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**DRAFT ENVIRONMENTAL ASSESSMENT**  
**December 1998**

FINANCE DOCKET NO. 33652

UNION PACIFIC RAILROAD COMPANY  
—ACQUISITION AND OPERATION EXEMPTION—  
MID MICHIGAN RAILROAD, INC.  
(RAIL LINE BETWEEN SAINT JOSEPH, MISSOURI AND UPLAND, KANSAS)

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## EXECUTIVE SUMMARY

The Surface Transportation Board (the Board), Section of Environmental Analysis (SEA), prepared this Draft Environmental Assessment (Draft EA) to identify and evaluate the potential environmental impacts of the acquisition by Union Pacific Railroad (UP) of a rail line between St. Joseph, Missouri and Upland, Kansas from the Northeast Kansas and Missouri Railroad (NEKM), a subsidiary of Mid-Michigan Railroad, Inc. (hereinafter referred to as the “proposed Acquisition”). SEA has identified potential environmental impacts in four environmental issue areas (air quality, noise, freight rail operations safety, and highway/rail at-grade crossing safety) and has recommended mitigation measures to address these potential impacts.

SEA concludes that if the mitigation it recommends is imposed, the proposed Acquisition would not have any significant adverse environmental impacts. SEA is issuing this Draft EA for public review and comment and will consider all comments it receives in preparing the Final EA. The Board will consider the entire environmental record, the Draft EA and Final EA, all public comments, and SEA’s final environmental mitigation recommendations in making its final decision on the proposed Acquisition.

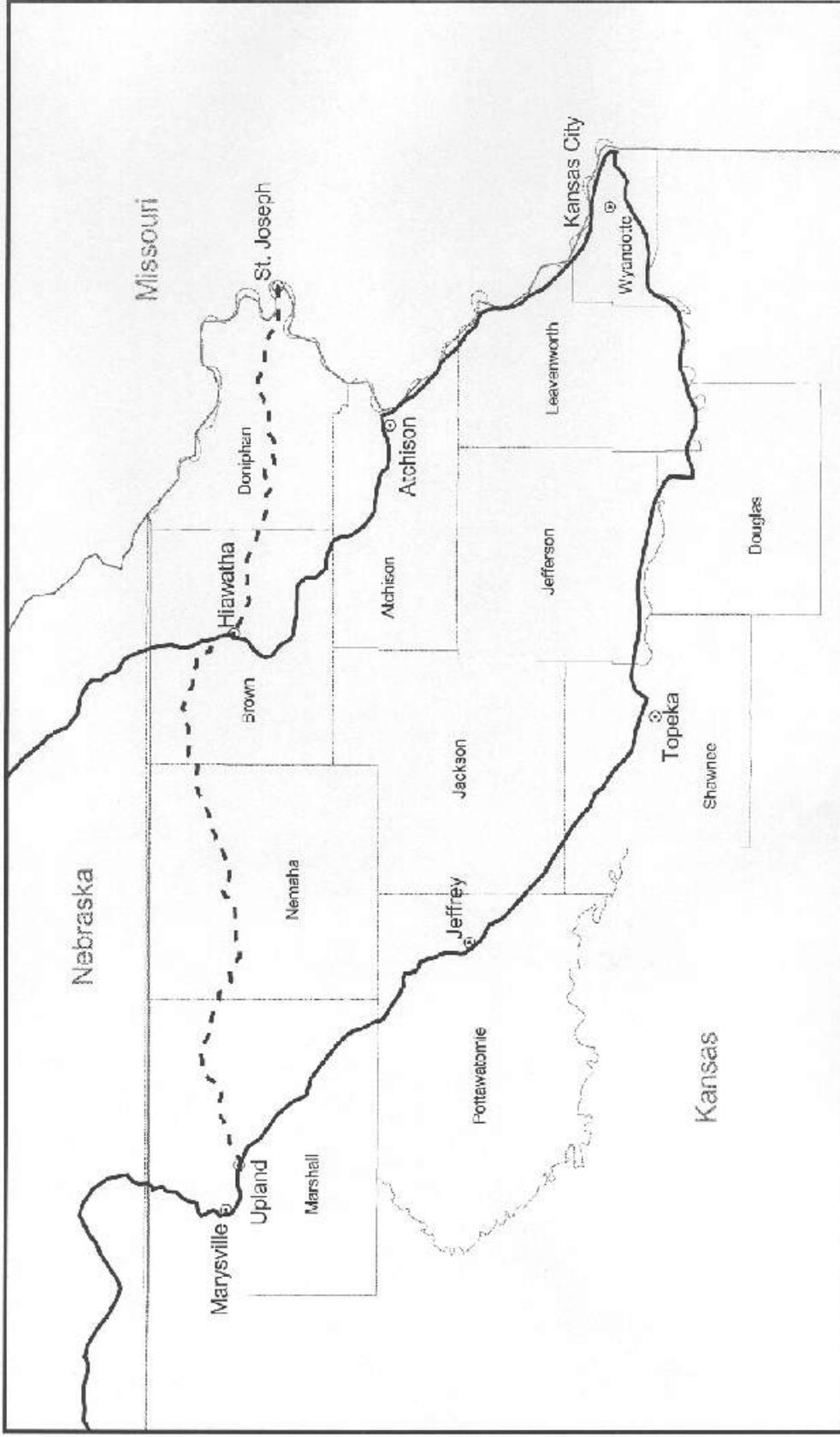
UP (the Petitioner) filed a Petition for Exemption (Petition) with the Board on August 25, 1998, seeking exemption under 49 U.S.C. 10502 from the prior approval requirements of 49 U.S.C. 11323-25 for the acquisition and operation of an approximate 107-mile long NEKM rail line from Mid-Michigan Railroad, Inc.<sup>1</sup> The Board will decide whether to grant or deny UP’s petition and will address potential environmental issues associated with the proposed Acquisition. It may impose any environmental conditions it deems appropriate.

The Board is required to issue an exemption if it decides that application of all or part of otherwise-applicable law (1) is not necessary to carry out the rail transportation policy of 49 U.S.C. 10101; and (2) either the transaction is of limited scope, or regulation is not necessary to protect shippers from an abuse of market power.

Figure ES-1, “Proposed NEKM Acquisition,” shows the rail line segment between Saint Joseph, Missouri and Upland, Kansas that UP seeks to acquire. SEA analyzed the potential environmental effects of changes in rail traffic that would occur if the Board grants the Petition. During its environmental review process, SEA considered a broad range of environmental issues that could affect communities on a regional and local level. This approach allowed SEA to identify and assess potential environmental impacts and, on a preliminary basis, to develop reasonable environmental mitigation.

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<sup>1</sup> Finance Docket No. 33652, *Union Pacific Railroad Company – Acquisition and Operation Exemption – Mid-Michigan Railroad, Inc. (Rail Line between Saint Joseph, Missouri and Upland, Kansas)*.



