Sanitary and Ship Canal to the east all in the city of Joliet. (See the following map on page 2)



EJ&E

ATSF

THEODORE

ST

EJ&E

LEGEND

- New Track
- New Dock
- Existing Track
- Railroads
- Major Highways

53

BROADWAY

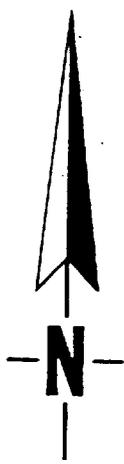
SANITARY

SHIP

CANAL

CHICAGO

ATSF



INVESTMENT OPTIONS:

This analysis will review the two available investment options.

- No Investment
- Invest \$290,000 for the reconstruction of 235 feet of track and construct 1,080 feet of new track.

IMPACT OF NO INVESTMENT:

With no investment, the area's economy would forego an increase of income of \$120,000 the first year of operation and \$180,000 by the second and through the fifth year of the analysis period.

The following table depicts the forfeiture of income to the region if funds are not provided for the new rail/barge facility.

Table 1
Regional Foregone Income

<u>Project Year</u>	<u>Foregone Income (\$000)</u>	<u>Present Worth Factor</u>	<u>Present Worth</u>
1	\$ 120	.909	\$ 109,080
2	\$ 180	.826	148,680
3	\$ 180	.751	135,180
4	\$ 180	.683	122,940
5	\$ 180	.621	<u>111,780</u>
		Total Lost Income	\$ 627,660

INVESTMENT OPTION:

An investment would provide the necessary funds to construct the necessary new track for the rail/barge facility and extend the other trackage on existing roadbed necessary for increased car storage. An estimated \$290,000 is needed for this purpose.

The following table provides the estimated costs.

TABLE 2

CREST HILL ESTIMATE Phase IV					
ITEM	UNITS	QUANTITY	MATERIAL	LABOR	TOTAL
PART I					
EI&E #6 TURNOUT	lump	--			\$15,000.00
CLEARING & GRUBBING	lump	--			\$5,000.00
GRADING	lump	--			\$30,000.00
SUBBALLAST CA-6 (6")	c.y.	450	\$4,950.00	\$6,750.00	\$11,700.00
SKELETON TRACK CONSTRUCTION	t.f.	1080		\$16,200.00	\$16,200.00
RAIL 100# or heavier	l.f.	2160	\$10,800.00		\$10,800.00
TIES 6"x8"x8'6"	ea.	655	\$15,960.00		\$15,960.00
OTM	t.f.	1080	\$8,640.00		\$8,640.00
STEEL BUMPING POST	ea.	1	\$1,500.00	\$500.00	\$2,000.00
BALLASTING CA-5 (8")	c.y.	510	\$7,650.00	\$1,020.00	\$8,670.00
SURFACE, ALIGN AND DRESS	t.f.	1080		\$6,480.00	\$6,480.00
				TOTAL I	\$130,450.00
ITEM	UNITS	QUANTITY	MATERIAL	LABOR	TOTAL
PART II					
REMOVE CONCRETE CROSSING	l.f.	62		\$1,240.00	\$1,240.00
REMOVE 4' RETAINING WALL	l.f.	370		\$4,440.00	\$4,440.00
REMOVE 10' CONCRETE PAVEMENT	sq. yd.	145		\$2,320.00	\$2,320.00
INSTALL KEYSTONE RETAIN. WALL	l.f.	370	\$14,800.00	\$14,800.00	\$29,600.00
INSTALL P.C.C. PAVEMENT, 10"	sq. yd.	145	\$3,625.00	\$5,800.00	\$9,425.00
GRADING FOR DRAINAGE	lump	--			\$20,000.00
ROCK EXCAVATION FOR DRAINAGE	c.y.	40		\$6,000.00	\$6,000.00
INSTALL 8" PERF. CMP DRAINAGE SY	l.f.	490	\$5,880.00	\$7,350.00	\$13,230.00
REMOVE & REPLACE ASPHALT PAVE.	sq. yd.	55	\$1,375.00	\$825.00	\$2,200.00
SKELETON TRACK CONSTRUCTION	t.f.	235		\$3,525.00	\$3,525.00
RAIL 100# or heavier	l.f.	470	\$2,350.00		\$2,350.00
TIES 6"x8"x8'6"	ea.	148	\$3,552.00		\$3,552.00
OTM	t.f.	235	\$1,880.00		\$1,880.00
SIX RAIL ASPHALT GRADE CROSSING	t.f.	40		\$600.00	\$600.00
RAIL	l.f.	240	\$1,200.00		\$1,200.00
OTM	l.f.	240	\$1,920.00		\$1,920.00
BONDS AND INSURANCES PART I & II	lump	--			\$8,000.00
				TOTAL II	\$111,482.00
				TOTAL I	\$130,450.00
				TOTAL II	\$111,482.00
				Contin.	\$48,068.00
			PROJECT	COST	\$290,000.00

BENEFIT COST ANALYSIS:

For the benefit/cost formula, the total project cost is reduced by the residual value of the material life remaining in the major material items at the end of the five year project life.

The present value of the residual life remaining is calculated as follows:

	<u>Rail & OTM</u>	<u>Ties</u>
Cost	\$36,290	\$19,512
% of Material Life Remaining	<u>.90</u>	<u>.75</u>
Residual Value	\$32,661	\$14,634
Present Worth Factor	<u>.621</u>	<u>.621</u>
Residual Value Discounted	\$20,280	\$ 9,090
Total Residual Value for B/C	<u>\$ 29,370</u>	
Estiamted Project Cost	\$290,000	
Value for B/C	<u>(29,370)</u>	
Net Project Cost	\$260,630	

The benefit applicable to this investment is an increase of jobs to the region if this project is undertaken. As presented in the No Investment Option, the present worth of that benefit is \$627,660. When compared to the Net Project Cost, the resultant Benefit/Cost ratio is 2.4 to 1.

$$\begin{aligned} B &= \text{Employment Benefits} = \underline{\$627,660} = 2.4 \\ C &= \text{Net Project Cost} = \$260,630 \end{aligned}$$

LINE: At North Chicago, Illinois
OWNER: C & M Recycling, Inc.
OPERATOR: Elgin, Joliet & Western Railway

PROBLEM STATEMENT

A recycling company in North Chicago is expanding its operation. The company plans to construct a rail spur and install a scale. It will ship a majority of its outbound material via the Elgin, Joliet & Eastern Railway (EJE) rather than truck. This analysis determines whether the benefits of constructing a publicly financed rail spur, funded by the state's Rail Freight Assistance Program, exceed the project's estimated costs.

BACKGROUND

The company has been in the recycling business for the past 20 years. Various grades of recyclable material such as newspaper, corrugated cardboard, mixed paper, and computer print-out paper are collected. These materials are baled on site and shipped out to markets by truck. It is projected that with the rail spur construction, the Company will increase its volume of materials and employ more personnel to handle additional shift work. By converting 80 percent of its outbound shipments from truck to rail, the company will realize significant transportation cost savings.

LOCATION

The proposed project is located in an industrial area in North Chicago. It is bordered on the north by Martin Luther King Highway (formally known as 22nd Street), on the south by Morrow Avenue, and is adjacent to the EJE Railroad on the east. The project location and limits are shown in Figures 1 and 2.

INVESTMENT OPTIONS

Two investment options are considered in determining whether a track construction project at the Company's recycling facility is eligible for state funds.

No investment, which would eliminate the Company's ability to ship outbound by rail.

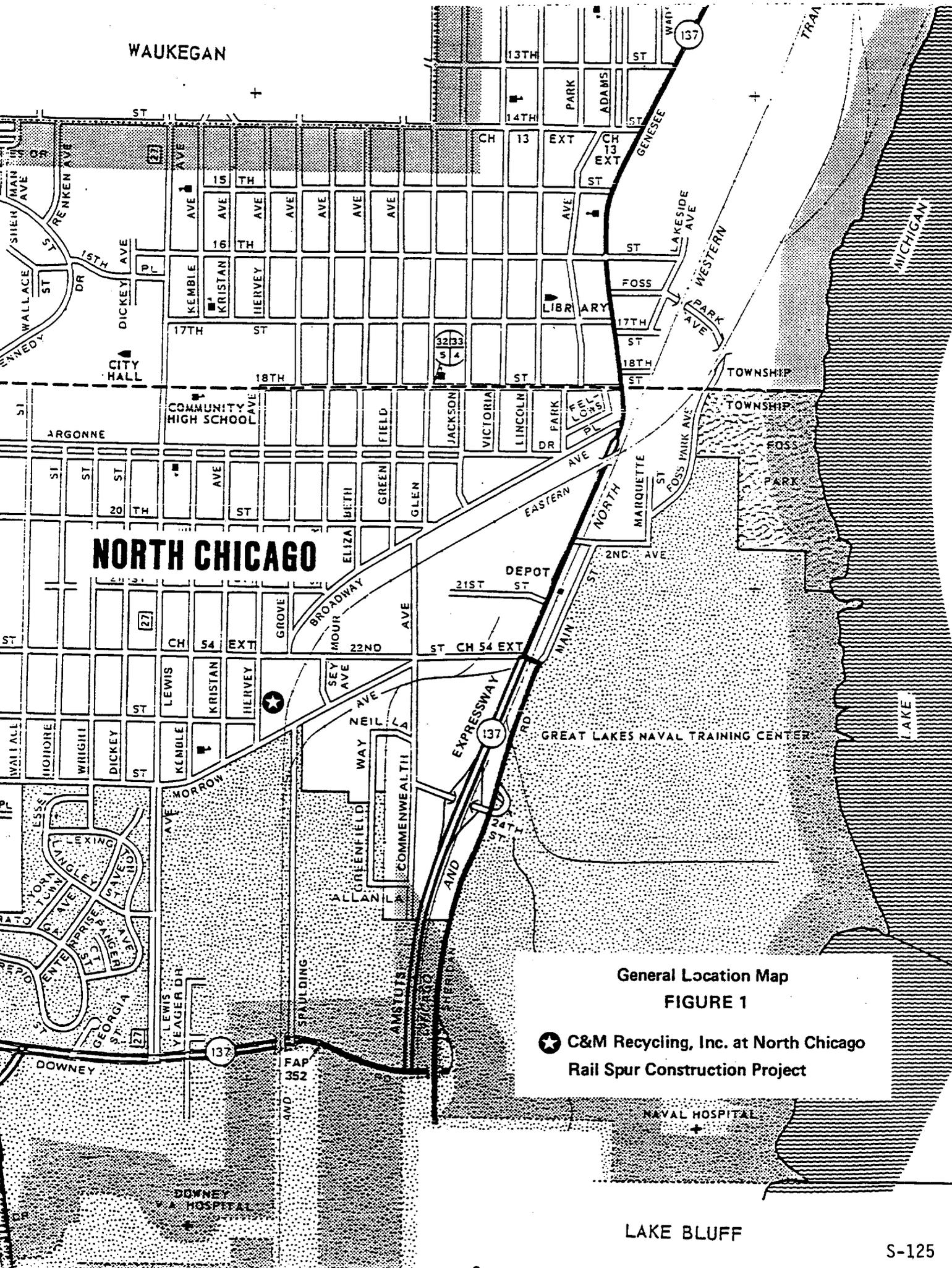
Invest \$290,000 to construct 1,000 feet of track and install a rail scale to handle 741 outbound rail cars per year.

NO INVESTMENT

Failure to invest in rail construction will limit the company's growth potential and the transportation cost savings of shipping by rail.

INVESTMENT

The investment option would enhance the company's expansion project providing the opportunity to ship its outbound paper by rail rather than truck. Estimated project costs are found in Table 1.



NORTH CHICAGO

General Location Map
FIGURE 1

★ C&M Recycling, Inc. at North Chicago
Rail Spur Construction Project

LAKE BLUFF

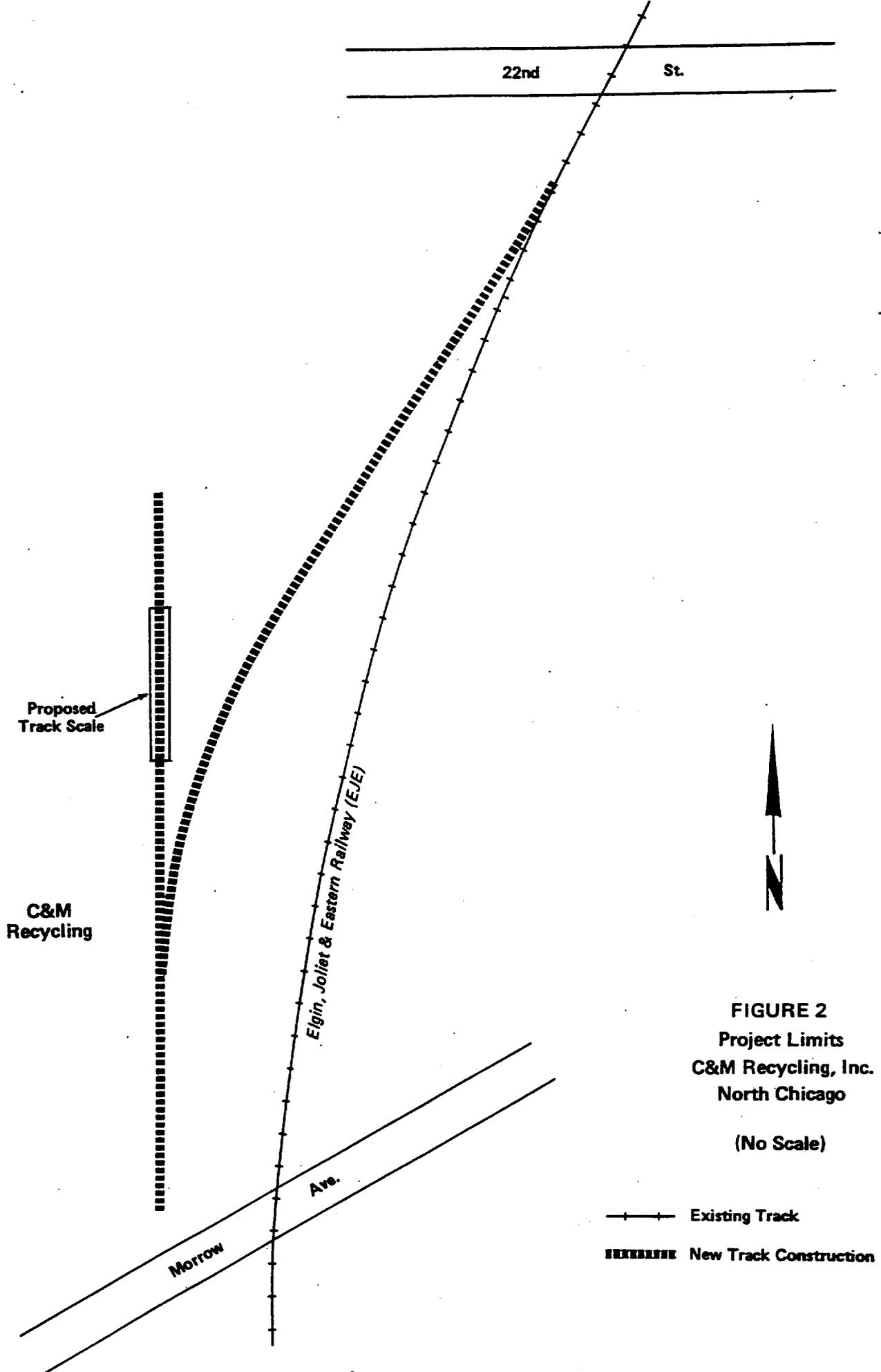


FIGURE 2
Project Limits
C&M Recycling, Inc.
North Chicago
(No Scale)

Table 1

ITEM NO.	DESCRIPTION	QUANTITY	COST
1	Rail Scale	1	\$120,000.00
2	Grading	1	10,000.00
3	Pole Line Adjustments	1	10,000.00
4	EJ&E Turnout/Track	1	30,000.00
5	EJ&E Crossing Circuit Adjustments	1	10,000.00
6	Subballast (6" - CA6)	300 cubic yds.	6,900.00
7	Skeleton Track Construction	600 track ft.	13,800.00
8	Rail 100#	1,200 lineal ft.	6,000.00
9	Ties 6" x 8" x 8'6"	370	8,880.00
10	OTM	1,200 track ft.	7,200.00
11	Skeleton Turnout Construction	1	5,500.00
12	Timber #8	1	3,000.00
13	Steel 100#	1	6,000.00
14	Six Rail Crossing	30 lineal ft.	2,250.00
15	Ballasting (6"-CA5)	300 cu. yd.	4,200.00
16	Surface, Align and Dress	800 track ft.	3,200.00
17	Bumping Post-Steel	2	6,000.00
18	Bonds and Insurance	1	2,500.00
19	Move Truck Scale	1	10,000.00
20	Contingencies		<u>24,570.00</u>
	Total Estimated Project Cost		290,000.00

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the five year project life. The residual value of \$91,487, when discounted to its present worth of \$56,813, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$233,187 as shown below.

	<u>Rail & OTM</u>	<u>Ties</u>	<u>Scale</u>	<u>Total</u>
Cost	\$54,950	\$11,800	\$120,000	
% Life Remaining	<u>x50%</u>	<u>x34%</u>	<u>x50%</u>	
Residual Value (5 yrs.)	\$27,475	\$ 4,012	\$ 60,000	\$91,487
Present Worth Factor (10%-5 yr.):				<u>x0.621</u>
Present Worth of Residual Value:				\$56,813

In Summary:	Project Cost:	\$290,000
	Less Present Worth Residual:	<u>56,813</u>
	Project Cost for Analysis:	\$233,187

TRANSPORTATION BENEFITS

Transportation benefits provided by this proposed rail construction project will increase the company's outbound rail traffic to 48,960 tons or 741 cars annually. If the company shipped by truck verses rail, the outbound transportation costs would be \$4,337,308 and \$2,521,538, respectively. Therefore, by converting from truck to rail, the company will realize a total annual savings of \$1,815,770 as shown in Table 2 below. The present worth of this transportation benefit is presented in Table 3.

**Table 2
ANNUAL PROJECTED OUTBOUND SHIPMENTS**

Item	Tonnage	Truck Shipping Costs	Rail Shipping Costs	Savings
Newspaper	24,000 tons	\$1,981,980	\$1,223,640	\$758,340
Corrugated Cardboard	21,600 tons	\$2,153,976	\$1,216,750	\$937,226
Mixed Paper	14,000 tons	\$1,219,680	\$ 667,181	\$552,499
Computer Print-Out	1,200 tons	\$ 66,000	\$ 44,352	\$ 21,648
Totals	61,200 tons	\$5,421,636	\$3,151,923	\$2,269,713
80% Shipped by Rail	48,960 tons	\$4,337,308	\$2,521,538	\$1,815,770

**Table 3
Transportation Benefits**

Project Year	Annual Savings in transportation costs	Five Year Factor	Total Discounted Benefit
1-5	\$1,815,770	3.791	\$6,883,584

ECONOMIC BENEFITS

Economic benefits provided by the proposed rail construction project include five new employees. The annual salary and benefits include one supervisor at \$43,750; one forklift operator at \$21,750; one baler operator at \$25,000; and two laborers at \$12,500 each. The total economic benefit of \$126,250 is discounted to its present worth in Table 4 below.

**Table 4
Economic Benefits**

Project Year	Additional Annual Wage & Fringe Benefits	Discount Factor	Total Discounted Economic Benefits
1-5	\$126,250	3.791	\$487,614

BENEFIT/COST ANALYSIS

The transportation and economic benefits directly attributable to this project over a five year period are \$7,371,198. These benefits, when compared to the net project cost of \$233,187, yield a benefit/cost ratio of 31.61, thereby qualifying this project for funding under the state's Rail Freight Assistance Program.

$$\frac{\mathbf{B}}{\mathbf{C}} = \frac{\mathbf{Transportation\ Benefits\ +\ Economic\ Benefits}}{\mathbf{Net\ Project\ Cost}}$$

$$\frac{\mathbf{B}}{\mathbf{C}} = \frac{\mathbf{\$6,883,584 + \$487,614 = \$7,371,198}}{\mathbf{\$233,187}} = \mathbf{31.61}$$

Nchicago

LINE: At Danforth, Illinois
OWNER: Danforth-Gilman Grain Company
OPERATOR: Illinois Central Railroad

ISSUE:

An existing country elevator served by the Illinois Central Railroad must expand its car storage and handling capacity to take advantage of multi-car discounts for shipping grain. The company is seeking financing for this project from the state's Rail Freight Assistance Program. The following analysis examines the benefits and costs of this project to determine if Program funds can be used for the track rehabilitation and expansion.