Draft Environmental Assessment

- ⊙ City
- UP Line
- - - NEKM Line
- County

Source: Geographic Data Technology

Proposed Acquisition  
 Union Pacific and Northeast Kansas & Missouri



**Figure ES-1**  
**Proposed NEKM Acquisition**

## **PURPOSE AND NEED FOR THE PROPOSED ACQUISITION**

UP states that the acquisition of the NEKM rail line would be an integral part of its Service Recovery program to add additional capacity to its Central Corridor. UP would use the NEKM rail line primarily to route westbound empty coal trains from the Kansas City, Kansas area to their destination in the Powder River Basin in Wyoming. The rerouting of the empty coal trains would relieve capacity constraints on UP's mainline track between Kansas City, Topeka and Upland, Kansas—thereby reducing train delay and improving freight delivery reliability and rail operations efficiency. UP also states that the proposed Acquisition would improve market access to shippers on the NEKM rail line.

## **DESCRIPTION OF THE PROPOSED ACTION**

The proposed Acquisition would allow UP to acquire the NEKM rail line between St. Joseph, Missouri and Upland, Kansas. NEKM currently operates approximately one train per day on its system, serving agricultural and other customers along its approximate 107-mile length. UP would use the NEKM rail line to reroute westbound empty coal trains, over the NEKM rail line between Hiawatha, Kansas and Upland, Kansas. These coal trains currently use two routes to move between Kansas City, Kansas and Gibbon, Nebraska, as follows:

- Approximately 5.7 empty coal trains per day move north from Kansas City, Kansas through Hiawatha, Kansas to Omaha, Nebraska. At Omaha, these trains head west to Gibbon, Nebraska.
- Approximately 9.3 empty coal trains per day move west from Kansas City, Kansas to Topeka, Kansas. At Topeka, these trains head north through Upland and Marysville, Kansas then on to Gibbon, Nebraska.

The rerouting of the empty coal trains would increase the train traffic by approximately 9.3 trains per day on UP's existing mainline between Kansas City, Kansas and Hiawatha, Kansas. Train traffic would increase by 15 trains per day between Hiawatha, Kansas and Upland, Kansas. There would be no change in train traffic on the NEKM rail line between St. Joseph, Missouri and Hiawatha, Kansas. Figure ES-2, "Estimated Rail Traffic Changes from the Proposed Acquisition," shows UP's estimate for changes in freight train traffic that would occur on rail line segments that would be affected by the proposed Acquisition.

## **THE BOARD'S ENVIRONMENTAL REVIEW PROCESS**

The Board is an independent Federal regulatory agency with jurisdiction over certain surface transportation matters, including railroad acquisitions and mergers. When it determines that a



transaction is consistent with the public interest, the Board is required by statute to approve and authorize the proposed transaction.

The Board's decision is a Federal action requiring environmental review under the National Environmental Policy Act (NEPA). As part of its environmental analysis, the Board considers potential beneficial, and potential adverse environmental effects. SEA is responsible for conducting the environmental review on behalf of the Board, and making final environmental mitigation recommendations to the Board.

In imposing environmental mitigation conditions, the Board has consistently focused on the potential environmental impacts that would result directly from Acquisition-related changes in activity levels on existing rail lines and at rail facilities. The Board's practice consistently has been to mitigate only those conditions that result directly from a proposed transaction. The Board typically does not require mitigation for pre-existing environmental conditions, such as effects associated with current railroad operations.

#### **SUMMARY OF ENVIRONMENTAL EFFECTS**

In its environmental review, SEA carefully assessed the extent and potential significance of adverse effects related to the proposed Acquisition. Based on its analysis, SEA developed a set of preliminary recommended mitigation measures that address potential adverse effects.

SEA believes that it has developed reasonable and practical preliminary environmental mitigation recommendations that would address potential adverse environmental effects associated with the proposed Acquisition. SEA's preliminary recommended mitigation falls within the scope of the Board's jurisdiction and is consistent with the Board's practice of mitigating only those environmental effects that directly result from the proposed action (for example, grade crossing safety impacts that result from increases in train traffic).

In its environmental review of the proposed Acquisition, SEA evaluated the following potential environmental impact areas:

- Freight Rail Operations Safety.
- Highway/Rail At-grade Crossing Safety.
- Highway/Rail At-grade Crossing Delay.
- Highway/Rail At-grade Crossing Emergency Vehicle Response.
- Energy.
- Air Quality.
- Noise.
- Environmental Justice.
- Cumulative Effects.

SEA also evaluated the construction of a proposed 820-foot rail line connection that is related to the proposed Acquisition. SEA reviewed this construction project for potential adverse environmental effects that may occur outside of railroad right-of-way.

In its environmental review, SEA determined that the proposed Acquisition would have positive effects on the environment. These benefits would occur on a regional basis, primarily through providing increased efficiency on existing routes. These potential benefits include reductions in fuel consumption, emissions, and freight rail accidents because of a reduction in train-miles traveled by trains that would use the shorter NEKM route.

In its evaluation of freight rail operations safety, SEA determined that overall accidents would decrease on the rail line segments affected by the proposed Acquisition; however the accident frequency on three rail line segments in Kansas (Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland) would exceed SEA's significance criteria because of increased freight train traffic on these rail line segments. SEA recommends mitigation to improve freight rail operation safety on these three rail line segments.

In its evaluation of highway/rail at-grade crossing safety, SEA determined that increased train traffic on the Hiawatha-Upland segment of the NEKM rail line could have a potential adverse effect on two highway/rail at-grade crossings (i.e., one in Sabetha, Kansas and one in Seneca, Kansas). SEA recommends mitigation to enhance safety at these highway/rail at-grade crossings.

In its evaluation of air quality, SEA determined that overall air emissions from changes in rail traffic on the 16 rail line segments affected by the proposed Acquisition would decrease; however, increases in nitrogen oxide (NO<sub>x</sub>) emissions in Atchison, Brown, Nemaha, and Marshall Counties in Kansas would exceed SEA's criteria of significance. SEA reviewed potential mitigation options to reduce Acquisition-related NO<sub>x</sub> emissions in these four counties and concluded that new locomotive emissions regulations, which will take effect in the year 2000, would mitigate these effects in Atchison, Brown and Marshall Counties. In Nemaha County, SEA determined that the new locomotive emissions regulations would achieve an approximate 50% reduction in Acquisition-related NO<sub>x</sub> emissions. SEA does not recommend further mitigation of air emissions in Nemaha County because: (1) additional Acquisition-related NO<sub>x</sub> emissions would be small in absolute terms compared to other potential sources of NO<sub>x</sub>; and (2) emissions would disperse because freight trains are mobile sources.

In its evaluation of noise, SEA determined that increased train traffic on the Hiawatha-Upland portion of the NEKM rail line could have a potential adverse effect on sensitive receptors in communities along the NEKM rail line. SEA estimates that the Acquisition-related changes in train traffic would result in adverse effects on approximately 648 noise-sensitive receptors. All but nine of these receptors are located in areas affected by train horn noise, which is a deliberate sound to promote safety at highway/rail at-grade crossings. SEA estimates that post-Acquisition train noise at all 648 sensitive receptors would exceed its criteria of significance for noise. SEA recommends mitigation to reduce the effects on noise-sensitive receptors on the Hiawatha-Upland rail line.

In evaluating other environmental issue areas, SEA determined that there would be no potential adverse impacts for the following issue areas:

- Highway/Rail At-grade Crossing Emergency Vehicle Response.
- Highway/Rail At-grade Crossing Delay.
- Energy.
- Regional Air Quality.
- Environmental Justice.
- Cumulative Effects.

SEA also determined that there would be no potential adverse impacts from the construction of the proposed rail line connection at Hiawatha, Kansas.

#### SEA's PRELIMINARY ENVIRONMENTAL MITIGATION RECOMMENDATIONS

Based on its independent analysis of all the information available at this time, SEA concludes that the proposed Acquisition would not significantly affect the quality of the human environment if the recommended mitigation measures set forth in this document are implemented. The preliminary mitigation recommendations are as follows:

##### Safety: Freight Rail Operations

**Condition 1.** UP shall comply with the requirements in the Federal Railroad Administration's (FRA) Proposed Rule for "gross ton-mile based" inspections (49 CFR Part 213.237, Docket No. RST-90-1) on the following rail line segments in Kansas:

- Kansas City-Atchison.
- Atchison-Hiawatha.
- Hiawatha-Upland.

FRA's Proposed Rule includes a provision that specifically requires railroads to conduct track inspections to detect rail flaws on a rail line segment at least once every 40 million gross tons per track mile or annually, whichever is more frequent. If FRA's Final Rule imposes a different inspection standard, then UP shall comply with the standard in the Final Rule.

##### Safety: Highway/Rail At-grade Crossings

**Condition 2.** UP shall upgrade the highway/rail at-grade crossing warning device at 6<sup>th</sup> Street in Sabetha, Kansas and 5<sup>th</sup> Street in Seneca, Kansas from crossbucks to flashing lights.

## Noise

**Condition 3.** UP shall consult with state and local officials to find suitable approaches for mitigating the adverse noise effects in the following communities on the Hiawatha-Upland rail line segment in Kansas:

- Hamlin
- Morrill
- Sabetha
- Oneida
- Seneca
- Baileyville
- Axtell
- Beattie
- Home

Mitigation for a specific community may include a combination of: (1) eliminating highway/rail at-grade crossings, (2) installing safety measures that meet future FRA requirements for no-horn quiet zones, or (3) other measures as UP and affected community may negotiate.

## Monitoring and Enforcement Condition

**Condition 4.** If there is a material change in the facts or circumstances upon which the Board relied in imposing specific environmental mitigation conditions in this Decision, and upon petition by any party who demonstrates such material changes, the Board may review the continuing applicability of its final mitigation, if warranted.

## PUBLIC PARTICIPATION AND AGENCY CONSULTATION

The Board's review of the proposed Acquisition is a Federal action requiring review of the potential environmental effects of the proposal. Under NEPA, agencies undertaking Federal actions must consult with other government agencies and involve the public in preparing environmental documents. As part of the environmental review process, SEA conducted notification activities to inform public agencies and the general public about the proposed Acquisition and to encourage broad public participation. SEA's efforts included the following: (1) mailing informational materials to pertinent public agencies and potentially affected communities; and (2) widely distributing copies of this Draft EA for public review and comment.

SEA's purpose in conducting public participation and agency consultation activities is to gain public input on the Draft EA and the environmental review process so that SEA can assess public concerns and issues and determine whether additional environmental analysis and mitigation are necessary.

*Executive Summary*

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SEA encourages the public to participate in the environmental review of the proposed Acquisition by commenting on the Draft EA during the 30-day comment period. Comments may be submitted to the address below. When submitting comments, please provide **one original and ten copies** to:

Office of the Secretary  
Case Control Unit  
STB Finance Docket No. 33652  
Surface Transportation Board  
1925 K Street, NW  
Washington, DC 20423-0001

The following information should appear in the lower left-hand corner of the envelope:

Attention: Harold McNulty  
Environmental Project Director  
Environmental Filing

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## CHAPTER 1 INTRODUCTION AND BACKGROUND

Chapter 1 describes the purpose of and need for the proposed Acquisition of an approximate 107-mile long rail line of the Northeast Kansas and Missouri Railroad (NEKM) between St. Joseph, Missouri and Upland, Kansas by the Union Pacific Railroad Company (UP). Chapter 1 also describes the environmental review process for the project and discusses the role of the Surface Transportation Board's (Board) Section of Environmental Analysis (SEA) in conducting the environmental review. Chapter 1 also describes the role of the public; Federal agencies; the petitioner; and other interested parties in the environmental review process.

### 1.1 PURPOSE AND NEED FOR THE PROPOSED ACQUISITION

On August 25, 1998, UP filed a Petition for Exemption with the Board seeking an exemption under 49 U.S.C. 10502 from the prior approval requirements of 49 U.S.C. 11323-25 for the acquisition and operation of the NEKM rail line segment from Mid-Michigan Railroad, Inc.<sup>2</sup> The Board is required to issue an exemption if it decides that application of all or part of otherwise-applicable law (1) is not necessary to carry out the rail transportation policy of 49 U.S.C. 10101; and (2) either the transaction is of limited scope, or regulation is not necessary to protect shippers from an abuse of market power.

UP has stated that the proposed Acquisition would be part of its Service Recovery program to add additional capacity to UP's Central Corridor and to provide service to shippers served by the NEKM rail line. The proposed Acquisition would allow UP to reroute westbound empty coal trains from Kansas City, Kansas to the Powder River Basin in Wyoming over the acquired rail line. The rerouting of these empty coal trains would relieve capacity constraints on a segment of UP's Marysville Subdivision between Kansas City, Topeka, and Upland, Kansas. The Kansas City-Topeka portion of UP's Marysville Subdivision is a critical link in UP's rail corridor between the Midwest and Los Angeles, California. UP has stated that the proposed Acquisition would improve its rail operation between the Midwest and Los Angeles.

UP stated that a number of benefits relate directly to the proposed Acquisition of the NEKM, including the following:

- Reduced train delay on UP's mainline between Kansas City, Topeka, and Upland, Kansas, as a result of diverting westbound empty coal trains over the NEKM line.
- Better utilization of freight cars, locomotives, and train crews to reduce operating costs, maintenance, and delays.

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<sup>2</sup> Finance Docket No. 33652, *Union Pacific Railroad Company – Acquisition and Operation Exemption – Mid-Michigan Railroad, Inc. (Rail Line between Saint Joseph, MO and Upland, Kansas)*.

- Reduced fuel consumption (and corresponding reductions in emissions) because the NEKM route is shorter than the current routes used by the empty coal trains.
- Improved market access opportunities for shippers along the NEKM line.

Figure 1-1, “Proposed NEKM Acquisition” is a map showing the rail line that UP proposes to acquire. See Chapter 2, “Project Description,” for a detailed discussion of the proposed action.