BACKGROUND:

Danforth-Gilman Grain company is a grain cooperative that operates two grain elevators on the Illinois Central Railroad. At present they can only load 9 cars at any one time, thus they are unable to take advantage of volume discounts on shipping rates provided by the railroad. In order to reduce shipping costs and access new rail markets, thereby improving prices quoted to local grain producers, they seek to expand their tracks to handle 25 cars at one time.

LOCATION:

The Danforth elevator is located alongside the Illinois Central Chicago-New Orleans main line in Iroquois County at Danforth, approximately 77 miles south of Chicago. The project site location in relation to the region's rail network is shown in Figure 1.

INVESTMENT OPTIONS:

To determine whether the proposed rail siding rehabilitation and extension is eligible for Program funding, two options are reviewed:

- No Investment - which retains the elevator's rail siding in its present condition, limiting rail car loading to 9 at one time; and
- \$365,000 for the rehabilitation of the existing track, construction of 1,425 feet of new track and additions to grain loading conveyors and piping.

These investment options are detailed as follows.

NO INVESTMENT:

The failure of Danforth-Gilman to undertake any investment in Danforth would mean the loss of service improvement and economies available by shipping in higher volumes by rail. The benefits foregone with no investment are quantified in the discussion of the Investment Option that follows.

\$365,000 INVESTMENT OPTION

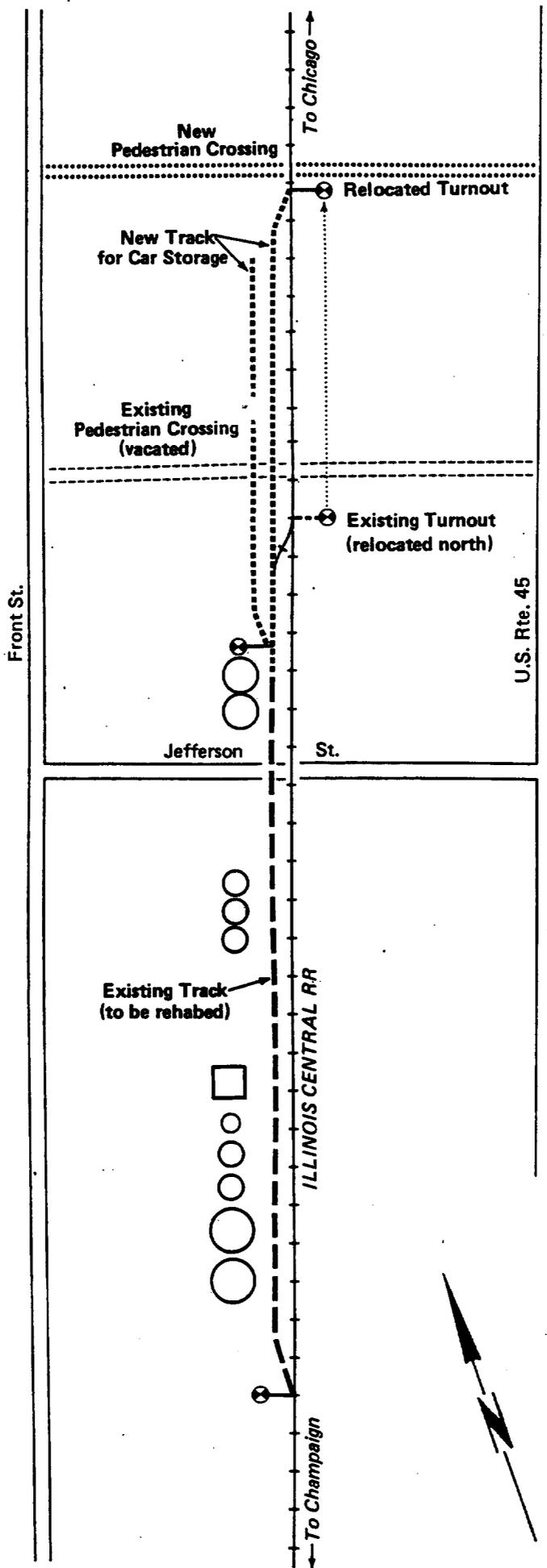
Danforth-Gilman's proposal will construct approximately 1,425 feet of new track and upgrade 1,486 feet of existing siding to accommodate a 25-car unit grain load out. In addition to the track rehabilitation and new track construction, the proposal will relocate a pedestrian crossing to the north of the new siding, which will better serve the needs of a nearby school. Alteration and extension of the elevator's loading spouts is also required. The detail and limits of this investment option are depicted in Figure 2. A detail of the estimated costs is shown in Table 1.

TABLE 1
INVESTMENT OPTION ESTIMATED COST

PROJECT WORK ITEM:	UNIT	ESTIMATED QUANTITY	MATERIAL COST	LABOR & EQUIP. COST	TOTALS
Dismantle 110# Rail for Reuse	Track Foot	1,530		\$10,710	\$10,710
Sort 1,580 L.F. of 85# Rail for Relay	Lump Sum	1		\$3,000	\$3,000
Fill in 24" CIP	Lump Sum	1		\$2,000	\$2,000
Track Site Preparation:					
Excavation / Fill	Lump Sum	1		\$25,600	\$25,600
Furnish and Install Subballast	Cubic Yard	711	\$10,665	\$6,399	\$17,064
Crosstie Renewal (6" x 8")	Each	520	\$13,000	\$14,560	\$27,560
Rail Upgrade to 110#	Track Foot	1,486		\$17,832	\$17,832
Rail (Purchased by Owner from ICRR)	Lineal Foot	2,972			
OTM	Track Foot	1,486	\$7,430		\$7,430
Skeleton Turnout Construction - No. 10	Each	1		\$7,100	\$7,100
Switchties (7" x 9")	Turnout	1	\$3,200		\$3,200
Steel 110#	Turnout	1	\$7,500		\$7,500
Track Construction	Track Foot	1,425		\$34,200	\$34,200
Crossties (6" x 8")	Each	877	\$21,925		\$21,925
Rail - 110# (by Owner)	Lineal Foot	88			
Rail - 110# (by Contractor)	Lineal Foot	1,182	\$7,683		\$7,683
Rail - 85# (by Owner)	Lineal Foot	1,580			
Geotextile Fabric (16 oz/S.Y.)	Square Yard	2,437	\$3,411	\$1,462	\$4,874
Other Track Material	Track Foot	1,425	\$8,550		\$8,550
Furnish & Install Ballast	Cubic Yard	1,415	\$21,932	\$4,952	\$26,885
Surface, Align & Dress	Track Foot	3,397		\$8,492	\$8,492
Relocate Derail	Each	1		\$300	\$300
Install Steel Bumping Post	Each	1	\$1,500	\$300	\$1,800
Scrap Tie Removal	Lump Sum	1,462		\$5,848	\$5,848
Scrap Rail	Gross Ton	20	(\$2,000)		(\$2,000)
Flagging	Day	35		\$12,250	\$12,250
Bonds & Insurance	Each	4			\$7,794
Subtotal - Track Work:					\$267,597
New load out spouts:	Lump Sum				\$20,000
Contingencies (Five Per Cent)					\$14,374
Force Account Work By IC RR	Lump Sum				\$46,232
Rail - 110# (Owner Purchased From ICRR)	Lineal Foot	3,060			\$15,300
Relocate CIPS Utility Pole	Lump Sum				\$1,500
			Total Estimated Cost		\$365,000

Danforth Grain
Project Limits

(not to scale)



In order to compare the up front capital costs of this investment, which includes long-lived assets like rail and other track material, with a benefit stream projected for only 5 years in the future, the costs are reduced by a residual value, which approximates the investment's remaining economic value at the end of five years. A residual value of \$38,907 when deducted from the estimated costs of \$365,000 yields a cost of \$326,093 to be used in the benefit to cost ratio calculation. The calculation of the residual value is detailed in Table 2.

TABLE 2
5 YEAR RESIDUAL VALUE OF INVESTMENT OPTION

ITEM	RESIDUAL ECON. LIFE	PERCENT RESIDUAL	COST	RESIDUAL VALUE
Load out Spouts	15	75%	\$10,000	\$7,500
Rail Spur:				
Rail	15	75%	\$30,438	\$22,829
Ties/OTM	10	67%	\$47,055	<u>\$31,527</u>
			Total 5-Year Residual:	\$61,856
			Discount Factor (10%-5):	<u>x .6290</u>
			Present Worth Residual:	<u>\$38,907</u>

INVESTMENT OPTION BENEFITS:

Transportation Benefits:

Danforth-Gilman's expansion of their load out capabilities to 25 car units opens new markets for the grain that they receive. Rather than being dependent upon local truck served markets (for transshipment in higher volumes to rail markets), they will directly reach rail markets such as Decatur processors and Gulf export. The company estimates that it will be able to increase its total annual grain handling or "throughput" to approximately 2.5 times its capacity. It currently ships about 1.2 times its capacity with the current track limitations. Based upon the differences in bids available to them at the Gulf or Southern feed market, the track expansion results in a bid premium that varies throughout the year from 4 cents to 23 cents per bushel. The shipper forecasts that on average, this premium, coupled with lower handling and shipping costs, amounts to 12.5 cents per bushel. When applied to the increase volumes anticipated, the annual transportation benefit ranges from \$62,500 in the first year to \$125,000 in the fifth year after the project is done. The current discounted value of these amounts is \$366,308 as shown in Table 3.

TABLE 3
INVESTMENT OPTION TRANSPORTATION BENEFITS

Project Year	Increase Grain Volume	Increased Income/Bu.	Total Increased Income	Discount Factor	Discounted Benefit
1	500,000	\$0.125	\$ 62,500	0.9091	\$ 56,819
2	600,000	\$0.125	75,000	0.8624	\$ 61,980
3	900,000	\$0.125	112,500	0.7513	\$ 84,521
4	1,000,000	\$0.125	125,000	0.6830	\$ 85,375
5	1,000,000	\$0.125	125,000	0.6209	\$ 77,612
TOTAL:					\$366,307

Economic Benefits:

In addition to the transportation advantages quantified above, there are some local area economic benefits, represented by the increase employment generated by Danforth-Gilman. While grain elevator operations are not very labor intensive, the shipper anticipates adding two new employees to handle the increase business. Base upon one full-time and one part-time addition, the estimated economic benefit to the region will be \$29,744 per year. A five year discounted benefit from this employment is \$112,750.

In summary, the total 5 year benefits from this investment option, in current dollars is \$479,057.

BENEFIT/COST ANALYSIS:

Comparing the Costs derived in Tables 1&2 for this investment option of \$326,093 to the benefits of \$479,057 results in a ratio of 1.47 to 1.0 as shown below:

$$\frac{B}{C} = \frac{\text{Trans. Benefits} + \text{Economic Benefits}}{\text{Cost for B/C}} = \frac{\$366,307 + \$112,750}{\$326,093} = \frac{\$479,057}{\$326,093} = 1.47$$

LINE: Crab Orchard and Egyptian Railroad (CO&E)
OWNER: Crisp Container Company
OPERATOR: CO&E

PROBLEM STATEMENT:

Given the new construction of a plastics blow-molding plant in Marion, Illinois, this analysis will explore the benefits of the construction of a new rail spur to serve that new facility.

BACKGROUND:

A new company decided to locate in Marion, Illinois rather than selecting a site in another state. The site chosen for the construction of the new plant is only 1100 feet away from the CO&E Railroad. This, coupled with the fact that the bottling facility to be served by the new container facility (or bottle making plant), is located also in Marion.

It is imperative for a company using plastic resins as in this case for making plastic bottles, to have rail service. Rail has a clear advantage over highway transportation of this raw material originating for the most part in Texas. When production commences, the plant will operate 24 hours, seven days per week. Some 110 million environmentally friendly bottles per year are expected to be produced by the 200 employees.

CURRENT CONDITIONS:

The project site is located in the city of Marion, Williamson County, Illinois. This site was chosen by the container facility because of its proximity to the bottling facility just south of this site, along with the potential of the site being served by the CO&E which is located immediately on the south border of this tract. The location is depicted in Figure 2.

ENVIRONMENTAL CONCERNS:

The project site has been zoned for light industry. At one time, this tract of land was disturbed considerably for the potential use as a golf course. Almost all of the tract has been altered because of dirt being moved in various spots and positions for tees and greens. After construction, the opportunity failed and the land was reclaimed by nature. The failure of the operation was not due to any environmental issue.

No farm land will be used for the project, nor is the department aware of any historical significance in the construction area.

SERVICE:

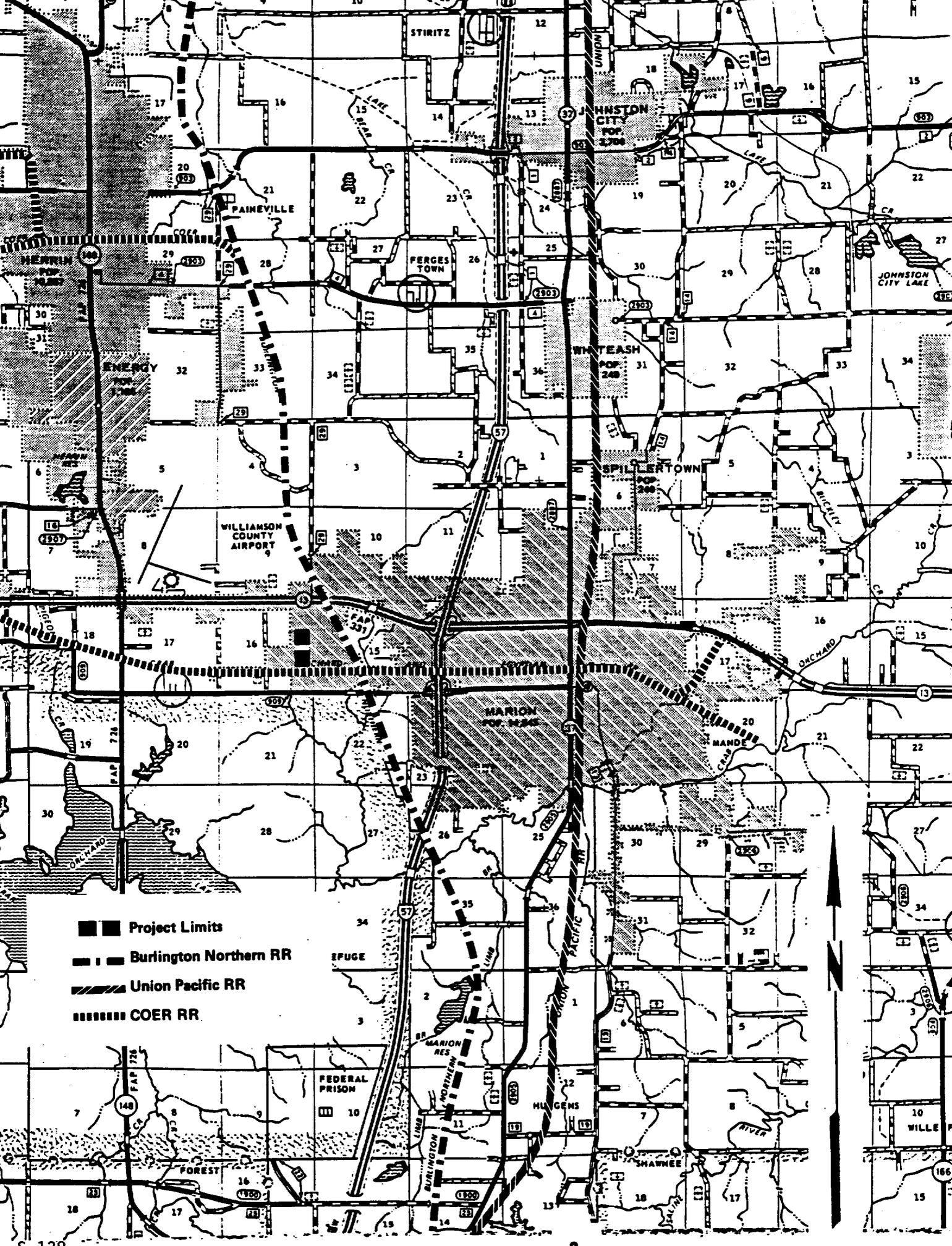
As with most shortline railroads, service will be on a daily basis or on demand if necessary.



REGIONAL RAIL NETWORK

■■■■■ COER
 — All Other Railroads

FIGURE 1



- ■ Project Limits
- — Burlington Northern RR
- — Union Pacific RR
- — COER RR

ALTERNATIVE TRANSPORTATION:

The only alternative to rail construction would be trucking in raw materials from the Class I carriers located in the Marion area. Both the Burlington Northern Railroad (BN) and the Union Pacific Railroad Company (UP) provide service in this area. The estimated cost to truck materials inbound is \$302,820 per year. This amount is in addition to the rail cost delivered to Marion by rail.

INVESTMENT OPTIONS - PROJECT ALTERNATIVES:

To determine the possibility of funding the proposed track construction under the federal Local Rail Freight Assistance Methodology, two investment options are explored.

- No Investment Option, or the Null Alternative, would not allow construction of a new turnout on the CO&E and the necessary spur to serve the project site. This would eliminate direct rail service and the only alternative would be to truck in raw materials from the nearest railhead.
- Investment Option - This option would provide funds of up to \$217,730 for new construction of a spur track to serve the project site with direct rail service.

NO INVESTMENT/NULL ALTERNATIVE

Void of an investment in the rail facility, the new company would be forced to use the less efficient highway mode. Not only are the transportation costs higher than direct rail service, but the costs of potential contamination of the raw materials will add to the cost of transportation. Given that plastic is shipped by the company of origin in its rail car, that product can be shipped with a guaranteed cost saving if the product is not transferred to truck and the car reaches its final destination with protective seals intact.

The Investment Option - Project Alternative option will discuss the benefits of avoiding this less efficient means of transport. An investment will allow direct rail transport without the transloading costs or contamination problems.

INVESTMENT OPTION/PROJECT ALTERNATIVE **\$219,150 FOR CONSTRUCTION OF THE COMPLETE SPUR**

This option is envisioned in two phases. The first phase would include the turnout on the CO&E mainline and 1100 feet of line to the new plant. The second phase would add another side track 400 feet in length parallel to the first spur. (See Figure 2) Phase 2 could occur as soon as next year. Therefore, it is included in the costs of this analysis and would qualify at a later date if funds are available. The detailed cost is shown in Table 1.

SALVAGE VALUE:

The facilities constructed and rehabilitated by this investment have an economic life extending beyond the 10-year FRA standard planning horizon used for this analysis.