## 1.2 THE ENVIRONMENTAL ASSESSMENT PROCESS

### 1.2.1 Role of the Surface Transportation Board

The Board is a nonpartisan, decisionally independent adjudicatory body, which is organizationally housed within the U.S. Department of Transportation (DOT). The Board has jurisdiction over certain transportation matters such as rail rates; financial transactions, including railroad acquisitions and consolidations; rail constructions; and abandonment of rail service.<sup>3</sup> The Interstate Commerce Commission (ICC) Termination Act of 1995<sup>4</sup> established the Board to assume some of the regulatory functions that the ICC previously administered. The Act either eliminated or transferred other ICC regulatory functions to different DOT agencies.

The Board’s charge is to provide an efficient and effective forum for the resolution of disputes within its jurisdiction. In all of its decisions, the Board is committed to advancing the national transportation policy goals established by Congress.<sup>5</sup>

In 1920, Congress established a national policy favoring railroad consolidations in the interest of economy and efficiency. Congress reaffirmed its rail consolidation policy in subsequent amendments to the Interstate Commerce Act, and it requires the Board, as it required the ICC, to approve rail consolidation transactions that are in the public interest.<sup>6</sup> In determining the public interest, the Board’s well-established and court-approved practice is to balance the gains in operating efficiency and marketing capability realized through a particular railroad consolidation against any consequent reduction in competition.

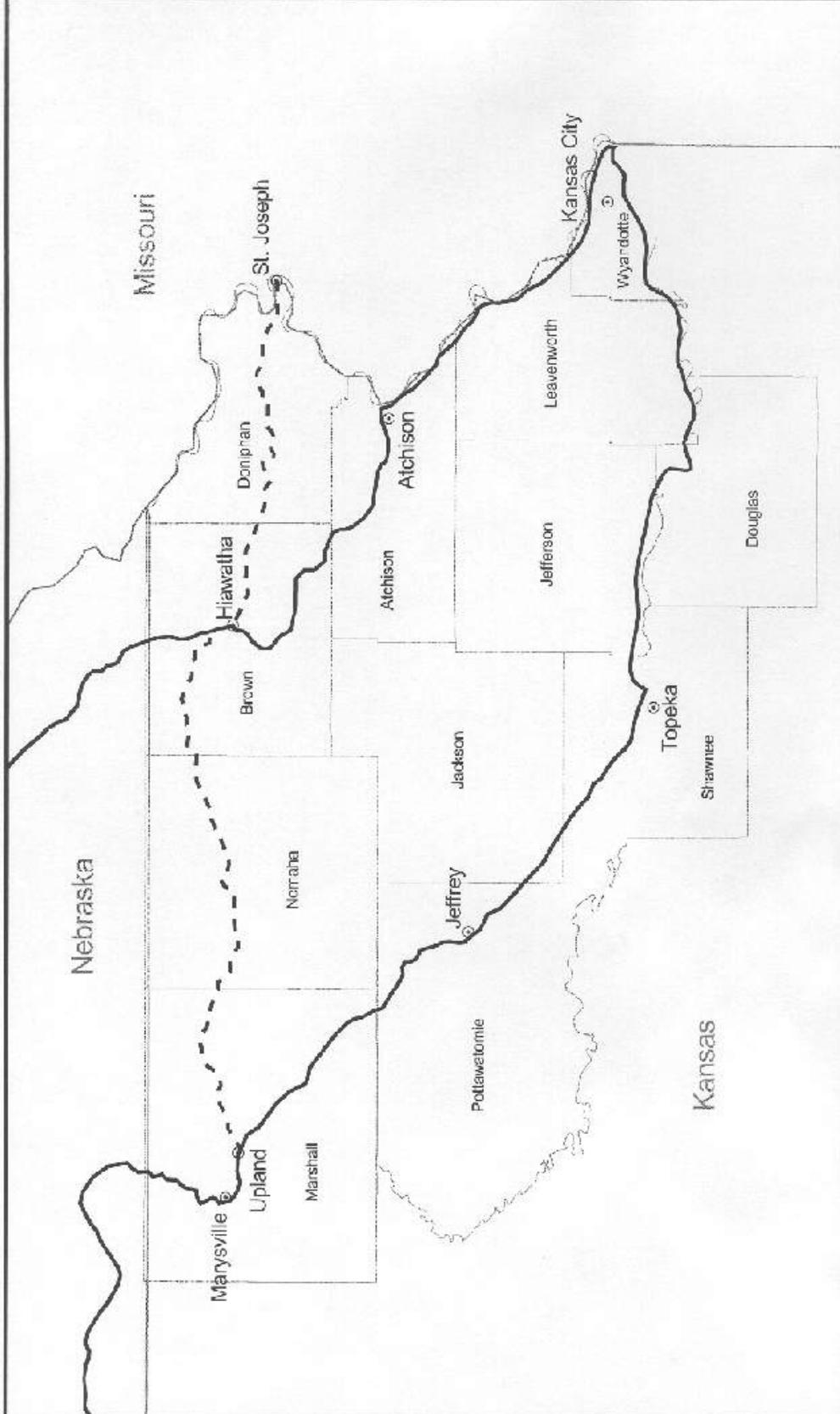
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<sup>3</sup> See 49 U.S.C. 10101 *et seq.*

<sup>4</sup> Pub. L. 104-88, 109 Stat. 803 (1995).

<sup>5</sup> See 49 U.S.C. 10101.

<sup>6</sup> See 49 U.S.C. 11324-25 (new), specifically 49 U.S.C. 11324(c).



Draft Environmental Assessment

Union Pacific and Northeast Kansas & Missouri Proposed Acquisition

① City  
 — UP Line  
 - - - NEKM Line  
 □ County

Source: Geographic Data Technology

**Figure 1-1**  
**Proposed NEKM Acquisition**

0 20 40 Miles

N

The Board licenses railroads as common carriers, requiring that railroads accept goods and materials for transport from all customers upon reasonable request. If a railroad simply wants to upgrade a portion of its system or improve service to certain shippers, it may do so without seeking the Board's permission. The Board, therefore, has no control over the level of service. It does not regulate the number of trains operating over a specific section of rail line or maintain control over general day-to-day operations of railroads. Railroads make decisions on an ongoing basis regarding which routes they will use in response to changes in market conditions, the economy, and shipper demands.

The Board considers the potential environmental effects of a transaction in its review of proposed railroad mergers and acquisitions. The Board can impose environmental conditions to offset or reduce the potential environmental impacts of the proposed action. In conducting its environmental review, the Board considers the requirements of the National Environmental Policy Act (NEPA); other related environmental laws and their implementing regulations; and the former ICC environmental regulations at 49 CFR 1105.7, which the Board has adopted. SEA is responsible for conducting the environmental review of the proposed Acquisition on behalf of the Board. The Board's environmental regulations govern SEA's environmental review process and outline SEA's procedures for preparing environmental documents.

In addition to the Environmental Report that UP submitted with its Petition, SEA requested that UP submit a Preliminary Draft Environmental Assessment (PDEA). SEA reviewed and verified all the information in UP's PDEA and prepared this Draft EA using information and analysis from the PDEA. After considering all the public comments received on this Draft EA, reviewing all other available environmental information, consulting with appropriate agencies and concerned parties and communities, and conducting additional environmental analysis (where appropriate), SEA will prepare a Final EA.