PHASE I				
ITEM	UNITS	MATERIAL	LABOR	TOTAL
Clear & Grub	Lump			\$2,500.00
Grading	Lump			\$20,000.00
Seed & Mulch	Lump			\$1,500.00
Subballast - CA6	600 C.Y.	\$6,600.00	\$7,200.00	\$13,800.00
Skeleton Track	1,100 T.F.		\$25,300.00	\$25,300.00
Rail 100 lb.	2,200 L.F.	\$11,000.00		\$11,000.00
Ties 6x8	677 Ea.	\$14,894.00		\$14,894.00
OTM	1,100 T.F.	\$6,600.00		\$6,600.00
Ballast - CA5	625 C.Y.	\$8,750.00		\$8,750.00
Surf. Algn. & Dress	1,100 C.Y.		\$4,400.00	\$4,400.00
Bumping Post Stl.	1 Ea.	\$1,500.00	\$500.00	\$2,000.00
Culvert 18"	50 L.F.	\$1,300.00	\$600.00	\$1,900.00
End Sections 18"	2 Ea.	\$440.00		\$440.00
Bonds & Ins.	Lump			\$2,500.00
Disassemble Track	100 T.F.		\$550.00	\$550.00
Skeleton T.O.	1 Ea.		\$5,500.00	\$5,500.00
Timber	Set	\$3,000.00		\$3,000.00
Steel	Set	\$7,500.00		\$7,500.00
Rail Upgrade	321 T.F.		\$2,889.00	\$2,889.00
112 lb. Rail	642 L.F.	\$4,815.00		\$4,815.00
112 lb. OTM	642 L.F.	\$2,247.00		\$2,247.00
Tie Renewal	20 Ea.	\$100.00	\$300.00	\$400.00
Insulated Joints	2 Pair	\$650.00	\$400.00	\$1,050.00
Ballast CA5	100 C.Y.	\$1,400.00		\$1,400.00
Surf. Algn. & Dress	600 T.F.		\$1,800.00	\$1,800.00
		PHASE I	TOTAL	\$146,735.00
PHASE II				
Grading	Lump			\$2,500.00
Subballast - CA6	300 C.Y.	\$3,300.00	\$3,600.00	\$6,900.00
Disassemble Track	100 T.F.		\$550.00	\$550.00
Skeleton Track	500 L.F.		\$11,500.00	\$11,500.00
Rail 100 lb.	800 L.F.	\$4,000.00		\$4,000.00
Ties 6x8	308 Ea.	\$6,776.00		\$6,776.00
OTM	400 T.F.	\$2,400.00		\$2,400.00
Skeleton T.O.	1 Ea.		\$5,500.00	\$5,500.00
Rail 100 lb.	Set	\$6,800.00		\$6,800.00
Ties #8	Set	\$3,300.00		\$3,300.00
Ballast CA5	300 C.Y.	\$4,200.00		\$4,200.00
Surf. Algn. & Dress	800 T.F.		\$3,200.00	\$3,200.00
Bumping Post Stl.	1 Ea.	\$1,500.00	\$500.00	\$2,000.00
Bonds & Ins.	Lump			\$1,000.00
		PHASE II	TOTAL	\$60,626.00
	PHASE I	\$146,735.00		
	PHASE II	\$60,626.00		
	Contingencies	\$10,369.00		
	TOTAL PROJECT	\$217,730.00		

Therefore, this analysis includes as a project benefit an estimated salvage value, which approximates the remaining economic value of the improvement at the end of the 10 years. In this case, the project alternative has an estimated salvaged value of \$44,788, which, discounted to its present worth (@ 3.6% discount rate), yields a benefit of \$31,750 as detailed in Table 2.

**Table 2
Project Alternative Salvage Value**

Item	Quantity/Unit Salvage Value	Total Salvage Value
Rail & OTM	3,642 L.F. @ \$5.58/L.F.	\$20,322
Crossties & Switchties	1,016 Ea. @ 10.00 Ea.	10,160
Turnouts	2	<u>14,300</u>
	Total Salvage:	\$44,782
	Discount (3.6%-10):	<u>709</u>
	Present Worth:	\$31,750

PROJECT ALTERNATIVE BENEFITS:

With an investment, the CO&E would participate in the final delivery of the raw materials to the blow-molding plant. The unique benefit in this case, since the shortline would move the material, is that no increase in cost would be borne by the shipper. As the rate structure is set up, the CO&E would provide switch service with a per car charge which is absorbed by the Class I carrier. Therefore, the transportation charges incurred if trucks were used for the final move, would be the incremental total cost savings if rail were used for the total move.

Another benefit to the new plant if direct rail service is used is the cost savings of using the shipper's rail car which is guaranteed to be clean. The shipper cannot guarantee the purity of the raw materials if these materials are transferred to trucks for the final movement. The benefit amounts to a savings of \$200 per car, which is reflected in the freight bill.

TRANSPORTATION EFFICIENCY BENEFITS:

As defined in the FRA methodology, Transportation Efficiency Benefits are derived from implementing a project based upon: 1) reduced transportation costs to the shipper on base traffic; plus, 2) branchline profits earned by the rail carrier on the incremental traffic. In this case, the expected traffic is newly created. However, the methodology interprets this new movement as "base traffic." Regardless of the mode to be used, the raw materials will be transported. Therefore, the reduced cost of deliveries made by rail versus truck correspond to the Transportation Efficiency Benefits. These benefits are summarized in Table 3. Table 4 depicts the shipper savings discounted over 10 years.

Table 3
Rate Savings Rail vs. Truck

Year	Tons	Savings/Ton	Annual Savings
1-10	38,500	\$7.86	\$302,610

Table 4
Present Value - Transportation Efficiency Benefits

Year	Shipper Savings	Present Worth Series (3.6%)	Present Worth
1-10	\$302,610	8.2748	\$2,504,037

SECONDARY BENEFITS:

These benefits under this alternative accrue to the state of Illinois as a whole. This is through the avoidance of highway maintenance needs. The nearest railheads are located in Marion and Herrin. As is typical for movements with two carriers available, the carloadings are split between the two.¹ Simply determining the distances from the two points to the plant is all that is necessary. Given a constant amount of tonnage over the ten year analysis period and given \$0.038 per truck mile for road fund fees and the FHWA cost allocation for pavement consumption at \$.50² per loaded truckmile, we may determine the net pavement consumption cost for this traffic. When the \$0.038 is deducted from the \$0.50 FHWA cost allocation, a net loss of \$0.462 in highway consumption costs or net highway cost per loaded mile results. The net benefit of avoiding additional highway traffic is shown in Table 5.

Table 5
Highway maintenance Cost Avoided

Anticipated Tons	Loaded Truck ³ Miles	Highway Consumption Cost	Net Highway Cost	Present Worth Series Factor	Present Value
Marion 17,325	3,031	\$0.462	\$1,400	8.2748	\$11,585
Herrin 17,325	6,928	\$0.462	\$3,200	8.2748	\$26,479
			Total Maintenance Avoided		\$38,064

¹ The Marion railhead is 3.5 miles - the Herrin railhead is 8 miles with 19,250 tons each.

² FHWA cost 1981 allocation updated to current dollars.

³ Usable tonnage 20 tons per truck 8.0 miles to Herrin and 3.5 miles to Marion.

SUMMARY: BENEFIT/COST:

As detailed in the previous tables 2, 4 and 5, this alternative yields the following benefits:

Project Salvage Value	\$ 31,750	Table 2
Transportation Efficiency	\$2,504,037	Table 4
Secondary Benefits	<u>\$ 38,064</u>	Table 5
Total 10-Year Benefits	\$2,573,851	

With the project cost estimated at \$217,730 as detailed in Table 1, this Project Alternative produces the following benefit/cost ratio:

$$\frac{B}{C} = \frac{\$2,573,851}{\$217,730} = 11.8$$

RECOMMENDATION:

Given a benefit/cost ratio of 11.8, this project would qualify for the use of both state and federal funds. Also, however not quantified, the creation of 200 jobs in the region is a factor which should drive the department toward seeking funds for this project.

LINE: At Rochelle, V
OWNER: Wausau Supply Company
OPERATORS: Union Pacific Railroad Company
Burlington Northern

Problem Statement

A building products wholesale company in Rochelle, Illinois is expanding its operation. The expansion will improve the company's competitiveness in serving as a regional hub for six other company owned distribution centers located in Minnesota and Wisconsin. Inbound material will be received via the Union Pacific Railroad Company (UP) and the Burlington Northern Railroad (BN) rather than by truck. This analysis determines whether the benefits of constructing a rail spur, funded by the state's Rail Freight Assistance program, exceed the project's estimated costs.

Background

Beginning in 1986, four prior projects have been funded under the state's Rail Freight Assistance Program in Rochelle. The first three development projects were located on the industrial spur where the subject lumber company is seeking assistance to expand its operation. The company currently receives inbound shipments of building products such as roofing, insulation, hardboard and siding, and treated deck wood by truck. It is projected that by converting inbound shipments from truck to rail, the company will generate approximately 360 rail cars per year while reducing its transportation costs. In addition, the company plans to hire eight new employees to handle its increased volume over the next five years. Additional warehouse space will accommodate the expansion project.

Location

The proposed project is located 75 miles west of Chicago in an industrial park in Rochelle, Ogle County, Illinois. The project location and limits are shown in Figures 1 and 2.

Investment Options

Two investment options are considered in determining whether a track construction project at the company's building material facility is eligible for state funds.

No investment, which would eliminate the Company's ability to receive inbound shipments by rail.

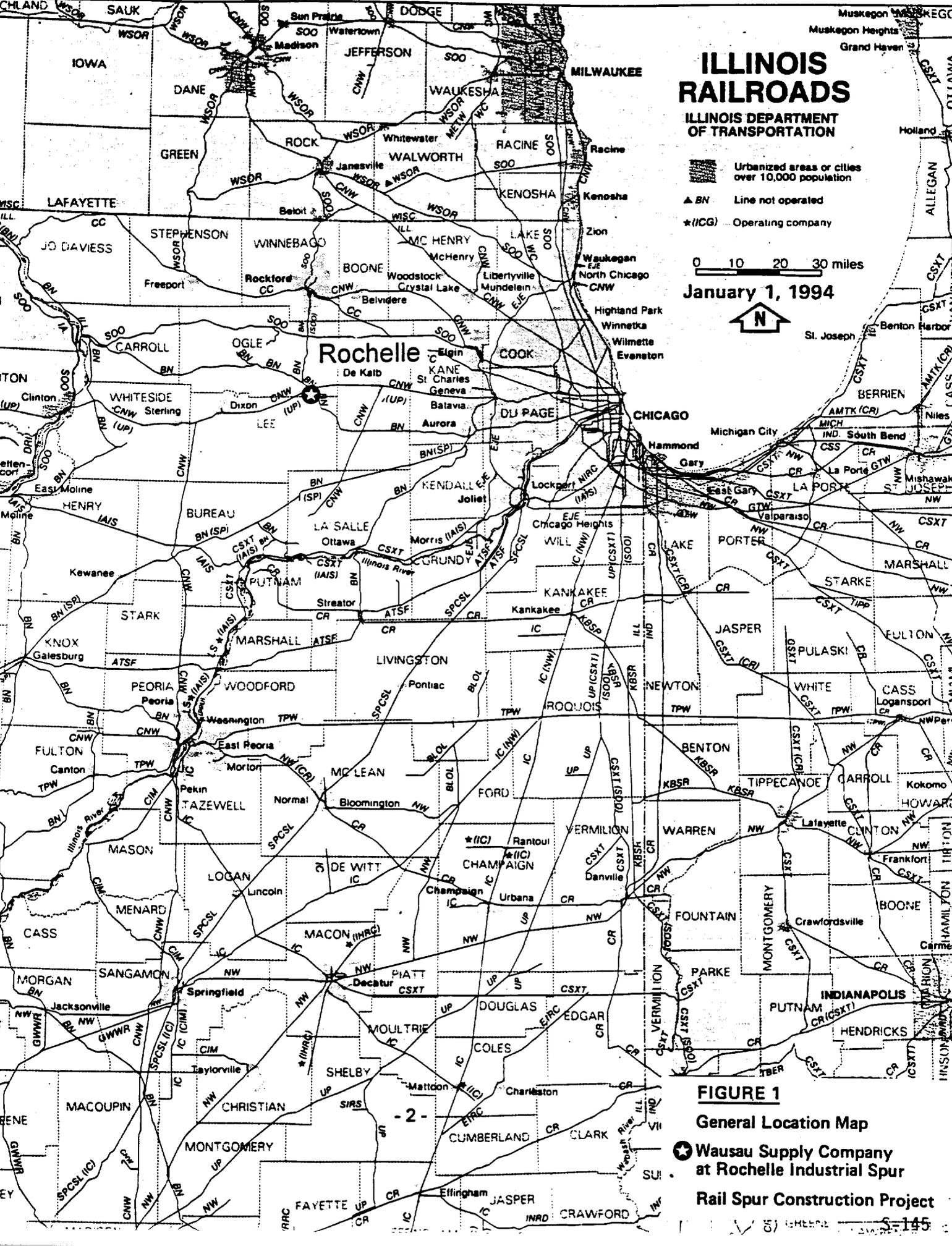
Invest \$164,000 to construct 750 feet of track to handle 360 inbound rail cars annually.

No Investment

Failure to invest in rail construction will limit the company's growth potential, economic development, and transportation cost savings.

Investment

The investment option would enhance the company's expansion project by allowing the company to receive inbound shipments by rail rather than truck. Estimated project costs are found in Table 1.



ILLINOIS RAILROADS

ILLINOIS DEPARTMENT OF TRANSPORTATION

-  Urbanized areas or cities over 10,000 population
-  ▲ BN Line not operated
-  ★ (ICG) Operating company

0 10 20 30 miles

January 1, 1994



Rochelle

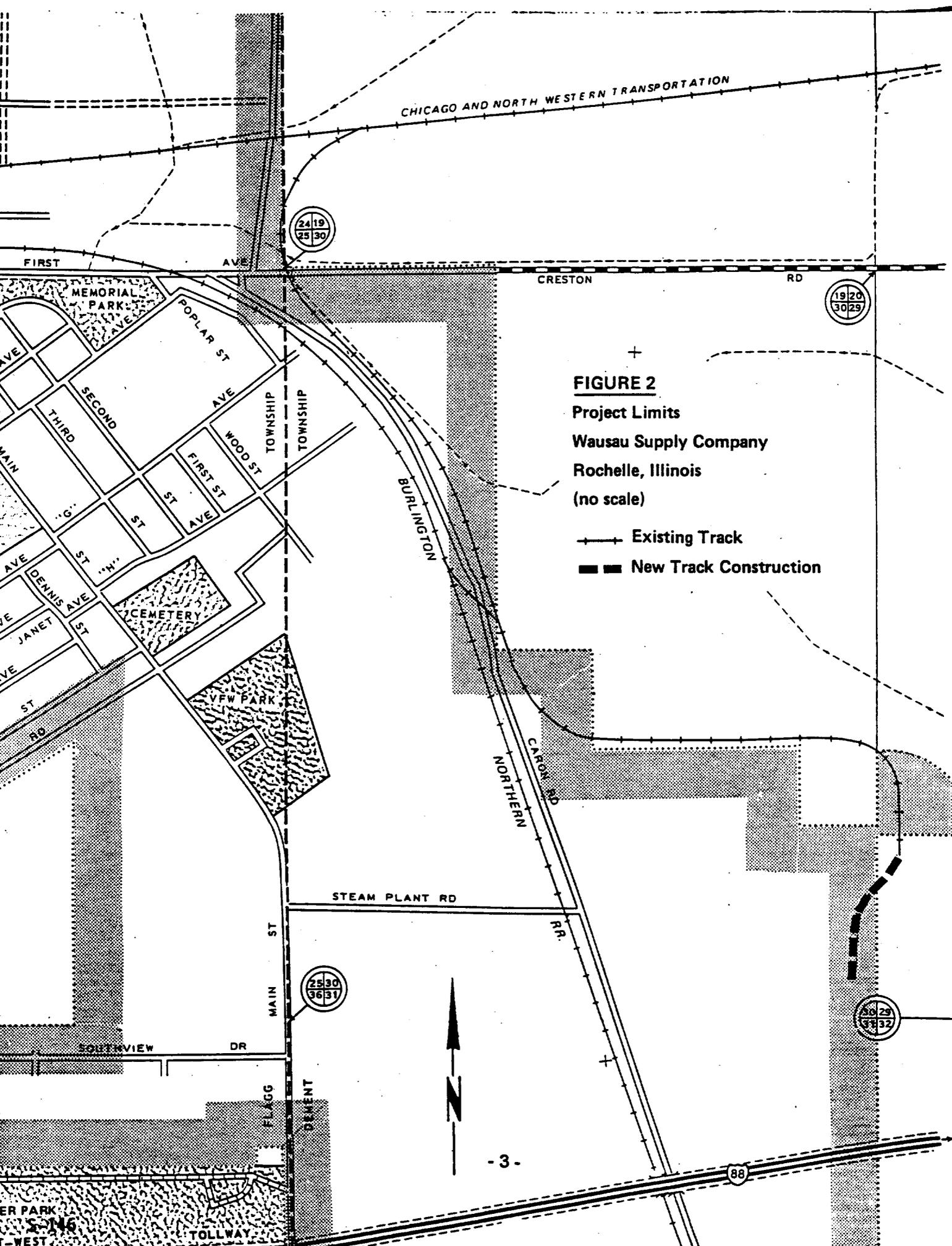
CHICAGO

FIGURE 1

General Location Map

★ Wausau Supply Company at Rochelle Industrial Spur

Rail Spur Construction Project



**Table 1
Rochelle V Rail Spur Project**

No	Item	Quantity	Material	Labor/Equip.	Cost
1	Clearing & Grubbing	Lump Sum			\$ 3,000
2	Grading	Lump Sum			\$ 25,000
3	Culvert - 18"	190 L.F.	\$4,750	\$ 2,090	\$ 6,840
4	18" End Section	4 Each	\$ 880		\$ 880
5	Manhole Complete	1 Each	\$ 500	\$ 700	\$ 1,200
6	Seeding & Mulching	Lump Sum			\$ 3,000
7	Track Relocation	110 T.F.		\$ 770	\$ 770
8	Subballast (8" - CA6)	425 C.Y.	\$5,100	\$ 2,125	\$ 7,225
9	Skeleton Track Const.	650 T.F.		\$13,000	\$ 13,000
10	Rail 100#	1,300 L.F.	\$6,500		\$ 6,500
11	Ties 6"x8"x8'6"	400 Each	\$8,800		\$ 8,800
12	OTM	650 T.F.	\$3,900		\$ 3,900
13	Skeleton Turnout Const.	Each		\$ 5,000	\$ 5,000
14	Timber #8	Turnout	\$3,000		\$ 3,000
15	Steel 100#	Turnout	\$7,500		\$ 7,500
16	Ballasting (8"-CA5)	435 C.Y.	\$5,655	\$ 2,175	\$ 7,830
17	Surface, Align & Dress	1,050 T.F.		\$ 5,250	\$ 5,250
18	Bumping Post-Steel	Each	\$1,600	\$ 400	\$ 2,000
19	Relocate Bumping Post	Each	\$ 200	\$ 400	\$ 600
20	Unloading Pad	18,750 S.F.	\$18,750	\$18,750	\$ 37,500
21	Bonds and Insurance	Lump Sum			\$ 1,000
22	Contingencies				\$ 14,205
	Total Project Cost				\$164,000

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the five year project life. The residual value of \$14,202, when discounted to its present worth of \$8,819, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$155,181 as shown below.

<u>Cost</u>	<u>Rail & OTM</u>	<u>Ties</u>	<u>Total</u>
	\$20,380	\$11,800	
% Life Remaining	<u>x 50%</u>	<u>x 34%</u>	
Residual Value (5 yrs.)	\$10,190	\$ 4,012	= \$14,202
Present Worth Factor (10%-5yr.)			<u>x .621</u>
Present Worth of Residual Value:			\$8,819

In Summary:	Project Cost:	\$164,000
	Less Present Worth Residual:	<u>8,819</u>
	Project Cost for Analysis	\$155,181

Economic Benefits

Economic benefits provided by the proposed rail construction project include eight new employees over a five year period. The total annual salary and benefits for the eight employees is \$207,200 which is discounted to its present worth in Table 2 below.

**Table 2
Rochelle - Economic Benefits**

Project Year	Additional Employees	Wage & Fringe Benefit	Present Worth Discount Factor	Total Benefit
1	3	\$77,700	.909	\$ 70,629
2	3	\$77,700	.826	\$ 64,180
3	3	\$77,700	.751	\$ 58,353
4	3	\$77,700	.683	\$ 53,069
5	8	\$207,200	.621	\$128,671
Total Discounted Economic Benefit				\$374,902

Transportation Benefits

While not quantified in this analysis, the transportation benefits are significant. With rail service, the company projects annual inbound shipments of 360 rail cars rather than 1,080 truck loads. This will result in significant savings by using rail rather than truck service.

Benefit/Cost Analysis

The economic benefits directly attributable to this project over a five year period are \$374,902. These benefits, when compared to the net project cost of \$155,181, yield a benefit/cost ratio of 2.42, thereby qualifying this project for funding under the state's Rail Freight Assistance Program.

$$\begin{array}{l} \mathbf{B} \\ \mathbf{C} \end{array} = \frac{\mathbf{Economic\ Benefits}}{\mathbf{Net\ Project\ Cost}}$$

$$\begin{array}{l} \mathbf{B} \\ \mathbf{C} \end{array} = \frac{\mathbf{\$374,902}}{\mathbf{\$155,181}} = \mathbf{2.42}$$

Project: Pecan Creek Bridge near Oakford
Owner: Chicago & Illinois Midland Railway Company
Operator: Chicago & Illinois Midland Railway Company

PROBLEM STATEMENT:

The Chicago & Illinois Midland Railway (C&IM) seeks funding to replace a bridge on its main line between Havana and Springfield. The "Pecan Creek" bridge is in very poor condition and will shortly be unable to support continued operation of trains over it, due to its age, and the condition of its supporting structure: pile bents have shifted, stringers have no support due to this shifting, and piles are rotting below the water line. The C&IM anticipates a significant amount of new traffic can be routed over this line in the near future, and as such, replacement of the structure is a necessity.

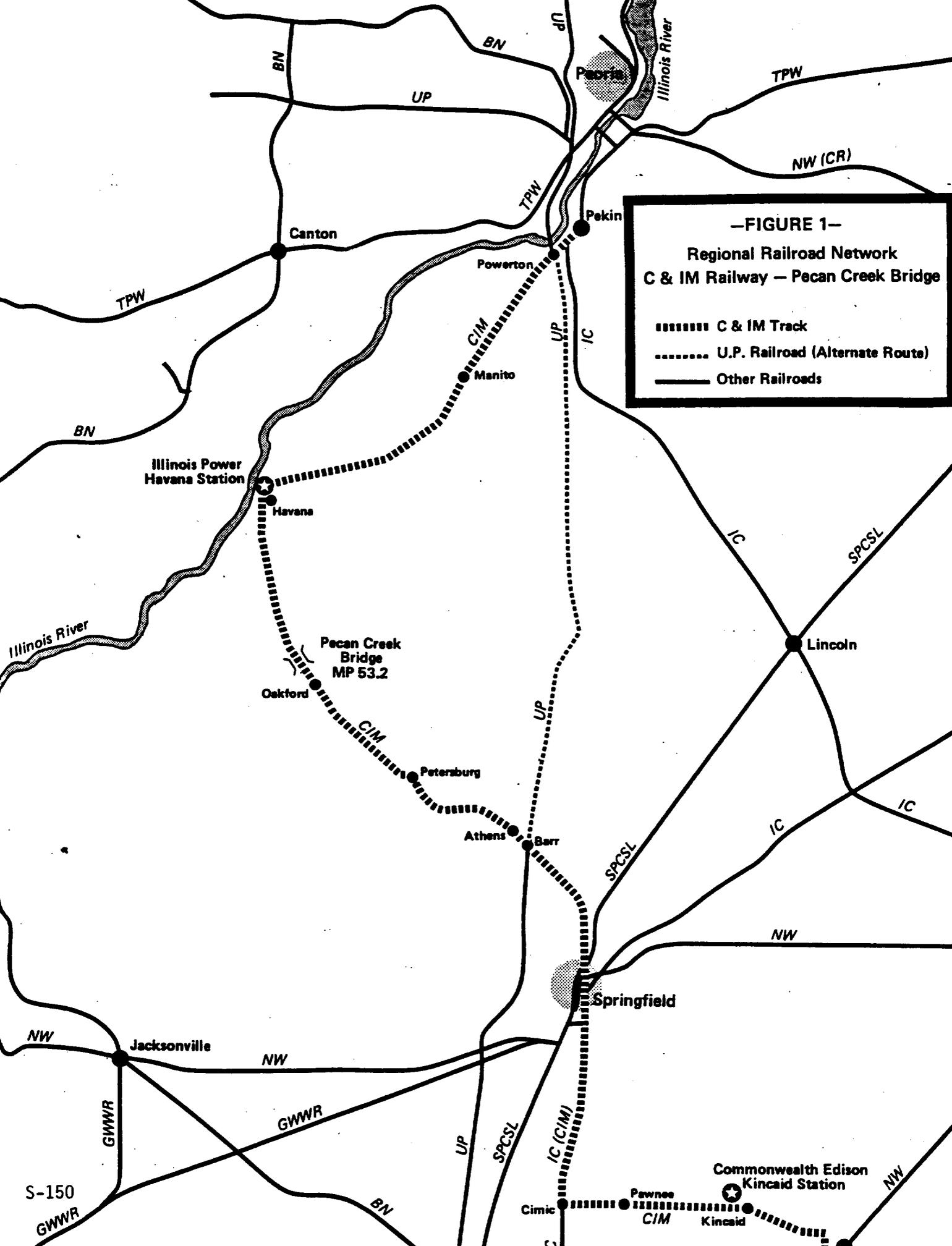
The following analysis employs the standard Federal Railroad Administration's Benefit/Cost Methodology to determine if the future benefits of this project exceed its cost, thereby establishing its eligibility for funding under the joint state/federal Local Rail Freight Assistance (LRFA) Program. The FRA interest rate for discount factors used is 4.6%.

BACKGROUND:

As shown in Figure 1 on page 2, the railroad's 121 mile system extends from Pekin (near Peoria), southwesterly along the Illinois River to Havana, thence southeasterly to Springfield. After traversing south from Springfield on the Illinois Central Railroad, it proceeds east through Kincaid and into Taylorville. For many years, the C&IM hauled coal from mines in central Illinois to Commonwealth Edison plants via a rail-barge transfer facility in Havana. While coal no longer moves this way due to the utility's need for lower sulfur coal, the C&IM still participates in coal delivery, now from western sources.

Two major receivers of coal will utilize the line over the Pecan Creek Bridge:

- At Havana, the railroad has traffic commitments from Illinois Power to supply coal to a 488 megawatt generating station. This western coal would originate on the Southern Pacific Railroad in Utah and be interchanged to the C&IM in Springfield for delivery to Havana. This is new traffic for the rail line, involving a shift in modes from barge delivery.
- At Kincaid, the railroad serves a 1,319 megawatt Commonwealth Edison plant. This plant is scheduled in 1996 to switch over to less expensive (per BTU) coal which originates in the Powder River Basin. When this happens, the C&IM can route unit trains of western coal via this line from its interchange with the Union Pacific (ex-C&NW) at Pekin. Currently, coal for the Kincaid plant originates on another railroad in Colorado or Utah and is delivered to Kincaid by the C&IM from Springfield. Changing the origin of supply changes the carrier and routing resulting in a southbound movement over the Pekin- Havana - Springfield line.



-FIGURE 1-
Regional Railroad Network
C & IM Railway - Pecan Creek Bridge

-  C & IM Track
-  U.P. Railroad (Alternate Route)
-  Other Railroads

The Havana to Springfield rail line is a single track main line that extends approximately 44 miles. The segment studied in this analysis extends from an interchange with the Union Pacific at Barr (north of Springfield) to Havana, a distance of 33 miles.

INVESTMENT OPTIONS:

For the purpose of determining the eligibility of the proposed investment in bridge replacement, its costs are compared to a No Investment Option, or Null Alternative. The two options are summarized as follows:

- **Null Alternative** or no investment which takes the Pecan Creek bridge out of service, severing the line from Barr to Havana. The result would be the abandonment of the line.
- **Investment Option A** - the replacement of the bridge for an estimated capital cost of \$1,197,250, and an "opportunity" cost (represented by the current net liquidation value of the Barr to Havana line) of \$3,157,515. This option's total cost is therefore **\$4,354,765**.

Null Alternative:

The failure to replace the Pecan Creek Bridge would cause the C&IM to shut down the line from Barr to Havana. Ultimately, this segment would be abandoned, leaving the remaining C&IM system to be operated as two isolated islands: a northern "island" from Pekin to Havana and a Southern "island" from Barr to Taylorville. Any through traffic would need to be detoured via the UP line between Barr and Powerton.

In order to accommodate a northbound movement of coal from the SP interchange in Springfield to Havana, and the southbound movement of Powder River Basin coal from the UP interchange near Pekin to Kincaid, the railroad would have to arrange for detour trackage rights over the UP line from Barr to Powerton. While the UP route from Powerton to Barr is more direct for the southbound coal being delivered to Kincaid by approximately 27 miles, it is longer for northbound coal being delivered to Havana (by approximately 44 miles). The C&IM estimates that the detour of the northbound coal to Havana would cost an additional \$0.85 per ton. Similarly, delivery of the southbound coal to Kincaid would cost an additional \$0.25 per ton.

These additional costs include trackage rights fees, additional motive power, crew and fuel expense as well as equipment maintenance that would be passed on to the utilities if the null investment option were chosen.

Investment Option A -- Pecan Creek Bridge Replacement

Project Costs:

Under this investment option, the C&IM would replace the bridge, retain the Havana to Barr segment and avoid any rerouting costs to move traffic over the UP. The total capital cost for this option is estimated at \$1,197,250 as detailed in Table 1.

TABLE 1
INVESTMENT OPTION CAPITAL COSTS

WORK ITEM	QUANTITY	MATERIAL COST	LABOR/EQUIP COST	OTHER COST	TOTAL COST
<u>Replace Bridge:</u>					
• Remove existing bridge:	Lump Sum		\$75,000		\$ 75,000
• Build Embankment	332 tons			\$ 4,980	\$4,980
• Steel Pile Bents	29 ea.			394,110	394,110
• Precast Bent Caps	29 ea.			229,100	229,100
• Install Slab beams	56 ea.			218,400	218,400
• Install Abutment Wall	2 ea.			10,400	10,400
• Ballast	301 tons			3,010	3,010
				Bridge Subtotal:	\$935,000
• Contingency (15%)				140,250	140,250
• Bonds & Insurance	Lump Sum			22,000	22,000
				<u>Bridge w/contingency:</u>	<u>\$1,097,250</u>
<u>Rail Line work:</u>					
• Remove rail, ties & stringers	Lump Sum		\$20,280		\$20,280
• Install ties, rail & OTM	Lot	7,726	4,080		11,806
• Distribute Ballast	100 tons	1,500	2,720		4,220
• Surface & Align	Job		960		960
• Clean up	Job		2,400		2,400
• Clerical/Supervision			1,800		1,800
• Equipment Rentals			19,685		19,685
• Labor Overhead	89%		28,623		28,623
• Material Handling	15%	\$1,384			1,384
• Contingencies	Lump Sum			\$8,842	8,842
				<u>Subtotal Rail Line Work:</u>	<u>\$100,000</u>
				<u>TOTAL PROJECT CAPITAL COST:</u>	<u>\$1,197,250</u>

The standard FRA benefit-cost methodology requires that the net liquidation value of the line in the null alternative be considered a "cost" in evaluating the project alternative. This is because the material and land tied up by the Havana to Barr rail line could be released for other purposes if the project was not undertaken. This opportunity cost is estimated to be \$3,157,515 as shown below:

TABLE 2
CALCULATION OF NET LIQUIDATION VALUE – BARR TO HAVANA

Net Salvage Value of Track	(33 miles @\$70,955 per mile) =	\$2,341,515
Fair Market Value of Right of Way	(408 acres @ \$2,000 per acre) =	\$816,000
<u>Total Net Liquidation Value:</u>		<u>\$3,157,515</u>

The total cost of the investment option, combining the capital cost of Table 1 and net liquidation value in Table 2 is therefore \$4,354,765.

Investment Option Benefits:

Using the FRA methodology, primary benefits are quantified in three categories. First, the reduced transportation cost for traffic on the line that would be affected by the null alternative abandonment is quantified; second, shipper "profits" from new or incremental traffic moving on the line following rehabilitation are measured; and third, the resultant branchline operating profits of the railroad are projected.

- **Base Traffic Benefits:**

According to C&IM traffic records the line segment between Havana Junction and Barr generated 52 carloads of local originating or terminating traffic in 1994. The majority of this traffic is agricultural chemicals, accounting for a total of 5,000 tons. The railroad estimates that the annual cost saving to shippers retaining this traffic via direct rail delivery (as opposed to a rail-truck combination) is \$0.89 per ton, resulting in a Base traffic benefit to shippers of \$4,450 per year. Over a ten year benefit-cost time line, the base traffic benefit has a present worth of \$35,039 using the discount factor for 4.6%:

$$\$4,450 \times (\text{SPWF } 4.6\% - 10 \text{ yr.}) = \$4,450 \times 7.874 = \$35,039$$

- **Incremental Traffic Benefits:**

The most substantial benefit of this project accrue to the shippers and railroad in the form of new or "incremental" traffic that will be generated after the bridge is replaced. The shipper profit on the new traffic is approximated by the difference in the cost to transport coal to the two utilities via the line, compared to the rerouting options discussed under the Null Alternative. Both coal receivers are regulated public

utilities, with limited ability to adjust rates to meet incremental costs. Assuming a fairly constant rate base, therefore, allows for the use of the reduced coal transport costs in the investment option to be a reasonable surrogate measure of "shipper profit". On this basis then, the shipper profit (savings) on incremental traffic (in dollars per ton) is shown in Table 3.

TABLE 3
TRANSPORTATION EFFICIENCY BENEFITS
INCREMENTAL SHIPPER PROFIT FOR HAVANA & KINCAID COAL

Project Year:	Savings/ton \$	Tons Delivered (thousands)	Total Annual Savings	Discount Factor:	Present worth of Savings
1	0.50	1,700	\$ 852,000	0.956	\$814,532
2	0.46	1,750	804,000	0.914	734,840
3	0.48	1,920	919,000	0.874	803,009
4	0.49	2,070	1,018,000	0.835	850,396
5	0.42	1,820	772,000	0.799	616,537
6	0.40	1,720	686,000	0.764	523,762
7	0.40	1,720	686,000	0.729	500,729
8	0.44	1,900	841,000	0.698	586,871
9	0.44	1,900	841,000	0.667	581,062
10	0.44	1,900	841,000	0.638	536,388

Total Discounted Benefit: \$6,528,124

It is important to note that the shipper savings per ton in Table 3 vary from one year to the next, as the volume of traffic between Havana and Kincaid varies. The tonnage numbers and total savings for each are combined so as not to disclose the traffic to or estimated profits of any one shipper or station in this report.

- **Branchline Profits Benefit:**

Branchline profits are estimated by the C&IM for each of the 10 years in the planning horizon. Total profits vary from year to year, again due to the variations in traffic to the two stations involved, but, as shown in the table on the next page, amount to \$8,171,531 when discounted to its present worth using the FRA interest rate of 4.6%

TABLE 4
BRANCHLINE PROFITS -- PECAN CREEK BRIDGE REPLACEMENT
\$ IN THOUSANDS

Project Year:	1	2	3	4	5	6	7	8	9	10
Tonnage (thousands)	1,700	1,750	1,920	2,070	1,820	1,720	1,720	1,900	1,900	1,900
Revenues:	\$1,710	\$1,692	\$1,948	\$2,181	\$1,773	\$1,640	\$1,672	\$2,012	\$2,049	\$2,093
Off Branch Costs:	\$50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
On Branch Costs:										
Maint of Way	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325	\$ 325
Transportation	259	259	259	259	259	259	259	259	259	259
Taxes	25	25	25	25	25	25	25	25	25	25
Mgmt/Admin	75	75	75	75	75	75	75	75	75	75
Insurance	14	14	14	14	14	14	14	14	14	14
Operating Profit:	\$962	\$944	\$1,200	\$1,433	\$1,025	\$ 892	\$924	\$1,264	\$1,301	\$1,345
Return on Value ¹ :	81	81	81	81	81	81	81	81	81	81
Economic Profit:	\$881	863	1,119	1,352	944	811	843	1,182	1,220	1,264
PW Factor (4.6%):	0.956	0.914	0.874	0.835	0.799	0.764	0.729	0.698	0.667	0.638
Present Worth Profit:	\$842.2	\$788.8	\$977.8	\$1,129.4	\$753.9	\$619.2	\$615.3	\$824.8	\$813.9	\$806.2
								Total, 10 year discounted profit:		\$8,171.5

¹ Return on value calculated using ICC railroad cost of capital of 12.2%

The sum total 10 year estimated branchline profits(discounted) in Table 4 is \$8,171,500.

Primary Benefits Summary:

Recapping the preceding sections, the primary benefits generated by the Investment Option combine to a total as summarized below:

Base Traffic Benefits:	\$ 35,039	(page 5)
Shipper Profits on Incremental Traffic:	\$6,528,124	(Table 3)
Branchline Profits on Incremental Traffic:	<u>\$8,171,500</u>	(Table 4)
Total Primary Benefits:	<u>\$14,734,663</u>	

The final category of benefit to be considered is the salvage value of the entire line at the end of the 10-year project planning period. The replacement of the bridge has added value to the line, however, the amount of additional gain to be realized in the future if the line were salvaged is minimal. Therefore, the end of period salvage value benefit for the analysis is assumed to be the current net salvage value, projected to the end of the tenth year. That amount, \$2,341,515, discounted to its present worth is \$1,493,418.

$$\$2,412,479 \times (\text{PWF } 4.6\%-10) = \$2,412,479 \times 0.638 = \$1,493,418.$$

Benefit To Cost Ratio:

Based on the preceding data the benefit to cost ratio is 3.89, as derived below:

$$\begin{aligned} \text{Total Benefits} &= \text{Primary Benefits} + \text{End of Period Salvage Value} \\ &= \$14,734,663 + \$1,493,418 = \underline{\$16,228,081} \end{aligned}$$

$$\text{Project Costs} = \underline{\$4,354,765}$$

$$\begin{aligned} \text{B} &= \underline{\$16,228,081} \\ \text{C} &= \underline{\$4,354,765} \end{aligned} = \underline{3.73}$$

Conclusion:

On the basis of the preceding analysis, the replacement of the Pekin Creek Bridge meets the criteria of generating benefits whose current values exceed the project's cost.

**LINE: AT SAUGET, ILLINOIS
OWNER: SOUTHERN PACIFIC RAILROAD & CAHOKIA MARINE SERVICE
OPERATOR: CAHOKIA MARINE SERVICE, INC.**

ISSUE:

A surge in demand for lower sulfur coal in response to the Clean Air Act has created capacity problems for a coal transshipment terminal on the lower Mississippi River across from St. Louis. In order to handle the higher demand for rail to barge shipments of coal, this terminal, at Sauget, Illinois needs to expand both its land- and water-side handling capacity.

The following analysis presents the Department's findings on whether the benefits of a proposed capacity expansion project, involving rail facilities, exceed its cost, a prerequisite for using the state's Local Rail Freight Assistance Program funding for a portion of the project.

LOCATION:

The Cahokia Marine Service (CMS) Terminal is located within St. Clair County, in the Village of Sauget. It is approximately 1 mile south of Interstate 55/70, and immediately west of Illinois Route 3. The facility's location in relation to the Metropolitan St. Louis rail system is shown in Figure 1, on page 2.