### **1.2.2 Agency Consultation**

Under NEPA, agencies undertaking Federal actions must consult with other government agencies and involve the public in preparing environmental documents. In conducting agency coordination and consultation, SEA complied with NEPA environmental review requirements and considered pertinent Federal statutes and executive orders. As with its public involvement effort, SEA conducted agency coordination and consultation activities to ensure that public agencies were notified about the proposed Acquisition and had adequate time to review and comment on the Draft EA.

### **1.2.3 Public Participation and Notification Activities**

As part of the environmental review process, SEA conducted public involvement activities to inform the public about the proposed Acquisition and encourage broad public involvement in the environmental review process. In preparing the Draft EA, SEA's public involvement efforts included distributing an October 1998 informational fact sheet to potentially affected communities prior to publishing the EA, notifying them of the intent to prepare an EA, notifying them of the availability of the Draft EA, and

providing instructions on how to submit comments. SEA's public involvement activities are intended to provide members of the public and interested parties with the opportunity to comment on the Draft EA, which identifies the potential environmental effects of the proposed Acquisition and includes SEA's preliminary mitigation recommendations.

#### **1.2.4 Role of the Petitioner**

UP is the Petitioner in the proposed Acquisition. In the environmental review process, UP has provided information on existing and proposed railroad operations and anticipated environmental effects. At SEA's request, UP also submitted a PDEA. If the Board grants UP's petition and imposes environmental conditions, UP would be responsible for implementing those conditions.

#### **1.2.5 Roles of Other Agencies**

The Board will exercise its authority with due regard for the jurisdiction and expertise of other Federal agencies. The following paragraphs briefly discuss the agencies that are typically most involved in Board proceedings. SEA will carefully consider their comments in preparing the Final EA and in making final recommendations to the Board.

##### **The Federal Railroad Administration (FRA)**

The Federal agency primarily responsible for railroad safety is FRA, an agency within the Department of Transportation (DOT). FRA has issued substantive safety regulations, most of which specifically address one of three major elements of the railroad system: the rolling equipment (such as locomotives and rail cars), the track and signal system over which railroads operate, and the rules for conducting rail operations. FRA regulations (49 CFR 200-240) include topics such as operating regulations and procedures; track safety standards and safe track speed; programs of instruction, testing, and monitoring of train and engine crews; hours of service for railroad personnel; accident reporting; licensing of locomotive engineers; drug and alcohol testing of employees; and inspection and testing of train cars, locomotives, signals, and trains. FRA generally subjects the railroads to liability for a civil penalty for violating FRA regulations.

##### **Council on Environmental Quality (CEQ)**

CEQ has developed regulations for implementing NEPA. CEQ also provides clarification and guidance on NEPA regulations and evaluates existing and proposed policies and activities of the Federal government involving environmental issues.

### **Environmental Protection Agency (EPA)**

EPA has broad oversight and implementing responsibility for many Federal environmental laws, including the Clean Air Act; Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; and Superfund Amendment and Reauthorization Act. EPA also provides guidance and advice in complying with appropriate Executive Orders, including Executive Order 12898 on Environmental Justice, Executive Order 11990 on Protection of Wetlands, and Executive Order 11988 on Floodplain Management. SEA will consider in the Final EA any EPA comments on the Draft EA.

### **U.S. Army Corps of Engineers (the Corps)**

The Corps is responsible for maintaining and operating certain navigation and flood control projects. In addition, under Section 404 of the Clean Water Act, the Corps is responsible for regulating the discharge of dredge or fill materials into the nation's waters, including wetlands. The Corps also regulates, under Sections 9 and 10 of the Rivers and Harbors Act of 1899, activities on navigable waters that could affect the course, location, and capacity of such waters.

### **U.S. Fish and Wildlife Service (FWS)**

FWS is the Federal agency with primary expertise for fish, wildlife, and natural resources issues. FWS also is responsible for implementing the Endangered Species Act and, through its regional offices, for consulting with other Federal agencies on potential impacts on threatened and endangered species.

### **Advisory Council on Historic Preservation (ACHP)**

The National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of their actions on historic and cultural resources. Under NHPA, the Board consults with appropriate State Historic Preservation Offices (SHPOs) and ACHP. SEA asked ACHP to review the discussion in the Draft EA of possible effects on historic and cultural resources. SEA will continue to consult with SHPOs and other appropriate parties to identify historic and cultural resources and determine whether they would be adversely affected by the proposed Acquisition and, if so, to develop appropriate mitigation measures.

### **Bureau of Indian Affairs (BIA)**

BIA administers and manages more than 56 million acres of land the Federal government holds in trust for Native Americans. BIA works with Native American tribes to protect and develop their lands and resources. SEA informed BIA and Native American tribes regarding potential impacts of the proposed Acquisition on their lands and cultural resources. SEA has provided copies of the Draft EA to BIA and potentially affected Native American tribes for their review and comment.

## Natural Resources Conservation Service (NRCS)

This agency, formerly the Soil Conservation Service, is responsible for protecting farmland, particularly those it classifies as prime, unique, or of state or local importance. NRCS also provides technical assistance to conservation districts, individuals, communities, watershed groups, tribal governments, and other agencies on reducing soil erosion and wetland loss.

### 1.2.6 How to Submit Comments

SEA encourages the public to participate in the environmental review of the proposed Acquisition by commenting on the Draft EA during the 30-day comment period. Comments may be submitted to the address below. When submitting comments, please provide **one original and ten copies** to:

Office of the Secretary  
Case Control Unit  
STB Finance Docket No. 33652  
Surface Transportation Board  
1925 K Street, NW  
Washington, DC 20423-0001

The following information should appear in the lower left-hand corner of the envelope:

Attention: Harold McNulty  
Environmental Project Director  
Environmental Filing

## 1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

UP has stated that the proposed Acquisition would result in train traffic increases on three rail line segments in Kansas that would exceed the Board's thresholds for environmental analysis. Specifically, rail traffic on UP's existing Kansas City-Atchison and Atchison-Hiawatha rail lines would increase by approximately 9.3 trains per day. Traffic would increase on a portion of the NEKM rail line (which UP proposes to acquire) between Hiawatha, Kansas and Upland, Kansas by approximately 15 trains per day. The portion of the NEKM rail line that UP would acquire between St. Joseph, Missouri and Hiawatha, Kansas would not experience train traffic increases. Table 1.3-1, "Pre- and Post-Acquisition Estimates for Rail Traffic and Gross Ton-miles on Affected Rail Line Segments," presents UP's estimates of rail traffic and annual gross ton-mile changes for all rail line segments that would experience Acquisition-related changes in rail traffic. UP's pre-Acquisition traffic figures for its own rail lines are based on actual operating data for October 1997 through September 1998. UP estimated

the pre-Acquisition NEKM rail traffic to be an average of one train per day.<sup>7</sup> Figure 1-2, “Estimated Traffic Changes From the Proposed Acquisition,” provides a regional overview of anticipated changes in train volumes between Kansas City, Kansas and Gibbon, Nebraska if the Board approves the proposed Acquisition.