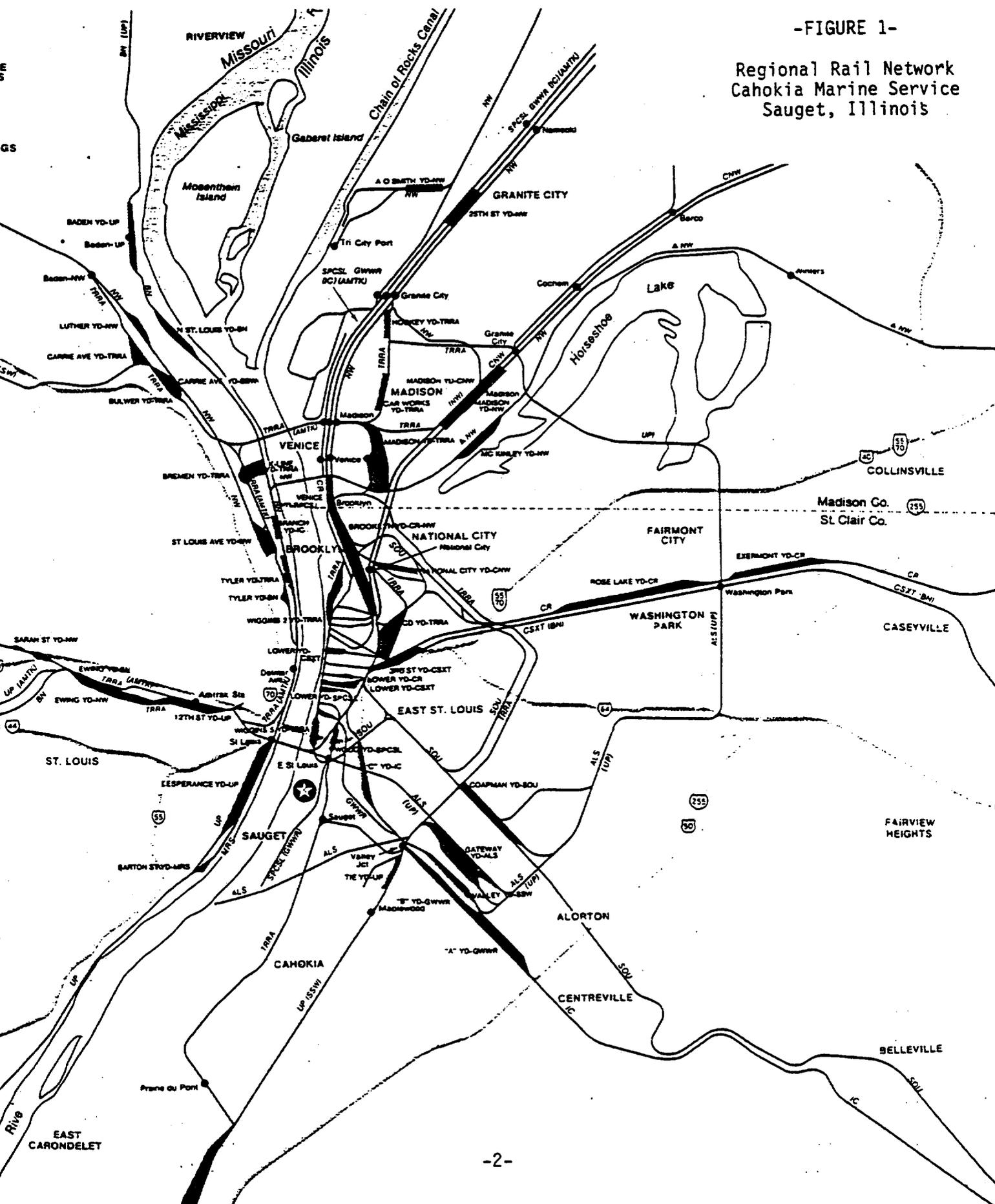
BACKGROUND:

CMS, a subsidiary of Slay Industries, began operating a rail-to-barge bulk transfer facility at the site of a former Union Electric powerplant in 1988. It has seen significant growth in traffic since opening, especially in handling western coal brought in by rail for transloading and delivery by barge, primarily to electric utilities. In 1993, CMS handled 915,000 tons of coal through the terminal. Between 1994 and 1995, coal tonnage moved through the terminal increased by nearly 91% up from 1.4 million tons in 1994 to a projected 2.7 million by the end of 1995. Projected growth in coal traffic over the next five years, while not as dramatic as in the last two years, is expected to average 30%: by 1999, CMS projects it will need to handle 7.5 million tons to meet expected demand.

The general layout of the existing terminal and rail facilities adjacent to it is shown in Figure 2.

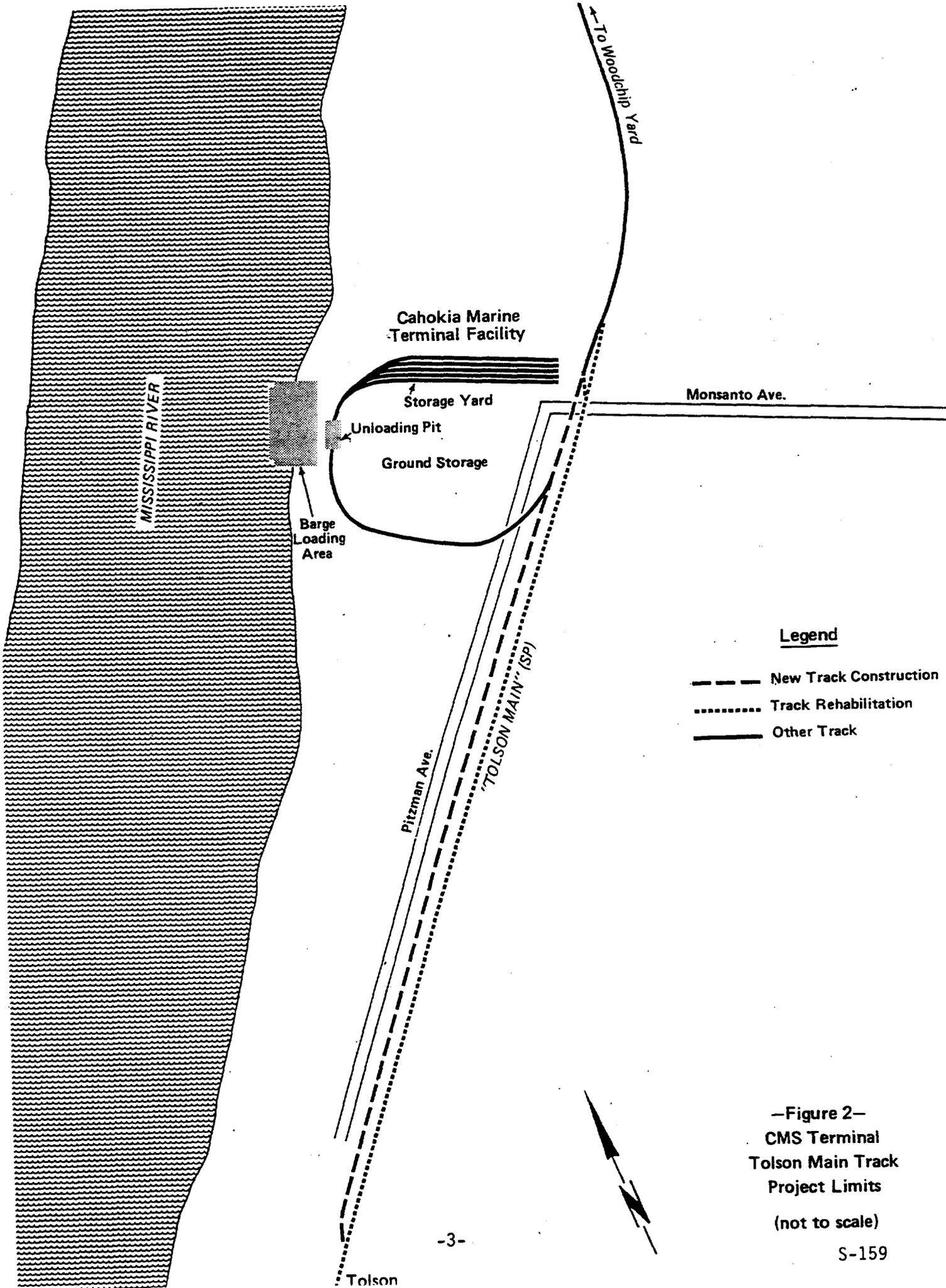
-FIGURE 1-

Regional Rail Network
Cahokia Marine Service
Sauget, Illinois



ST. LOUIS/EAST ST. LOUIS AREA





Legend

- New Track Construction
- Track Rehabilitation
- Other Track

—Figure 2—
 CMS Terminal
 Tolson Main Track
 Project Limits
 (not to scale)

Capacity constraints at the facility are apparent both on the land side, where coal is delivered by rail, and on the water side, where coal is transferred to barges. On the rail side, coal from the Southern Pacific Railroad is delivered in 105 car unit trains. The set off track running parallel to Pitzman Avenue, known as the "Tolson Main", can accommodate only 93 cars south of the main lead into the facility. The yard track in the terminal itself accommodates 80 cars, with any balance of cars having to be spread out on other tracks in the complex. There are two tracks running through the dump pit near the old powerhouse, but only one car can be unloaded at a time. Coal dumped from cars is transferred by a relatively small 48" conveyor. On the river side, the terminal can handle only one barge at a time due to the short conveying equipment. Occasionally, in order to meet fleeting queues and release the rail cars to the railroad on schedule, coal is stored or stacked on the ground for later reclaiming and loading to barge.

These factors, when combined with the increasing demands for faster turnaround of the rail equipment demanded by the railroad, have led CMS to the develop the capital improvement program outlined in the Investment Option section that follows.

ALTERNATE TRANSPORTATION:

There is no feasible alternative for transporting the volumes of coal that must be delivered from sources in Colorado or Utah, except for direct rail delivery to the ultimate end user. This is not practical or economical for the railroad, when unit trains of locomotives and cars are assigned to "wholesale" transportation service and are kept in units for back hauls of other bulk commodities such as taconite. Certain utilities may only be able to accept barge or truck deliveries, and trucking coal for long distances from the terminal is not economically feasible.

INVESTMENT OPTIONS:

Two investment options are reviewed:

- No Investment option, describes the conditions and constraints that exist and would continue to worsen if no capacity improvements were made; and
- \$2,740,000 Investment Option for rail sidings and higher capacity coal handling equipment.

No Investment Option

As described generally in an earlier section, the CMS facility is nearing a practical capacity condition: without additional investment it would not be able to efficiently move the amount of traffic it projects it needs to handle. At present it takes CMS crews about 14 hours to unload a train and release it for return loading. At best, this equates to 1.5 trains per day assuming no problems with equipment, or downtime for maintenance repair and upkeep. Realistically, when considering operational difficulties encountered,

the need to clean and maintain equipment etc., the practical capacity of the terminal is closer to one train per day. This equates to an annual throughput capacity of approximately 3.2 million tons. This level of demand will be reached within the next year according to CMS projections.

Without the improvements detailed in the discussion that follows, the terminal would be at a disadvantage, and would probably be faced with the potential loss of business to other river terminals.

\$2,740,000 Investment Option in Rail & Handling Equipment.

This level of investment, as detailed in Table 1 and depicted in Figure 2, provides improvements to allow CMS to turn trains and load barges in 9 hours as opposed to the 14-15 hours currently required.

Improvements to the rail side include construction of a second track parallel to the Tolson Main, allowing CMS to accept delivery of a second full unit train as it makes up empties from the first train. The remaining investment involves modifications to the dump pit and conveyor system transferring the coal to barges.

**-TABLE 1-
-INVESTMENT OPTION COST ESTIMATE-**

Item	Units	Material Cost	Labor/Equip. Cost	Total Cost
Rail Facility improvements:				
Grading & Utility Work	Lump Sum		\$72,818	\$ 72,818
New Track Construction	8,300 T.F.			573,044
Rehabilitate Existing track	3,250 T.F.			113,138
Other (bonds, insurance, etc.)	Lump Sum			6,000
		<u>Subtotal, rail facilities:</u>		<u>\$765,000</u>
Dump Pit modifications	Job			200,000
Reclaim Conveyor system	System			275,000
West Conveyor System	System			900,000
East Conveyor System	System			400,000
Telescope Barge Load Out System	System			200,000
		<u>Subtotal, material handling equipment:</u>		<u>\$1,975,000</u>
		<u>Total Estimated Project Cost:</u>		<u>\$2,740,000</u>

In order to provide a fair comparison of the up-front capital costs of this investment in the benefit cost analysis, which includes long-lived assets like rail and conveyor systems, with a benefit stream projected for only 5 years in the future, the project costs are reduced by a residual value. This residual value approximates the investment's remaining economic value at the end of five years. A residual value of \$874,668 when

deducted from the estimated costs of \$2,740,000 yields a cost of \$1,865,332 to be used in the benefit to cost ratio calculation. The calculation of the residual value is detailed in Table 2.

**-TABLE 2-
-5 YEAR RESIDUAL VALUE OF INVESTMENT OPTION-**

Item	Residual Econ. Life	Percent Residual	Cost	Residual Value
Conveyor Systems	10	67%	\$1,775,000	\$1,189,250
Rail Spur:				
Rail	15	75%	\$177,000	\$132,750
Ties/OTM	10	67%	\$102,341	<u>\$68,568</u>
			Total 5-Year Residual:	<u>\$1,390,568</u>
			Discount Factor (10%-5):	<u>x .6290</u>
			Present Worth Residual:	<u>\$874,668</u>

Investment Option Benefits - Transportation Efficiency:

The implementation of this project over the next year will allow the CMS terminal to meet projected traffic demand, and turn trains & barges of coal with a projected 36% improvement in efficiency: down to 9 hours per train from the current 14 or 15 hours per train. The most striking transportation efficiency benefit derived from the investment is the reduction in transloading costs, which according to the terminal's analysis result in savings of between \$0.09 cents and \$0.24 cents per ton of coal handled. Combining the tonnage to be handled with the savings per ton, results in annual savings ranging from \$364,000 per year to \$2,040,000 per year by the end of the fifth year following project completion. On a discounted present worth basis, this transportation efficiency benefit totals \$4,858,000, as shown in Table 3 below:

**-TABLE 3-
-TRANSPORTATION EFFICIENCY BENEFIT-
-REDUCED TRANSSHIPMENT COSTS**

Project Year	Tonnage (thousands)	Unit Trains Per Year	Cost Savings Per Ton	Total Annual Savings	Discount Factor (10%)	Discounted Annual Savings
1	4,053	368	\$0.09	\$ 364,770	0.9091	\$ 331,610
2	5,943	566	\$0.20	1,188,600	0.8264	982,260
3	6,699	638	\$0.22	1,473,780	0.7513	1,107,250
4	7,455	710	\$0.23	1,714,650	0.6830	1,171,110
5	8,500	810	\$0.24	2,040,000	0.6209	1,266,640
Total, discounted 5 year efficiency benefit:						<u>\$4,858,860</u>

Economic Benefits - Additional Employment:

Increasing capacity and throughput at the terminal has positive economic benefits in terms of additional employment. CMS currently employs 50 people and anticipates that with the completion of the project and the tonnage increases, it will need to add crews to handle more trains. The additional wage and fringe benefit from this addition is estimated at \$320,000 per year, for 4 crews added with 4 persons each. Over the 5-year benefit cost time frame, the present worth of this economic benefit is \$1,213,056 as shown below:

$$\$320,000 \times (\text{SPWF } 10\%-5 \text{ yr.}) = \$320,000 \times 3.7908 = \underline{\$1,213,056}$$

In summary, the total benefits from implementing this project are:

Benefits = Transportation Efficiency Benefit + Economic Benefits			
	\$4,858,860	+ \$1,213,056	= <u>\$6,071,916</u>

Benefit to Cost Ratio

Comparing the total benefits above to the cost derived earlier results in a Benefit to Cost ratio of 3.26 as shown below.

$$\begin{array}{rcl} B = & \underline{\$6,071,916} & = \underline{3.26} \\ C & 1,865,332 & \end{array}$$

CONCLUSION:

Based on the preceding analysis, the proposed capital improvements to the facilities at the Cahokia Marine Service Terminal meet the initial eligibility criteria of having a B/C ratio that is greater than 1.0.

LINE: Herrin
OWNER: City of Herrin
OPERATOR: Crab Orchard and Egyptian Railroad (CO&E)

PROBLEM STATEMENT:

Given 2,725 feet of 85 pound rail rolled in 1892 remaining in service on this line, the potential for a derailment and consequent industry short-term shut-down is imminent.

BACKGROUND:

The Department, through its Bureau of Railroads, has performed a project on this line. Due to federal constraints in having to use prevailing wage rates in the performance of the first project, some rail replacement could not be accomplished due to limited available funds. In 1987, the 85 pound rail, which normally would have been replaced, was in usable condition. Now, after eight years of use, this rail has reached the end of its useful life and requires immediate replacement. Simply due to extremely high labor rates mandated under the federal program, some material costs had to be eliminated at that time.

The original project involved the construction of a 5,500 foot interchange track to the Burlington Northern Railroad Company (BN). The new connection was necessary due to the original railroad abandoning its line which provided service to the City of Herrin. The city purchased trackage inside the city and the necessary land to construct the new interchange with BN. This action retained rail service to the City of Herrin along with the CO&E as the operator.

ENVIRONMENTAL CONCERNS:

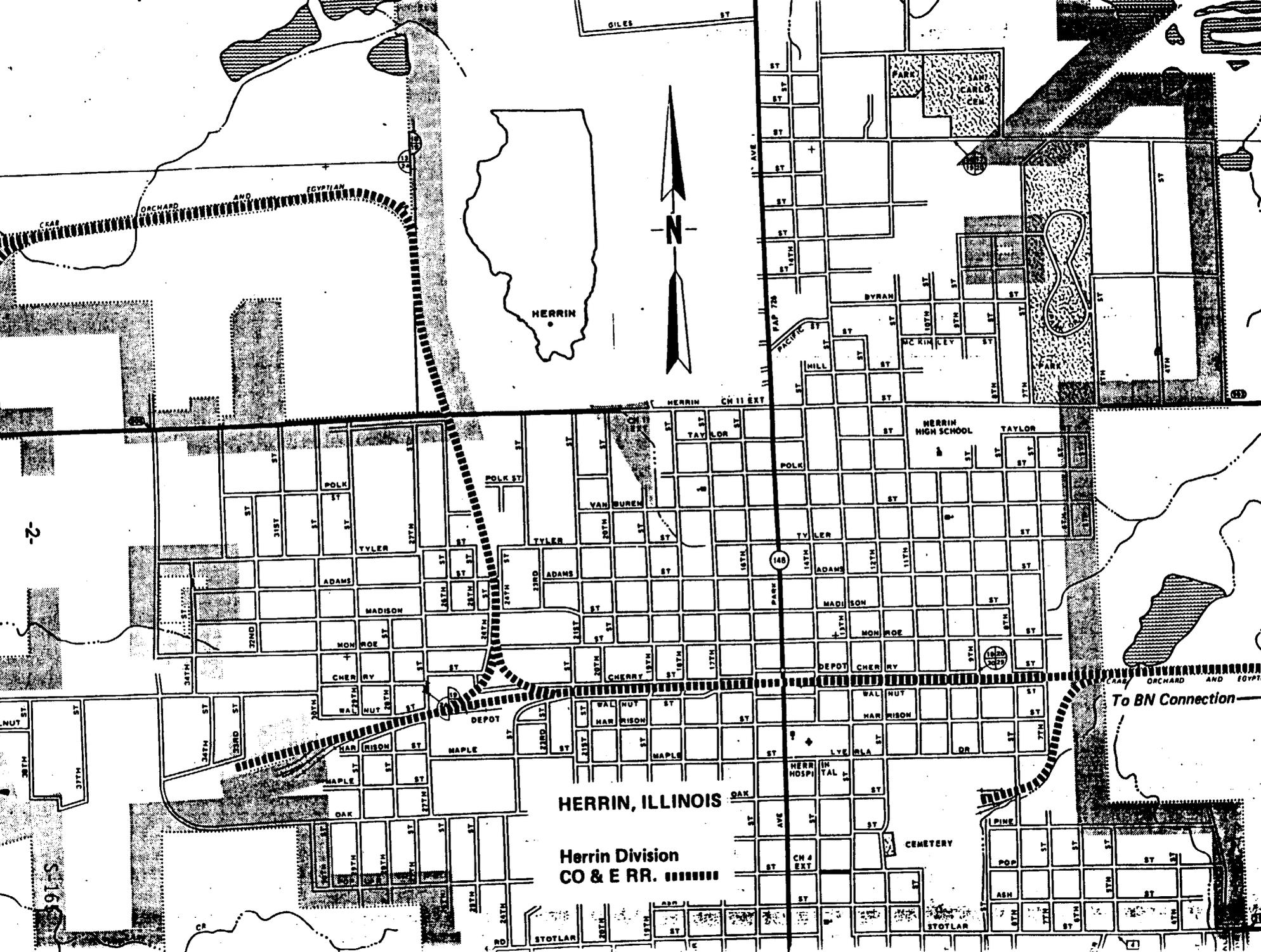
All of the potential work will be performed on existing right-of-way. It would only involve 2,725 feet of rehabilitation. Therefore, no environmental issues are foreseen. No bridges are involved, no farmland will be used, nor will anything of historical significance be involved.