Normally, the Board’s environmental review is limited to an assessment of anticipated environmental effects of the specific actions pending before the Board (i.e., the proposed Acquisition). An existing railroad can increase its level of operations without Board approval and without limitation. Thus, if UP had not filed a Petition for Exemption with the Board to acquire the NEKM rail line, UP could increase the number of trains operating on its existing Kansas City-Atchison and Atchison-Hiawatha rail line segments to any level it considered appropriate.

However, in this case, UP proposes to change rail traffic volumes on its Kansas City-Atchison and Atchison-Hiawatha rail line segments as a direct result of its proposed acquisition of the NEKM rail line. As shown in Figure 1-2, “Estimated Traffic Changes From the Proposed Acquisition,” the portion of the NEKM rail line between Hiawatha, Kansas and Upland, Kansas would provide UP with a more direct alternative route for empty coal trains operating between Kansas City, Kansas and Gibbon, Nebraska. Because the proposed Acquisition would directly affect rail traffic changes on the Kansas City-Atchison and Atchison-Hiawatha rail line segments, SEA concluded that its environmental analysis should include potential effects of operational changes on these rail two rail line segments.

As part of its environmental review of air quality and freight rail operations safety, SEA estimated potential regional effects of changes in train traffic levels that would result from the proposed Acquisition. In this case, the regional review includes all rail line segments between Kansas City, Kansas and Gibbon, Nebraska (see Figure 1-2, “Estimated Traffic Changes From the Proposed Acquisition”), that would experience Acquisition-related changes (i.e., increases and decreases) in rail traffic. SEA believes that the regional analysis of air quality and freight rail operations safety shows some important benefits of the proposed Acquisition, which SEA also considers when developing its preliminary recommended mitigation measures for any significant localized effects of the proposed operational changes.

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<sup>7</sup> The NEKM’s operation is seasonal and pre-Acquisition rail traffic may be less than one train per day for parts of the year. For ease of analysis, SEA used the one train per day figure provided by UP.

**TABLE 1.3-1  
PRE- AND POST-ACQUISITION ESTIMATES FOR RAIL TRAFFIC  
AND GROSS TON-MILES ON AFFECTED RAIL LINE SEGMENTS**

Route	Route Miles	Pre-Acquisition <sup>a</sup>			Post-Acquisition			Net Change		
		Trains per Day	Annual Gross Tons (millions)	Annual Gross Ton Miles (millions)	Trains per Day	Annual Gross Tons (millions)	Annual Gross Ton Miles (millions)	Trains per Day	Annual Gross Tons (millions)	Annual Gross Ton Miles (millions)
UP Marysville Subdivision										
Kansas City-to-Topeka	61.8	60.3	220.5	13,626.9	51	208.5	12,885.3	-9.3	-12.0	-741.6
Topeka-to-Jeffrey	34.0	42.8	164.9	5,606.6	33.5	152.9	5,198.6	-9.3	-12.0	-408.0
Jeffrey-to-Upland	40.4	44.3	160.0	6,464.0	35	148.0	5,979.2	-9.3	-12.0	-484.8
Upland-to-Marysville	7.7	45.9	211.4	1,627.8	51.6	218.8	1,684.4	5.7	7.4	56.6
Marysville-to-Gibbon	137.5	46.7	153.2	21,065.0	52.4	160.6	22,076.3	5.7	7.4	1,011.3
UP Falls City Subdivision										
Kansas City-to-Archison	44.6	14	17.4	776.0	23.3	29.4	1,311.2	9.3	12.0	535.2
Archison-to-Hiawatha	38.2	12.8	20.1	767.8	22.1	32.1	1,226.2	9.3	12.0	458.4
Hiawatha-to-Falls City	14.0	12.8	20.3	284.2	7.1	12.9	181.2	-5.7	-7.4	-103.0
Falls City-to-Union	63.2	12.4	8.0	503.6	6.7	0.6	40.8	-5.7	-7.4	-464.8
Union-to-Omaha	33.3	11.9	7.7	256.4	6.2	0.3	11.5	-5.7	-7.4	-244.9
UP Council Bluffs Subdivision										
Omaha-to-Valley	24.6	37.6	88.3	2,172.2	31.9	80.9	1,991.3	-5.7	-7.4	-180.9
Valley-to-Fremont	11.2	37.5	86.3	966.6	31.8	78.9	884.2	-5.7	-7.4	-82.4
Fremont-to-Grand Island	107.0	63.2	154.8	16,563.6	57.5	147.4	15,776.7	-5.7	-7.4	-786.9
Grand Island-to-Gibbon	28.9	64.8	162.0	4,681.8	59.1	154.6	4,469.3	-5.7	-7.4	-212.5
NEKM										
Hiawatha-to-Upland	64.7	1	0.2	12.9	16	19.6	1,265.2	15.0	19.4	1,252.2
St. Joseph-to-Hiawatha	42.6	1	0.1	4.3	1	0.1	4.3	0.0	0.0	0.0

<sup>a</sup> Pre-Acquisition rail traffic and gross ton-mile data for the period October 1997 through September 1998



## CHAPTER 2 PROJECT DESCRIPTION

Chapter 2 describes the proposed Acquisition and provides background on the existing UP operations that relate to the proposed Acquisition. This chapter also describes the scope of the Draft EA, the thresholds SEA used to determine the activities to analyze, and the locations and facilities that SEA evaluated in this Draft EA. In addition, this chapter describes related actions and alternatives to the proposed action.