SERVICE:

Service is daily as needed.

ALTERNATIVE TRANSPORTATION:

If a derailment were to occur, rail service is projected to be halted for a minimum of two days. Given this situation, local industries would suffer the loss of inbound materials necessary to maintain existing production levels. Other arrangements for the transport of inbound raw materials could be made. However, this would take a minimum of three to four days to receive the necessary new supply. By that time, the railroad would be returned to service. Therefore, it is conceivable that various plant shut-downs could occur with a one-time derailment. The loss of production of two days is expected with a short-term cut in inbound supply.



-2-

S-16

HERRIN, ILLINOIS

Herrin Division
CO & E RR.

MAP 1

INVESTMENT OPTIONS:

To assist in the decision concerning the possibility of funding, two options are discussed.

- **No Investment Option**
This alternative would not provide funds for the needed rail replacement project. Without the investment, a derailment will almost certainly occur within the next five years as a result of a broken rail.
- **Investment Option**
This alternative would provide funds of up to \$40,000 for 2,725 feet of rail replacement.

IMPACT OF NO INVESTMENT

With no investment, the CO&E would continue its self-imposed "slow order" in the areas where the 85 pound rail remains in place. As shown on Map 2, all of the traffic must traverse one 1,175 foot section of this light rail. Some 75% of the traffic must again move over the second spot which consists of 1,550 feet of 85 pound rail. This total of 2,725 feet of 98 year old rail is certainly the weakest link in Herrin's rail system.

Experience with similar rail under daily use dictates that the Herrin line will suffer recurring derailments over the next five years. However, to be conservative, Table 1 illustrates the economic impact of a single derailment occurrence upon the local workforce dependent on this rail line for its inbound materials.

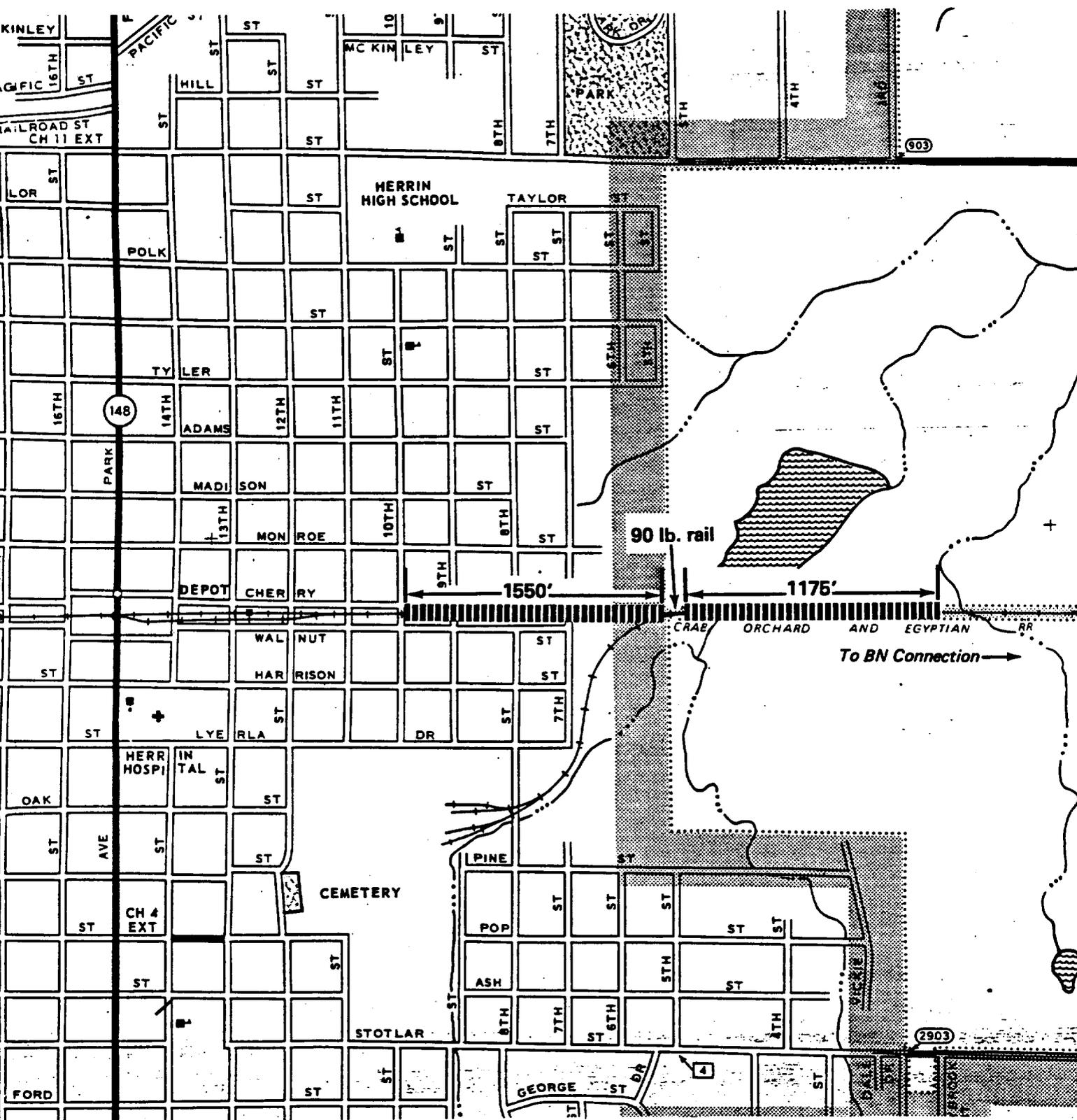
The following table depicts the economic loss to the region if rail service is curtailed, causing a two day shut-down of the industries supplied by rail.

TABLE 1
Regional Economic Loss

Employment Loss Two Days	Average Hourly Wage	Affected Work Force	Total Economic Loss
16 Hours	\$9.30	1050	\$156,240

INVESTMENT OPTION

With an investment to replace the old rail sections, the chance of a derailment can almost be eliminated. In this industry there are no guarantees, however, the probability can be hedged. Replacing the rail in this case is absolutely necessary. Suitable rail is available in storage on city property. It is assumed this rail will be used and therefore the only investment necessary is for the installation.



-MAP 2-

Project Limits  85 pound rail replacement

The following table is an estimate of the various materials and labor costs.

TABLE 2
Rail Installation Costs

Item	Unit	Material	Labor/Other	Total Estimate
Rail Replacement	2,725 T.F.	-	-	\$40,000

Normally the benefit/cost analysis is performed using benefits and costs which are reduced by using present values over a five year period. This analysis, however, is coupled to a one-time derailment which could occur within the five year period. Therefore, the benefits are not discounted over time nor are the costs reduced by the residual value of life remaining after the five year analysis period. Predicting the derailment occurrence over time is the problem here. Therefore, since the benefits are wages paid by Herrin industries and the majority of costs associated with rail installation is labor, these two factors are assumed to increase equally over the years. Given this assumption, over time the benefit/cost ratio would increase very slightly because of equal increases in future years.

BENEFIT/COST ANALYSIS

The benefits applicable to the investment are the potential lost wages or the Regional Economic Loss identified in Table 1. When compared to the project cost, the Benefit/Cost Ratio is as follows:

$$\frac{B}{C} = \frac{156,240}{40,000} = 3.9$$

Recommendation:

Provided a high probability exists for a derailment on this line, an investment should be made to replace the outdated rail, and thereby endeavor to avoid the projected plant closures. However, not quantified in this analysis, are additional costs associated with a potential derailment. These foreseeable costs would also be avoided with rail replacement.

LINE: Glasford to Good Hope
OWNER: Toledo, Peoria & Western Railroad Co.
OPERATOR: Toledo, Peoria & Western Railroad Co.

Problem Statement

The Toledo, Peoria & Western Railroad Co. (TP&W) has requested funds to rehabilitate 46 miles of track between Glasford near mile post 125 and Good Hope near mile post 180 in Central Illinois. Approximately 9 miles of this segment have already been retied. To accommodate intermodal traffic, the line needs to be upgraded to eliminate temporary slow orders and to meet, at the minimum, FRA Class 3 Track Safety Standards. Using the Federal Railroad Administration's benefit/cost methodology, this analysis determines whether the benefits of rehabilitating the TP&W line exceed the costs as is required under the federal Local Rail Freight Assistance Program.

Background

Since 1990, segments of TP&W track adjacent to the proposed project have been rehabilitated. In 1992, the Illinois Department of Transportation, Bureau of Railroads, loaned the TP&W \$1.2 million to rehabilitate 14 miles of track from E. Peoria to Cruger, Illinois. Similarly, another 8.9 miles of track from mile post 154.6 to mile post 163.5 has been retied and will only require minimal rehabilitation. With the completion of the proposed track rehabilitation project, temporary slow orders can be removed allowing the TP&W to serve time-sensitive automotive markets using intermodal service.

Two new TP&W interchange agreements with the Southern Pacific at Ft. Madison and Bushnell are expected to increase traffic from Ft. Madison to E. Peoria. In September, 1995, Southern Pacific's Chicago to Kansas City trackage-rights' intermodal trains shifted from Burlington Northern via Quincy to Santa Fe via Fort Madison. This newly captured Southern Pacific traffic will benefit TP&W and shippers along its line.

At least three major shippers will benefit from the proposed rehabilitation project. Two automotive assembly plants use intermodal service and one utility transports coal by rail. Without the rehabilitation project, the continued deterioration of the track will cause added slow orders. This will result in automotive shippers using the more costly trucking rates. It will also increase the utility shipper base cost thereby reducing shipper benefits.

The western portion of the TP&W track extends for approximately 85 miles from Kolbe, west of E. Peoria to Lomax, Illinois. The segment proposed in this analysis for rehabilitation is 46 miles from Glasford to Good Hope, excluding M.P. 154.6-163.5. The project scope and location are shown in Figures 1 and 2.

Investment Options

In determining the eligibility of the proposed investment to rehabilitate track from Glasford to Good Hope, the costs of the project are compared to the null alternative which is the no investment option.

- Null Alternative or the no investment option would result in loss of shipper intermodal and car load traffic which could not operate at a competitive advantage on the poor track.

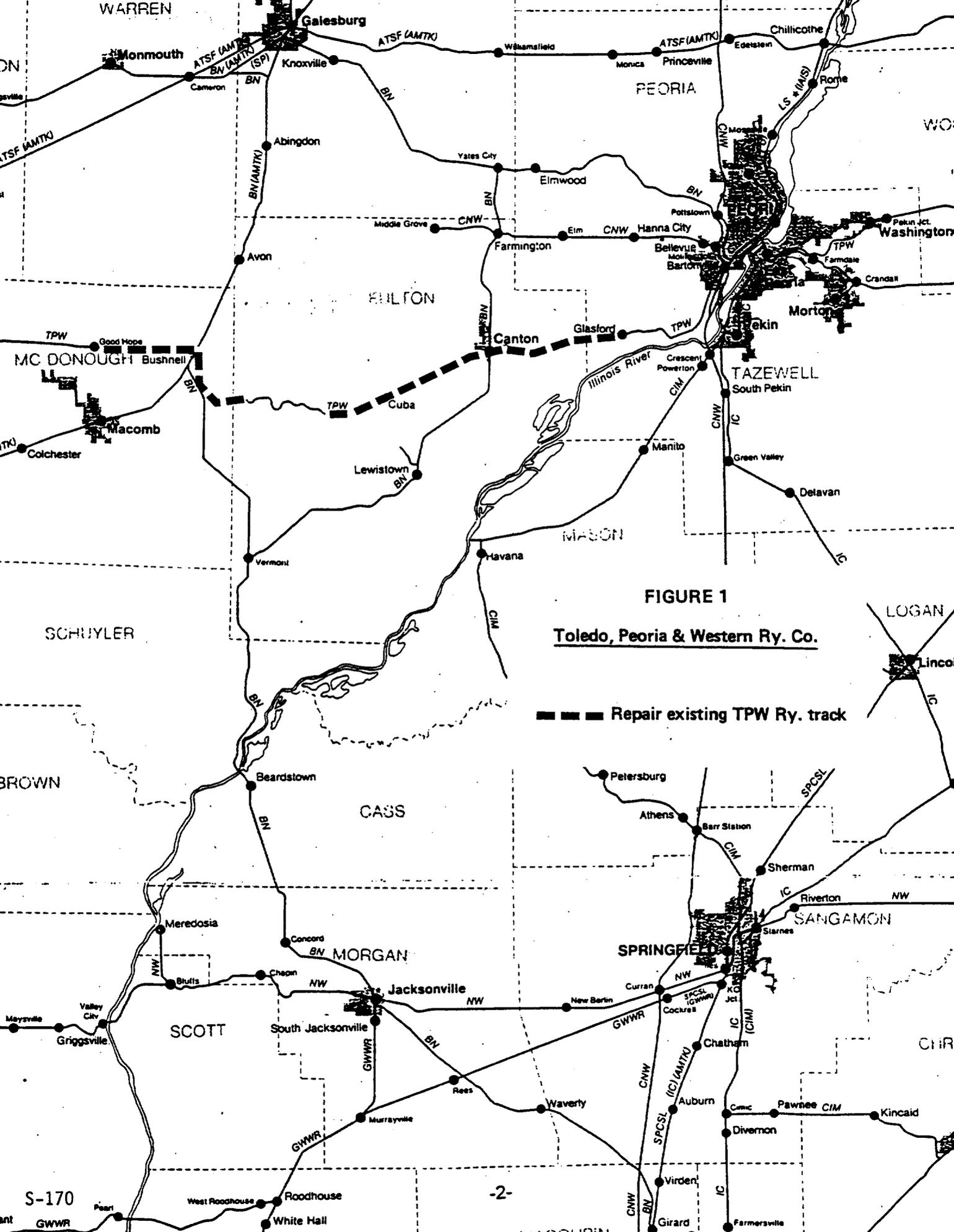


FIGURE 1

Toledo, Peoria & Western Ry. Co.

--- Repair existing TPW Ry. track



FIGURE 2
LOCATION MAP

- Invest \$3,647,198 to rehabilitate 46 miles of track between Glasford and Good Hope, eliminating slow orders and providing 40 mph service for intermodal and car load traffic.

Null Alternative

Without the rehabilitation project, rail traffic from Ft. Madison to E. Peoria would be limited to traffic that could afford to continue operating over poor track. Due to the numerous slow orders, intermodal traffic could not serve automotive manufacturers running just-in-time inventories. These shippers would be forced to pay higher trucking rates to transport their containers to and from their Bloomington, Illinois and Lafayette, Indiana facilities.

In addition, the electric utility, located in Sommer, Illinois owns or leases its rail cars. Traffic operating over a poor track would be subject to slow order delays and longer turn times on their equipment. This inability to maintain schedules would add to their base cost. These costs are not quantified as part of this analysis.

Investment Option

The investment option would provide transportation savings for automotive intermodal and utility car load traffic served along the proposed rehabilitated segment of the TP&W line. The material and labor costs to rehabilitate the track are provided in Table 1.

Table 1
Investment Option Capital Costs

Work Item	Quantity	Material Cost	Labor/Equip. Cost	Total Cost
Crosstie Renewal (7x9)	42,270 Each	\$1,437,180	760,860	2,198,040
Switch Tie Renewal (7x9)	24.43 MBF	23,697	26,873	50,570
Timber 10" Wide/Asphalt	164 LF	44,280	32,800	77,080
Timber 10" Wide/Gravel	64 LF	7,680	10,880	18,560
Scrap Tie Removal	Lump Sum			170,140
Turnout Rehabilitation	25 Each	11,250	7,500	18,750
Furnish and Install Ballast	27,500 CY	220,000	68,750	288,750
Surface, Align and Gage	55 TM		247,500	247,500
Rail Repair	330 Each	89,100	80,850	169,950
Bolt Tightening/Bar Repair	55 TM		137,500	137,500
Bolts	2,365 Bolts	5,912		5,912
Bars	605 Bars	6,050		6,050
Bonds & Insurance	Lump Sum			84,720
Subtotal				\$3,473,522
Contingencies (5%)				173,676
Total Project Capital Cost				<u>\$3,647,198</u>

Investment Option Benefits

Applying the FRA methodology for a rehabilitation project with a null alternative of continued operation on a poor track, three applicable benefit categories are quantified. These categories include the increase in branch line profits after rehabilitation (Table 2), shipper business profits on traffic that would not move without rehabilitation (Table 3), and the salvage value of the rehabilitation materials at the end of the 10-year planning horizon (Table 4).

Increase in Branch Line Profits After Rehabilitation

Projected branch line profits from rehabilitating the line segment from Glasford to Good Hope are \$23,029,000 when discounted to the present worth using the FRA interest rate of 4.6 percent. The calculation is provided in Table 2. Under the 10-year planning horizon, profits for years 1-7 are projected to increase 4 percent each year (2 percent volume and 2 percent rate increase). Profits are projected to increase 3 percent (1.5 percent volume and 1.5 percent rate increase) for years 8, 9 and 10.

The return on value takes into consideration the current rail industry cost of capital at 12.2% times the net liquidation of the right-of-way and the track salvage. For the real estate value, 46 miles of 75 feet wide right-of-way is estimated to have a value of \$500 per acre. At 418 acres, the rural right-of-way property is valued at \$209,000. As to the track salvage value, a total of 9,642 tons of rail at a salvage value of \$65.00 per gross ton provides a salvage value of \$626,730. The net liquidation value of \$835,730 (right-of-way and track salvage) times the 12.2% TP&W cost of capital equals the return on value in the amount of \$101,959.

Shipper Profits on Traffic that would not Move without Rehabilitation

There are two major automotive shippers that would not move traffic along the TP&W line segment from Glasford to Good Hope without the track rehabilitation project.

Both the Bloomington, Illinois and Lafayette, Indiana shippers use intermodal traffic for just-in-time automotive part "CKD" delivery. Without rehabilitating the TP&W line segment and removing slow orders, these shippers would transport their containers by truck instead of rail. The savings based on the actual difference in intermodal and truck rates are calculated as shipper profits in Table 3. Intermodal traffic originating on the West Coast moves via the TP&W line at Ft. Madison to a destination of either E. Peoria, Illinois or Remington, Indiana. The rate savings is based on the difference between trucking from the E. Peoria instead of the Galesburg Intermodal facility to the Illinois shipper and from Remington instead of a Chicago Intermodal facility to the Indiana shipper.

TABLE 2
BRANCHLINE PROFITS FOR GLASFORD TO GOOD HOPE REHABILITATION PROJECT
\$ in thousands

Project Year	1	2	3	4	5	6	7	8	9	10
Carloads	37,512	38,262	39,027	39,808	40,604	41,416	42,244	42,878	43,521	44,174
Revenue	\$13,457	\$13,995	\$14,555	\$15,137	\$15,743	\$16,372	\$17,027	\$17,538	\$18,064	\$18,606
Off Branch	5,237	5,394	5,555	5,723	5,894	6,071	6,253	6,378	6,505	6,636
On Branch Costs										
Maint.-of-way	1,368	1,409	1,451	1,495	1,540	1,586	1,633	1,666	1,699	1,733
Trans.	3,665	3,775	3,888	4,005	4,130	4,249	4,376	4,463	4,553	4,649
Taxes	92	95	98	101	104	107	110	112	114	117
Mgt./Admin.	835	860	886	912	940	968	997	1,017	1,037	1,058
Insurance	160	165	170	175	180	185	191	195	199	203
Operating Profit	2,100	2,297	2,507	2,726	2,955	3,206	3,467	3,707	3,957	4,210
Return on Value*	102	102	102	102	102	102	102	102	102	102
Economic Profit	1,998	2,195	2,405	2,624	2,853	3,104	3,365	3,605	3,855	4,108
PW Factor (4.6%)	0.956	0.914	0.874	0.835	0.799	0.764	0.729	0.698	0.667	0.638
Present Worth Profit	\$1,910	\$2,006	\$2,111	\$2,191	\$2,279	\$2,371	\$2,453	\$2,516	\$2,571	\$2,621
*Return on value calculated using ICC railroad cost of capital at 12.2%										
Total 10-year discounted profit:										\$23,029

Total 10-year discounted profit: \$23,029

Table 3
Shipper Business Profits

Project Year	Total Annual Profits	Discount Factor	Present Worth/Profits
1	\$1,797,000	0.956	\$ 1,717,932
2	1,814,800	0.914	1,658,727
3	1,833,100	0.874	1,602,129
4	1,916,100	0.835	1,599,944
5	1,935,300	0.799	1,546,305
6	1,954,600	0.764	1,493,314
7	2,065,400	0.729	1,505,677
8	2,085,900	0.698	1,455,958
9	2,106,800	0.667	1,405,236
10	2,263,700	0.638	1,144,241
TOTAL PROFIT DISCOUNTED			\$15,429,462

To protect the proprietary nature of individual shipper traffic, this data is not published and shipper profits are combined.

Salvage Value of Rehabilitated Materials

The salvage value of the materials used in the rehabilitation program at the end of the 10-year planning period is calculated in Table 4. The net salvage value of 42,270 crossties after 10 years is \$422,700. When discounted to its present worth at the 4.6% rate, the value of the material is \$269,683.

Table 4
Salvage Value of Materials

Item	Quantity/Unit Salvage Value	Total Salvage Value
Crossties	42,270 @ \$10.00 Each	\$422,700
	Discount (4.6%-10 Yr.)	<u>0.638</u>
	Present Worth	\$269,683

Benefit/Cost Summary

In summary, the benefits projected under this investment option over a 10-year planning horizon include:

Increase in branchline profits	\$23,029,000 (Table 2)
Shipper business profits	\$15,429,462 (Table 3)
Salvage Value of Materials	<u>\$ 269,683</u> Table 4)
Total Project Benefits	\$38,728,145

Benefit/Cost Ratio

The benefits discounted over 10 years are \$38,728,145. The project cost as shown in Table 1 are \$3,647,198. Therefore, the benefit/cost ratio is 10.62.

$$\frac{B}{C} = \frac{\text{Benefit}}{\text{Project Net Cost}}$$

$$\frac{B}{C} = \frac{\$38,728,145}{\$3,647,198} = 10.62$$

LINE: At McLean
OWNER: McLean County Service Company
OPERATOR: Southern Pacific Transportation Company

Problem Statement

An elevator in McLean, Illinois plans to expand its railroad shipping facilities to increase its outbound capacity from 25 to 75 car units. To accomplish this expansion, the elevator will construct 5,300 feet of additional trackage, rehabilitate 2,400 feet of existing trackage, and install a new turnout, conveyor, and sampler. This analysis determines whether the benefits of a construction and rehabilitation rail project, funded by the state's Rail Freight Assistance Program, exceed the project's estimated costs.

Background

The McLean elevator currently ships out about 3.6 million bushels of corn and soybeans per year via the Southern Pacific Transportation Company (SP). Soybeans are primarily shipped to Illinois destinations while corn is shipped to Arkansas and Texas markets. The McLean County Service Company owns a number of other elevators in McLean County whose grain will also be shipped out of the McLean facility. It is anticipated the McLean facility will significantly increase its annual outbound shipments and receive lower rates for shipping the 75 car units. A combination of the increased volume shipped, at lower unit rates, will provide a savings that the McLean elevator will pass on to local farmers as increased prices for their product.

Location

The proposed project is located in Central Illinois near Interstate 55 and Route 136 off the SP in McLean, McLean County, Illinois. The project location and limits are shown in Figures 1 and 2.

Investment Options

Two investment options are considered in determining whether a track construction and rehabilitation project at the McLean elevator is eligible for state funds.

- No investment, which would maintain the existing track layout and capacity at the McLean elevator.
- Invest \$883,608 to construct 5,300' of new and rehabilitate 2,400' of existing track to handle 2000 rail cars annually.

No Investment

Failure to invest in rail construction and rehabilitation will prevent the elevator from shipping out larger units of grain cars at lower rates.

Investment Option

The investment option would enhance the elevator's expansion project by increasing volume, reducing rates, and offering higher prices to the local farm economy. Estimated project costs are found in Table 1.

General Location Map
FIGURE 1

★ McLean County Service Co. at McLean, Illinois
Rail Construction and Rehabilitation Project

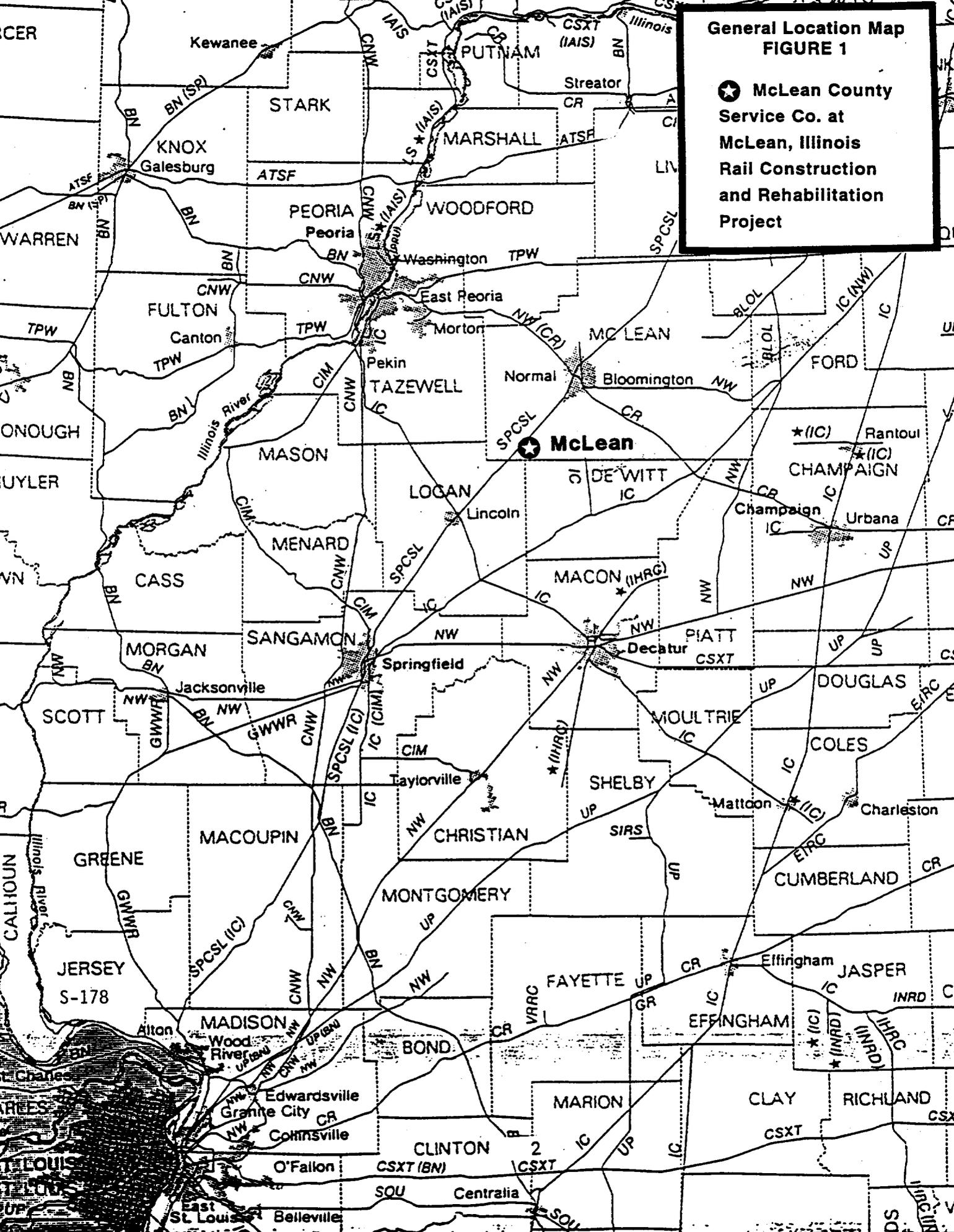
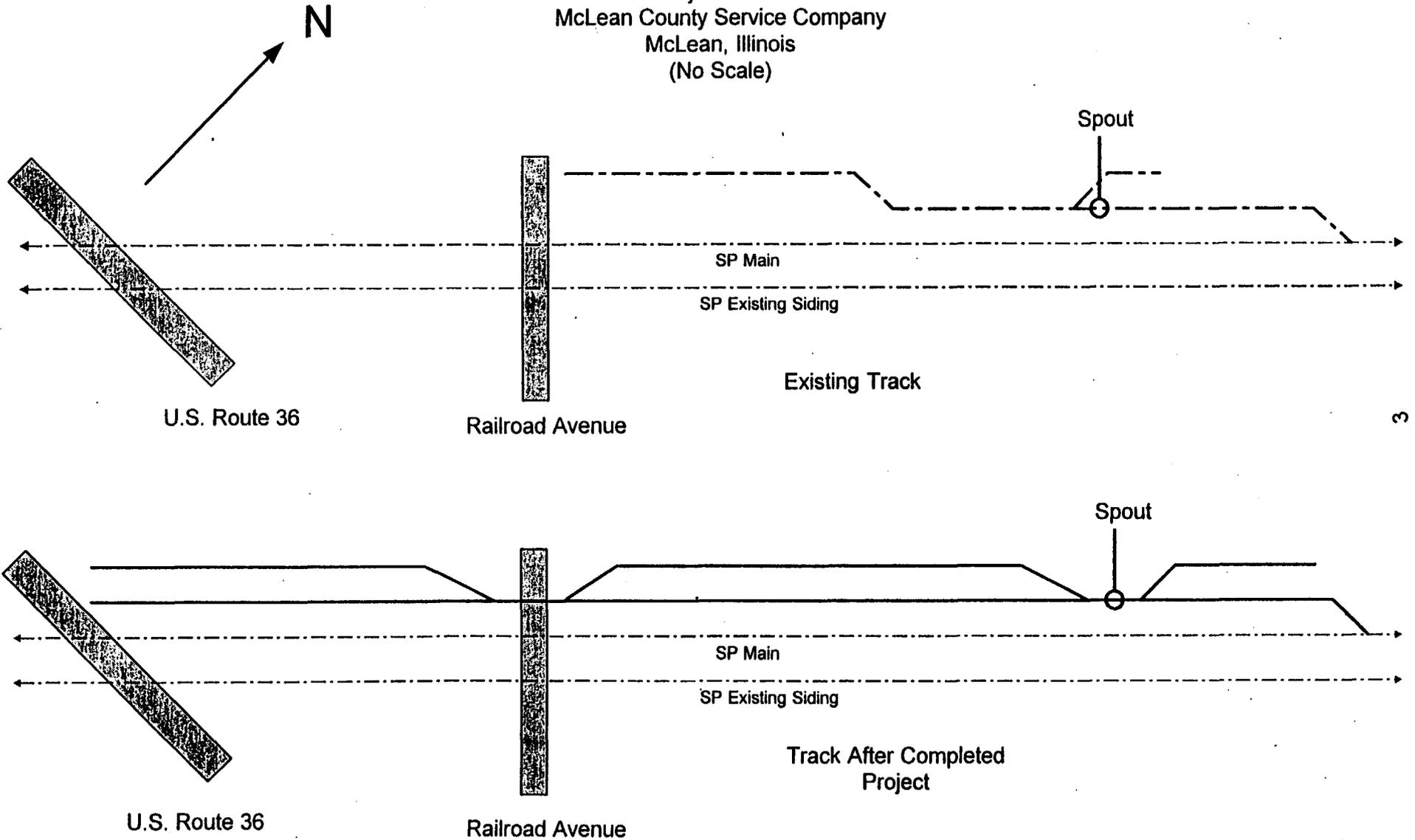


FIGURE 2
Project Limits
McLean County Service Company
McLean, Illinois
(No Scale)



**Table 1
Estimated Project Costs**

Item No.	Description	Units	Quantity	Cost
1	Pole Line Removal	L.S.	1	\$ 5,000
2	Buried Cable Relocation	L.F.	3,000	\$ 45,000
3	Flagging	Day	60	\$ 30,000
4	Crossing Signals & Relocation	Each	1	\$ 25,000
5	Grading and Drainage	L.S.	1	\$ 75,000
6	Track Removal	T.F.	1,350	\$ 5,400
7	Subballast	Cu.Yd.	2,850	\$ 42,750
8	Skeleton Track Construction	T.F.	5,300	\$ 84,800
9	Rail 100# or heavier	L.F.	10,600	\$ 63,600
10	Ties 6"x8"x8'6"	Each	3,262	\$ 61,978
11	OTM all inclusive	T.F.	5,300	\$ 26,500
12	Skeleton Turnout Construction	Each	5	\$ 25,000
13	Timber #8 Turnout	Each	5	\$ 15,000
14	Steel #8-100# or heavier	Each	5	\$ 40,000
15	Ballasting CA-5	Cu.Yd.	3,900	\$ 42,900
16	Surface, Align and Dress (Skin)	T.F.	2,600	\$ 2,600
17	Surface, Align and Dress	T.F.	6,200	\$ 12,400
18	Bumping Post-Steel	Each	3	\$ 5,700
19	Crosstie Renewal 6"x8"	Each	500	\$ 22,500
20	Rail Upgrade 80#-100# or Heavier	T.F.	2,400	\$ 24,000
21	Rail 100#	L.F.	4,800	\$ 28,800
22	OTM	T.F.	2,400	\$ 12,000
23	Grade Crossing Construction	L.F.	88	\$ 4,400
24	Guard Rail W/OTM	L.F.	352	\$ 5,280
25	Welds	Each	4	\$ 1,600
26	Crossties 7"x9"x9'	Each	80	\$ 3,600
27	Hot Mix Asphalt	Ton	80	\$ 7,200
28	Bonds and Insurances	L.S.	1	\$ 8,000
29	Railroad Protective	L.S.	1	\$ 6,000
30	Conveyor	Each		\$100,000
31	Sampler for testing grain	Each		\$ 15,000
CONTINGENCIES (4%)				\$ 36,600
TOTAL ESTIMATED PROJECT COSTS				\$883,608

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the five year project life. The residual value of \$283,647 which, when discounted to its present worth of \$176,145, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$707,463.

	<u>Rail & OTM</u>	<u>Ties</u>	<u>Sampler & Conveyor</u>	<u>Total</u>
Cost	\$182,280	\$90,578	\$115,000	
% Life Remaining	<u>x 75%</u>	<u>x 67%</u>	<u>x 75%</u>	
Residual Value 5 Yrs.	\$136,710	\$60,687	\$ 86,250	\$283,647
Present Worth Factor (10%-5 Yr.)				<u>x .621</u>
Present Worth Residual Value				\$176,145
In Summary	Project Cost:		\$883,608	
	Less Present Worth Residual		<u>176,145</u>	
	Project Cost for Analysis		<u>\$707,463</u>	

Transportation Benefits

Transportation benefits provided by this project will result in a savings to the elevator and the local farm community. By shipping 2000 outbound cars via SP at a savings of \$70 per car, the elevator will realize an annual savings of \$140,000. These savings in transportation costs will be reflected in higher prices paid to area farmers for their products. The transportation benefits in the amount of \$530,704 are quantified over a five year period in Table 2.

**Table 2
Transportation Benefits**

Project Year	Annual Rail Shipment Savings	Discount Factor	Total Discounted Benefits
1-5	2000 cars x \$70/savings per car = \$140,000	3.791	\$530,740

Economic Benefits

Economic benefits provided by the proposed rail construction and rehabilitation project include the economic savings from retaining one full-time and one half-time employee to handle the overall increase at the McLean facility. These economic benefits in the amount of \$190,498 are quantified in Table 3.

**Table 3
Economic Benefits**

Project Year	Wage & Fringe Benefits Retained	Discount Factor	Total Discounted Benefits
1-5	\$50,250	3.791	\$190,498

Benefit/Cost Analysis

The transportation and economic benefits directly attributable to this project over a five year period are \$721,238. These benefits when compared to the net project costs of \$707,463, yield a benefit cost ratio of 1.02, thereby qualifying this project for program funding.

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Economic Benefits}}{\text{Net Project Cost}}$$

$$\frac{B}{C} = \frac{\$530,740 + \$190,498}{\$707,463} = \frac{\$721,238}{\$707,463} = 1.02$$

LINE: At Allen
OWNER: Taloma Farmers Grain Co.
OPERATOR: Union Pacific Railroad Company

Problem Statement

A grain company in central Illinois plans to expand its railroad shipping facilities to increase its outbound capacity from 25 to 75 car units. To upgrade its Allen, Illinois facility, the grain company will construct 5,680 feet of trackage, install a rail scale, conveyor tunnel, and loading system. This analysis determines whether the benefits of a construction and rehabilitation rail project, funded by the state's Rail Freight Assistance Program, exceed the project's estimated costs.

Background

Taloma Farmers Grain Co. is a cooperative with five elevators located in Tazewell, Logan, and Mason Counties. They have recently purchased 13 acres to combine with the 8 existing acres they own in Allen, Illinois, to construct and rehabilitate a rail facility. With processors in all three counties utilizing the Allen facility, annual outbound grain shipments will increase to 1,650 cars via the Union Pacific Railroad Company (UP). Corn will be shipped in 75 car units to new Arkansas poultry markets, the Gulf Region and Mexico. Due to savings enjoyed by the grain company from shipping larger volumes at lower unit rates, higher prices will be paid to over 1,000 farmers served by the grain company.

Location

The proposed project is located in the northeast portion of Mason County, Illinois near the town of Allen where Route 136 crosses the UP (formally the Chicago & Northwestern Transportation Company). Project location and limits are shown in Figures 1 and 2.

Investment Options

Two investment options are considered in determining whether a track construction and rehabilitation project at the Allen site is eligible for state funds.

- No investment, which would limit the grain company to the current track layout and capacity at its Allen facility.
- Invest \$1,225,832 to construct 5,680' of new track, install a rail scale, conveyor tunnel, and loading system to handle 1,650 cars annually.

No Investment

Failure to invest in rail construction and rehabilitation will prevent the grain company from shipping out larger car units at lower rates.

Investment Option

The investment option would enhance the Allen facility expansion project by increasing volume, reducing rates, and providing higher prices to the 1,000 farmers being served. Estimated project costs are found in Table 1.

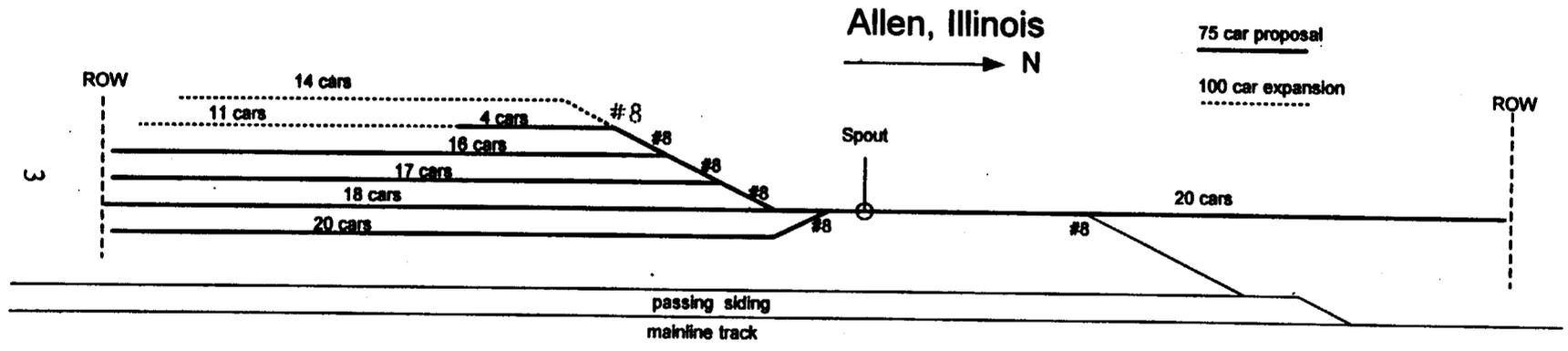


Figure 2
Taloma Farmers Grain Co.
Allen, Illinois
(No Scale)

**Table 1
Estimated Project Costs**

Item No.	Description	Units	Quantity	Cost
1	Grading & Drainage	L.S.	1	\$ 50,000
2	Track Removal	T.F.	520	2,080
3	Subballast CA-6	C.Y.	3,405	51,075
4	Skeleton Track Construction	T.F.	5,680	90,880
5	Rail 100# or heavier	L.F.	11,360	68,160
6	Ties 6"x8"x8'6"	Each	3,496	66,424
7	OTM all inclusive	T.F.	5,680	28,400
8	Skeleton Turnout Construction	Each	5	25,000
9	Timber #8	Turnout	5	15,000
10	Steel #8-100# or heavier	Turnout	5	40,000
11	Ballasting CA-5	C.Y.	3,750	41,250
12	Surface, Align and Dress	T.F.	6,680	13,360
13	Bumping Post-Steel	Each	6	8,400
14	Bonds and Insurance	L.S.	1	5,000
15	Conveyor Tunnel	L.S.	1	16,000
16	Electrical Hookup	L.S.	1	35,500
17	Rail Scale	L.S.	1	112,000
18	Loading System	L.S.	1	498,930
	Contingencies (5%)			58,373
	Total Estimated Project Costs			\$1,225,832

To determine the benefit/cost for this investment option, the estimated project cost is reduced by the residual value to approximate the remaining economic value of the improvement at the end of the ten-year project life. The residual value of \$412,429 which, when discounted to its present worth of \$159,198, is subtracted from the cost detailed in Table 1 to provide an estimated project cost of \$1,066,634.