### 2.1 THE PROPOSED ACTION

#### 2.1.1 Existing NEKM System

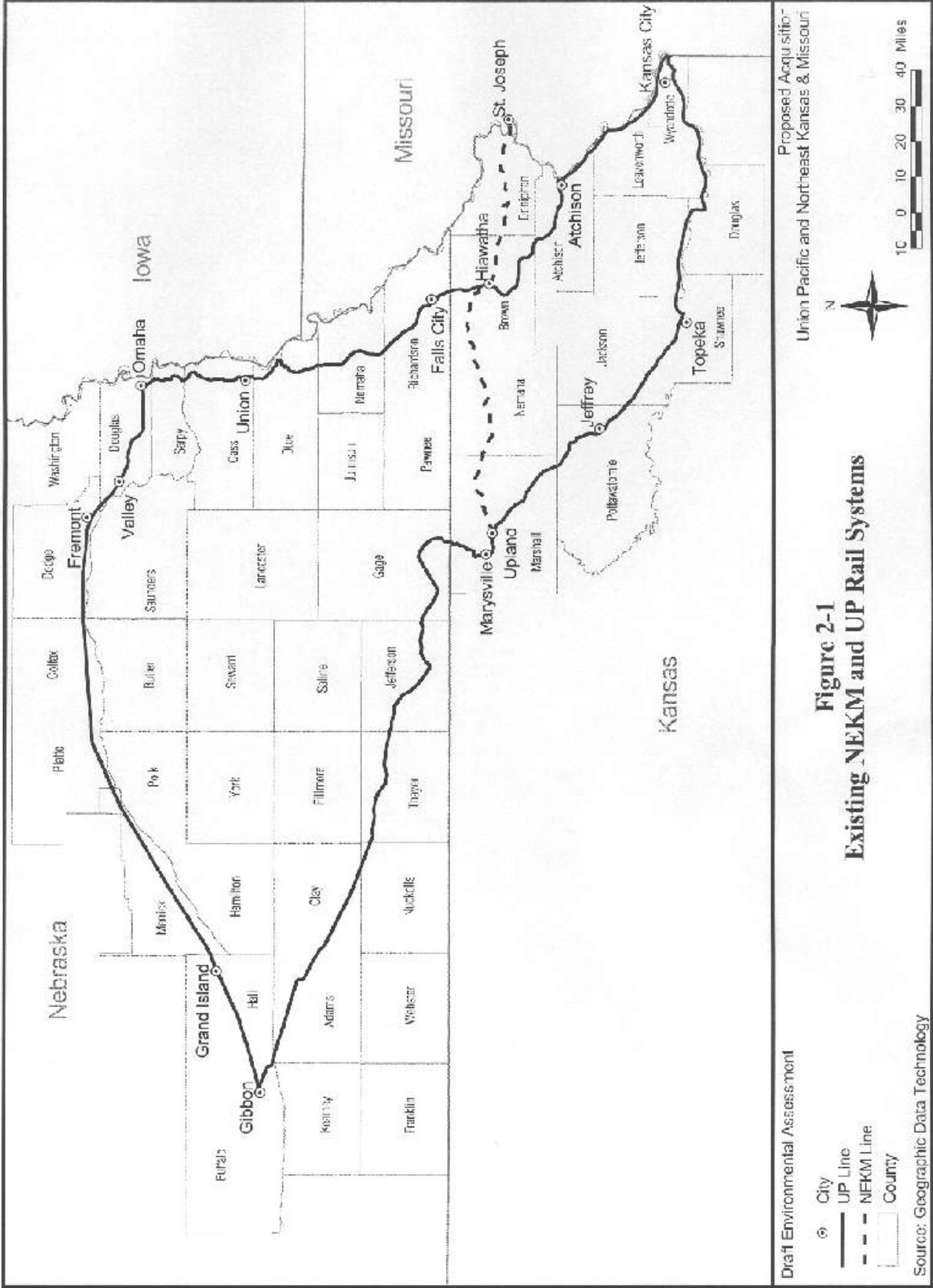
The NEKM rail line that UP proposes to acquire operates between St. Joseph, Missouri and Upland, Kansas, a distance of approximately 107 miles. The NEKM rail line traverses the counties of Doniphan, Brown, Nemaha, and Marshall in the State of Kansas and Buchanan County in the State of Missouri. NEKM also has trackage rights on an existing UP rail line segment from Upland, Kansas to Marysville, Kansas, a distance of approximately 7 miles in Marshall County, Kansas. NEKM currently operates approximately one local train per day between St. Joseph, Missouri and Marysville, Kansas<sup>8</sup>, providing a means for local shippers of agricultural products to interchange with UP rail lines at Hiawatha and Marysville, Kansas and St. Joseph, Missouri. NEKM's local traffic is seasonal in nature—most of the freight activity occurs in the early summer and late fall harvest periods. The NEKM train is limited to a maximum speed of 25 miles per hour on its mainline track. Figure 2-1, "Existing UP and NEKM Rail Systems," shows the location of the NEKM rail line.

#### 2.1.2 Existing UP System

UP currently operates more than 36,000 miles of rail lines in 23 states, including about 2,618 miles of rail lines in Kansas. Approximately 15 empty coal trains leave Kansas City, Kansas each day toward the Powder River Basin in Wyoming. UP currently routes approximately 9.3 of these empty coal trains over its existing mainline track that runs west from Kansas City, Kansas through Topeka, Kansas and then north through Marysville, Kansas to Gibbon, Nebraska. (See Figure 2-1, "Existing UP and NEKM Rail Systems") This route covers a distance of about 281 miles between Kansas City, Kansas and Gibbon, Nebraska. The other approximate 5.7 empty coal trains per day use UP's existing mainline that runs from Kansas City, Kansas north to Omaha, Nebraska. From Omaha, Nebraska, these trains continue west to Gibbon, Nebraska. The northern route between Kansas City, Omaha and Gibbon, Nebraska covers a distance of approximately 365 miles.

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<sup>8</sup> The NEKM local train makes a round trip between St. Joseph, Missouri and Hiawatha, Kansas every other day; the following day, the train makes a round trip between Marysville, Kansas and Hiawatha, Kansas.