	Rail & OTM	Ties	Scale, Loading System & Conveyor	Total
Cost	\$142,560	81,424	\$629,930	
% Life Remaining	x50%	x34%	x 50%	
Residual Value 10 Yr.	\$ 71,280	\$ 27,684	\$313,465	\$412,429
Present Worth Factor (10%-10Yr.)				x .386
Present Worth Residual Value				\$159,198
	Project Cost		\$1,225,832	
	Less Present Worth Residual		<u>159,198</u>	
	Project Cost for Analysis		\$1,066,634	

Transportation Benefits

Transportation benefits provided by this project will result in savings to the grain company and the local farm community. By shipping 1,650 outbound cars via UP at a savings of \$70 per car, the grain company will realize an annual savings of \$115,000. These savings in transportation costs will be reflected in higher prices paid to local farmers for their products. The transportation benefits of \$706,675 are quantified over a ten-year period in Table 2 below.

**Table 2
Transportation Benefits**

Project Year	Annual Rail Shipment Savings	Discount Factor	Total Discounted Benefits
1-10	1,650 cars x \$70/savings per car =\$115,000	6.145	\$706,675

Economic Benefits

Economic benefits provided by the proposed rail construction and rehabilitation project include the economic savings from retaining two full-time employees and hiring one new full-time employee to handle the increase in volume at the rail facility located at Allen. The combined salary and benefits of retaining existing employees at \$44,600 and hiring a new employee at \$25,600 total \$70,200. These economic benefits of \$431,379 are quantified over a ten-year period in Table 3 below.

**Table 3
Economic Benefits**

Project Year	Wage & Fringe Benefits	Discount Factor	Total Discounted Benefits
1 - 10	\$70,200	6.145	\$431,379

Benefit/Cost Analysis

The transportation and economic benefits directly attributable to this project over a ten-year period are \$1,138,054. These benefits when compared to the net project costs of \$1,066,634, yield a benefit cost ratio of 1.07, thereby qualifying this project for program funding.

$$\frac{B}{C} = \frac{\text{Transportation Benefits} + \text{Economic Benefits}}{\text{Net Project Cost}}$$

$$\frac{B}{C} = \frac{\$706,675 + \$431,379}{\$1,066,634} = \frac{\$1,138,054}{\$1,066,634} = 1.07$$

THE BENEFIT COST METHODOLOGY: STATE-ONLY

Each option is put through two phases of analysis. The first phase is line viability; although a straightforward test, it is most difficult since so many variable factors must come together to determine whether the project passes or not. The second phase is the benefit/cost ratio. Both phases are described below.

Line Viability - Put simply, a line is viable if it makes a positive net contribution to the operation. For example: "Will sufficient traffic be generated to allow the railroad to either provide service in the case of a new construction project or to continue/reinstate service on an existing line once an investment takes place? Will the rail users make an effort to increase rail traffic thereby proving to the railroad that line profitability is possible?" In answering these and other questions, the Department determines a project's viability.

Benefit/Cost - The benefit/cost ratio compares the estimated benefits in dollars to the associated project cost necessary to obtain those benefits. Benefits are categorized into three groups: transportation, economic and public benefits (see below).

Benefits are calculated over a project life (generally five years but not exceeding ten years) and are discounted to reflect their present worth. A ten percent annual rate of return is used to determine present worth.

The benefits are measured against the net capital investment required to implement the project, less the residual value of the project material after the project life has been realized.

Benefit Analysis - The analysis identifies three distinct sets of benefits for each investment option:

- **Transportation Benefits** -- the avoidable additional cost of transporting affected freight shipments by other modes.

- **Economic Benefits** -- the avoidable loss of employment retention or the payroll benefits of employment creation and the utilization of raw materials and production assets within the local economy.
- **Public Benefits** -- the incremental reduction in directly-related government expenditures, or directly related public costs, resulting from the implementation of the investment option.

The calculation of these benefits is accomplished through the comparison of each investment option with a "No Investment Option." For instance, under the no-investment option for a rehabilitation project, capital improvements are not made, and only routine normalized maintenance of the line is assumed. The purpose of this option is to calculate what could be expected to happen to transportation costs, the local economy, the general public, and public expenditures if nothing were done to the rail line. This evaluation determines whether or not the rail line would remain in service, and also provides the base for measuring the avoidable costs which would in turn be benefits resulting from a capital investment. The calculations of specific benefits are accomplished through the following methods:

Transportation Benefits - Transportation benefits are calculated by determining the difference in costs between the no-investment option and the investment option for transporting the affected traffic from its origin to its destination. The costs calculated for this analysis are the actual costs of resources required to transport the traffic. The elements which determine these costs vary between projects but, simply defined, are the operating and maintenance costs necessary to provide service. For rail, these costs include:

- Maintenance-of-way costs
- Maintenance-of-equipment costs
- Labor costs (primary crew costs and arbitraries)
- Fuel costs
- Administrative costs
- Return on investment

The existing rail mode costs are then compared to other modes such as truck, truck to rail and water. Any increased costs which can be avoided in an investment option are classified as a transportation benefit.

Economic Benefits - Economic benefits to communities are calculated by determining the avoidable loss of production to the local economy if the no investment option is undertaken. This analysis focuses on the utilization of non-transportation resources, such as manufacturing plants, manpower, and raw materials, which are influenced by the decision to improve (or not improve) or to construct a rail line. From this perspective, the impact on production is usually measured by the net income generated by the community.

Major emphasis in this category is placed upon the addition/ retention of jobs. Related jobs are lost forever if a company is forced to close its doors upon the loss of rail service. If it is determined through user surveys that this is the case, then the employment loss to the local economy is determined. Total annual salaries are assumed to be lost for one year, because of reemployment or relocation out of the area. From this value is subtracted the current unemployment compensation rate for an average family. The total is calculated and represents the avoidable loss of employment for the project life.

Public Benefits - Public benefits are calculated by assessing the savings in government expenditures or reduction in other costs to the public, if the investment option were implemented. In this case, the analysis of the no-investment option would indicate that costs (e.g. government expenditures) would be incurred without a capital investment. The investment option, by definition, would be a lower-cost alternative for government expenditures. An example of this benefit would be the relocation of a rail user to lower the cost of another transportation project, such as a highway construction project.

Cost Analysis - The benefits are measured against the net project cost minus the salvage value of the project material after the project life has been realized. The net project cost is the total cost of the capital improvement, including labor, for each investment option, minus the net salvage value of the track material extracted when the project is implemented.

To equalize the comparison of capital investment options, the present worth of the residual value of the project material at the end of the project life is subtracted from the net project cost. The residual value of the project material is calculated by multiplying the original costs of material times the percent of useful life remaining in the respective material.

In equation form the benefit/cost analysis looks like this:

$$\frac{[\text{Transportation Benefits} + \text{Economic Benefits} + \text{Public Benefits}]}{[\text{Net Project Cost} - \text{Residual Value}]} = \frac{\text{B Ratio}}{\text{C}}$$

This ratio must be greater than one in order for the project to be eligible for funding.

Investment Recommendation

The Department evaluates the desirability of all investment options by focusing on whether a long-term solution would be achieved for the service problems identified in the line issue statement. Specifically, external factors influencing the viability of the line are evaluated to determine the potential success or failure of the investment options. Based on all available information a recommendation is made.

THE BENEFIT-COST METHODOLOGY: LOCAL RAIL FREIGHT ASSISTANCE (LRFA)

General. The following sections present, in a step by step fashion, the benefit-cost methodology to be used for analyzing LRFA projects. Generally, the data underlying the benefit-cost analysis must be reasonably current. Data over three years old will not be considered valid, except where:

1. It is a part of a historical time series of data that has an end date within three years prior to submission of the data; or
2. An explanation accompanies submission of the data as to why it can reasonably be expected to reflect current conditions.

A benefit-cost analysis of a candidate LRFA project must include the following steps:

1. Establishing the project alternative;
2. Determining the project costs;
3. Determining the nul alternative;
4. Using the standard planning horizon;
5. Using the FRA published discount rate;
6. Calculating transportation efficiency benefits;
7. Calculating secondary benefits;
8. Calculating salvage value;
9. Calculating the benefit-cost ratio.

Each of these steps is discussed in detail in the sections which follow.

Establishing the project alternative. The analysis must identify the problem, determine the possible solutions to each other and choose which one (or more) to define as a "project" for purposes of performing the benefit-cost analysis or analyses. The project must meet one of the statutory eligibility criteria which are (1) acquisition of a line of railroad or other rail property, (2) rehabilitation or improvement of rail properties, or (3) construction of rail or rail-related facilities.

Determining the project costs. In most cases, the project cost will be equal to the cash and in-kind outlays used to build and implement the project, exclusive of financing costs. Since the analysis is from a public perspective, the source of funds or the financing arrangements have no bearing on the project cost. It is important to include the costs covered by shares paid in such costs are discounted to a present value.

Determining the null alternative. The null alternative represents the Department's best estimate as to what will happen if the project is not undertaken, and is the alternative against which any candidate project must be compared in the benefit-cost analysis.

Using the standard planning horizon. This is the number of years over which the benefits and costs of the project will be considered. The FRA has determined that for local rail freight assistance projects, the appropriate planning horizon is ten years; and, that horizon is to be used in all benefit-cost analyses in support of project applications.

Using the FRA published discount rate. The discount rate to be used each year in benefit-cost analyses is published annually by the FRA after funds for the Local Rail Freight Assistance Program have been appropriated.

The published discount rate will be based upon the Federal Government's cost of borrowing (determined by the interest rate on 10 year obligations) less that element of the cost of borrowing that is estimated to represent expectations as to inflation.

Because the discount rate to be used will not include an inflation component, all forecasts of cost and benefits included in the analysis are to be in constant dollars.

Calculating transportation efficiency benefits. Transportation efficiency benefits are those which are a direct effect of the project alternative being considered. Much of the information used to calculate transportation efficiency benefits must, of necessity, be provided by railroads and/or shippers. To the extent permissible under law, any information considered commercially sensitive will be protected. any information submitted with or as part of a

benefit-cost analysis which the Department wants to be treated confidentially will be clearly and specifically so identified.

Calculating Secondary Benefits. Secondary benefits are those which are an indirect consequence of the project alternative being evaluated and normally reflect temporary alternative rather than allowing the null alternative to occur. The analysis should identify secondary benefits and quantify them for each year in the planning horizon, including all offsets. If in the course of searching for and identifying secondary benefits, it is determined that they do not warrant consideration, then they will not be quantified and included in the analysis. However, a statement to that effect will be included.

In calculating secondary benefits, the Department will take a statewide and not a local perspective. Thus, for example, if a plant is expected to close as a result of a rail line abandonment, it is important to know what alternatives the plant's owner might pursue, if any. If the owner intends to relocate that plant's production to another part of the state, then the local employment and other impacts will not be included in the analysis, since they will be offset at the new location. If the owner intends to relocate out of state, then these impacts should be included. This pertains also to any tax revenues lost to the state or local community as a result of the plants relocating out-of-state. In either case, the business relocation costs should be included in the analysis.

Calculating salvage value. The salvage value for the last year in the planning horizon should be calculated. In cases where the value of the entire line was used in the project cost, the salvage value of all materials in the line, i.e., the line's net liquidation value, would be used here. If the project cost represents only those capital improvements put in place by the project, it is the salvage value of only those capital improvements that would be used here.

Calculating the benefit-cost ratio. Using the FRA published discount rate, calculate the present value of the benefits. The sum of the present values of the benefits should then be divided by the project cost to determine the benefit-cost ratio. In the case of a phased project, the present value of future project costs should be added to current year costs.

ILLINOIS RAILROADS AND ABBREVIATIONS

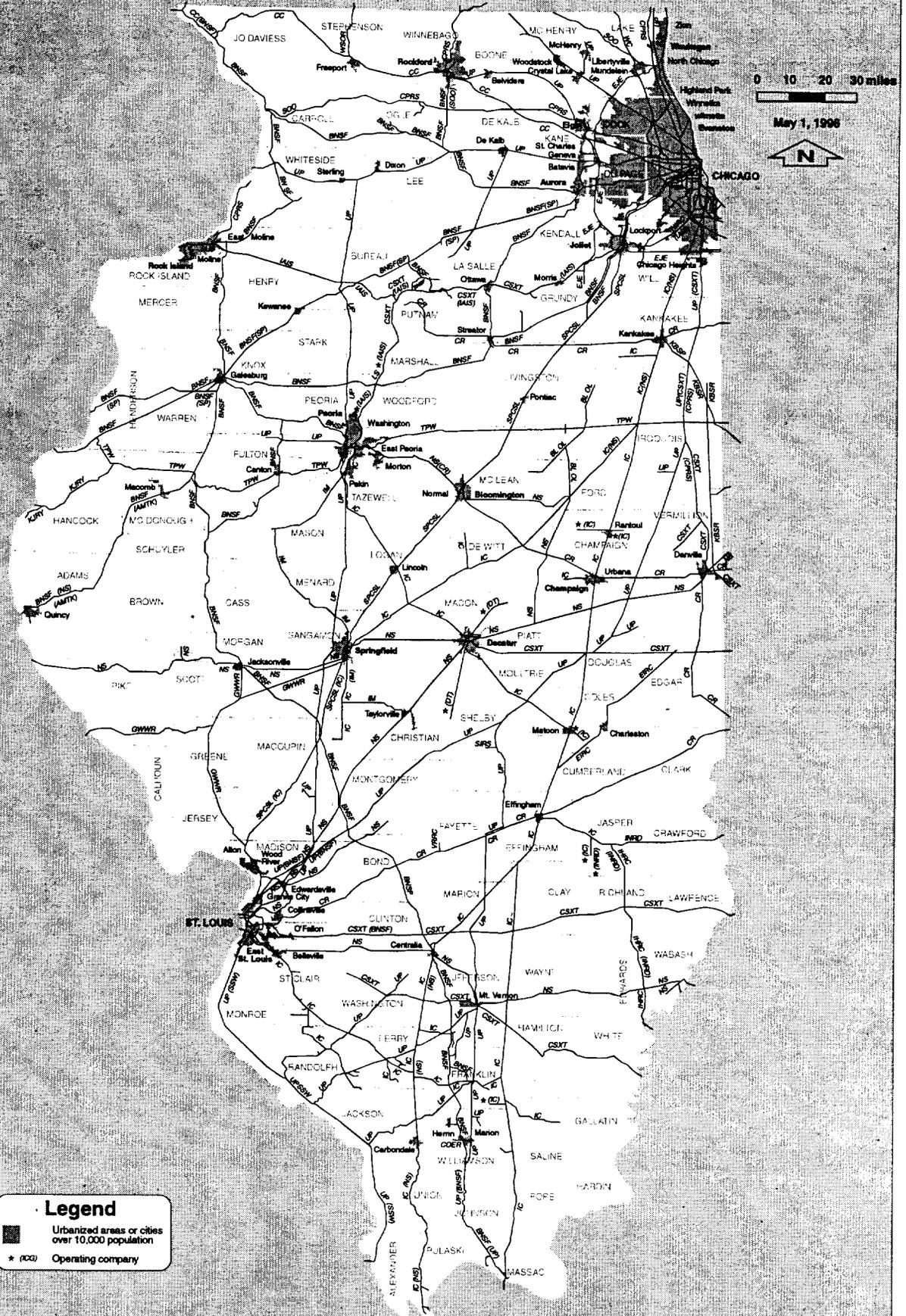
<u>Railroad</u>	<u>Abbreviation</u>
Alton & Southern Railway	ALS
Baltimore & Ohio Chicago Terminal Railroad ^{1/}	BOCT
Belt Railway Company of Chicago	BRC
Bloomer Shippers Connecting Railroad Co.	BLOL
Burlington Northern Santa Fe	BNSF
Cairo Terminal Railroad	CTML
Chicago, Central & Pacific Railroad	CC
Chicago-Chemung Railroad Co.	CCRC
Chicago & Western Indiana Railroad	CWI
Chicago Heights Terminal Transfer Railroad	CHTT
Chicago Rail Link ^{2/}	CRL
Chicago Short Line Railway	CSL
Chicago, South Shore & South Bend Railroad ^{3/}	CSS
Chicago, West Pullman & Southern Railroad	CWP
Consolidated Rail Corporation (Conrail)	CR
CP Rail System	CPRS
Crab Orchard & Egyptian Railroad	COER
CSX Transportation, Inc. ^{4/}	CSXT
Eastern Illinois Railroad Co.	EIRC
East St. Louis Junction Railroad	EJR
Elgin, Joliet & Eastern Railway	EJE
Gateway Western Railroad	GWWR
Grand Trunk Western Railroad Company ^{5/}	GTW
Illinois Central Railroad	IC
Illinois Midland Railroad, Inc.	I&M
Indiana Harbor Belt Railroad	IHB
Indiana Hi-Rail Corp.	IHRC
Indiana Railroad	INRD
Iowa Interstate Railroad, Ltd.	IAIS
Joppa and Eastern Railroad	JE
Kankakee, Beaverville & Southern Railroad	KBSR
Kaskaskia Regional Port District Railroad	KPRD
Keokuk Junction Railway	KJRY
Lincoln and Southern Railroad Company	L&S*
Manufacturers' Railway	MRS
Manufacturers Junction Railway	MJ
Norfolk Southern Railway Co. ^{6/}	NS*
Peoria and Pekin Union Railway	PPU
Peoria, Peoria Heights & Western Railroad ^{7/}	PPW
St. Louis Southwestern Railway Company ^{7/}	SSW
Shelbyville Industrial Rail Spur	SIRS
Southern Pacific Transportation Company	SP
SPCSL Corporation ^{7/}	SPCSL
Toledo, Peoria and Western Railway Corp.	TPW
Terminal Railroad Association of St. Louis	TRRA
Union Pacific Railroad	UP
Vandalia Railroad Company	VRR
Wisconsin & Calumet Railroad	WICT
Wisconsin Central Ltd.	WC

* These corporations do not operate lines in the state, but own the land and track over which various railroads operate, or own out-of-service lines.

- ^{1/} The B&OCT is a subsidiary railroad of CSX Corporation and is scheduled to be merged into CSX Transportation.
- ^{2/} Purchased by CWP.
- ^{3/} The Northern Indiana Commuter Transportation District (NICTD) operates passenger service over the lines of the CSS.
- ^{4/} CSX Transportation in Illinois encompasses the lines and operations of the former Seaboard System Railroad (owner of the LN) and B&O.
- ^{5/} Recently merged with Canadian National and renamed CN-North America.
- ^{6/} Lines formerly shown as NW and SOU
- ^{7/} A wholly-owned subsidiary of Southern Pacific.
- ^{8/} Union Pacific Railroad incorporates lines and operation of the Missouri Pacific Railroad and former Chicago North Western

Illinois Railroads

Illinois Department of Transportation



Legend

- Urbanized areas or cities over 10,000 population
- * (ICC) Operating company