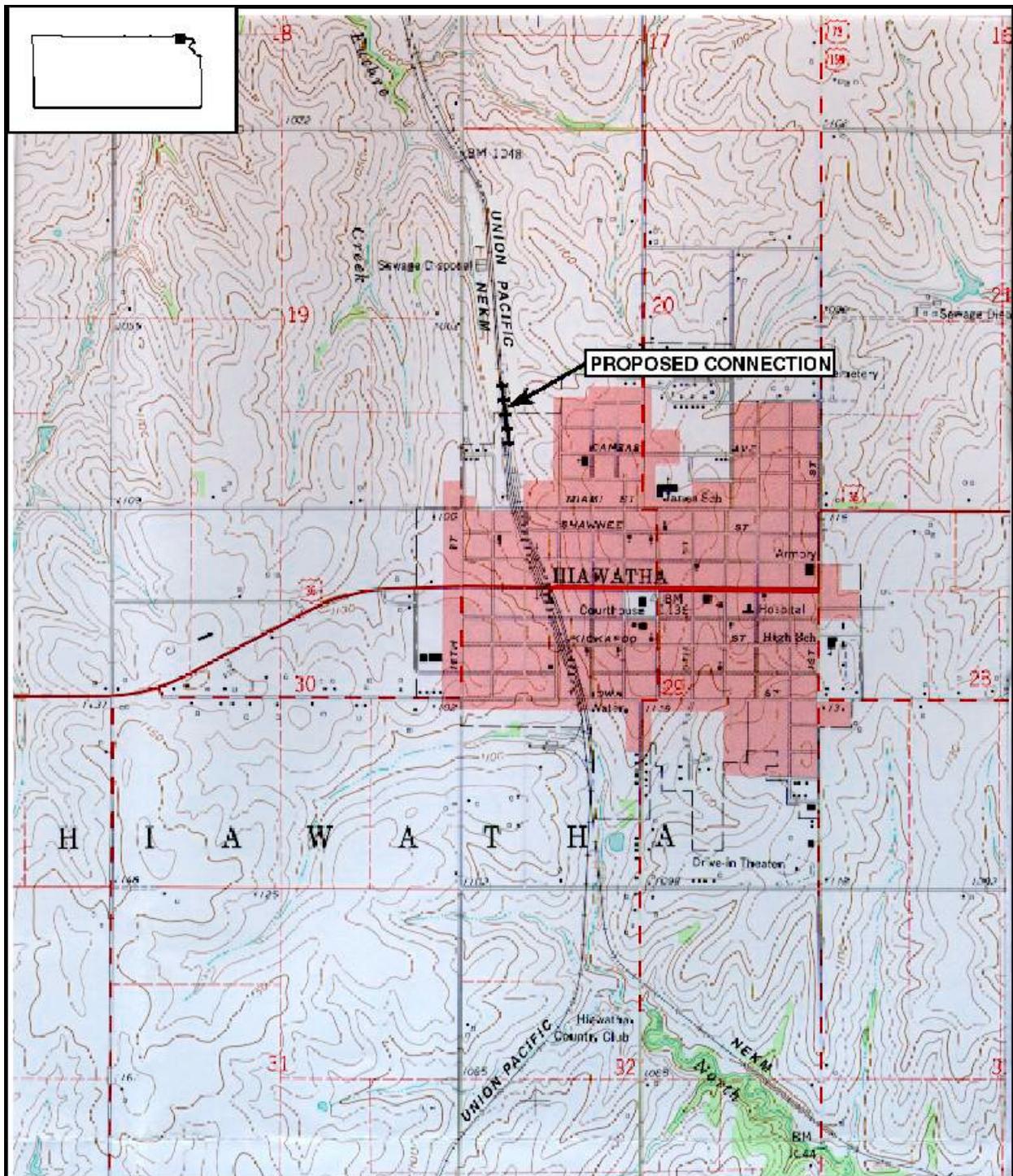
### 2.1.3 Combined UP/NEKM System

UP has stated that the proposed Acquisition would be part of its Service Recovery program to add additional capacity to UP's Central Corridor and to provide service to shippers served by the NEKM rail line. The proposed Acquisition would allow UP to reroute westbound empty coal trains between Kansas City, Kansas and Gibbon, Nebraska over part of the acquired NEKM rail line between Hiawatha, Kansas and Upland, Kansas. The rerouting of these empty coal trains would relieve capacity constraints on UP's mainline between Kansas City, Topeka, and Upland, Kansas. The Kansas City-Topeka rail line segment is a critical link in UP's rail corridor between the Midwest and Los Angeles, California. UP has stated that the proposed Acquisition would improve its rail operation between the Midwest and Los Angeles, California.

The rerouting of the westbound empty coal trains would increase the train traffic by approximately 9.3 trains per day on the existing UP mainline between Kansas City, Kansas and Hiawatha, Kansas. Train traffic would increase by approximately 15 trains per day between Hiawatha, Kansas and Upland, Kansas. Figure 1-2, "Estimated Traffic Changes From the Proposed Acquisition," shows the Acquisition-related change in estimated train traffic for each affected rail line segment between Kansas City, Kansas and Gibbon, Nebraska. The route between Kansas City, Kansas and Gibbon, Nebraska via the NEKM rail line covers a distance of about 293 miles. The route to Gibbon, Nebraska over the NEKM rail line would be about 12 miles longer than UP's current route via Topeka, Kansas and about 71 miles shorter than UP's current route via Omaha, Nebraska.

UP plans to upgrade portions of the Hiawatha-Upland segment of the NEKM rail line to Class III track, which would allow trains to travel over the upgraded portions at speeds up to 40 miles per hour (versus the current maximum speed of 25 miles per hour). The upgrade work would consist of track, wood tie, and anchor replacement plus the addition of ballast along the upgraded rail line. UP also plans to evaluate and, as necessary, rebuild public and private highway/rail at-grade crossings along the Hiawatha-Upland rail line segment. The improvements at these highway/rail at-grade crossings would not include modification of existing crossing protection devices. UP does not plan to upgrade the portion of the NEKM rail line between St. Joseph, Missouri and Hiawatha, Kansas.

UP proposes to construct a connection between the existing UP mainline track and the NEKM mainline track in Hiawatha, Kansas. The proposed connection would begin approximately 900 feet north of Miami Street in Hiawatha. UP would construct the approximate 820-foot long connection entirely on existing railroad right-of-way. (See Figure 2-2, "Proposed Rail Line Connection at Hiawatha, Kansas—Area Map.") Section 3.9, "Construction Projects," presents a discussion of potential environmental effects of the proposed connection.



Draft Environmental Assessment

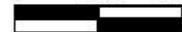
Proposed Acquisition Union Pacific and  
Northeast Kansas & Missouri

+++++ Proposed Connection

**Figure 2-2**  
**Proposed Rail Line Connection at**  
**Hiawatha, Kansas -**  
**Area Map**



0 1000 2000 Feet



SOURCE: USGS 7.5 Minute Topographic Map, HIAWATHA, KANSAS Quadrangle, 1961

## 2.2 ALTERNATIVES TO THE PROPOSED ACTION

If the proposed Acquisition is not completed, UP would continue to route its empty westbound coal trains via the Kansas City-Topeka-Gibbon corridor and the Kansas City-Omaha-Gibbon corridors. The total miles that trains would travel via the current routes would be greater than the total miles via the NEKM route and the benefits associated with a reduction in total train-miles (i.e., fuel consumption, emissions, and freight rail operations safety benefits) would not occur.

In addition, UP would have to upgrade its rail line between Kansas City and Marysville, Kansas to relieve current capacity constraints and to accommodate future growth in train volume. This would involve the construction of a second mainline track between Topeka, Kansas and Marysville, Kansas, and expansion of UP's rail yard in Topeka, Kansas.

## 2.3 THRESHOLDS FOR ENVIRONMENTAL ANALYSIS

UP has stated that the proposed Acquisition would modify existing rail operations and cause changes to existing rail activities. To conduct its environmental review, SEA evaluated changes in the following categories of railroad activities that would result from the proposed Acquisition:

- Increases and decreases in rail traffic on rail line segments.
- Construction of new rail facilities, including rail line connections.

UP stated that the proposed Acquisition would not result in changes to other railroad operations, such as rail yard activity, or abandonments of any existing rail lines. SEA used thresholds to identify the changes in rail activities that have the potential to cause environmental effects and thus require SEA's environmental review. The Board's environmental rules at 49 CFR 1105.7(e) provide thresholds to identify the activities that require review for potential noise and air quality effects. For other issue areas, SEA generally used an increase of eight trains per day or a 100 percent increase in annual gross ton-miles. Where appropriate, SEA developed additional thresholds to guide its environmental review.<sup>9</sup>

Table 2.3-1, "Board's Thresholds for Environmental Analysis," lists all the thresholds SEA used in this Draft EA.

Based on information provided by UP, the following rail line segments would exceed the Board's thresholds for environmental analysis:

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<sup>9</sup> In recent railroad mergers and acquisitions, SEA developed reasonable thresholds for its evaluation of environmental effects on resources other than noise and air quality. See Final Environmental Impact Statement, pp. 2-1 through 2-6 (May 1998), *CSX Corporation and CSX Transportation, Inc., Norfolk Southern Corporation and Norfolk Southern Railway Company—Control and Operating Leases / Agreements—Conrail Inc. and Consolidated Rail Corporation*, STB Finance Docket No. 33388.

- Kansas City, Kansas to Atchison, Kansas, where UP estimates that rail traffic would increase by approximately 9.3 trains per day.
- Atchison, Kansas to Hiawatha, Kansas, where UP estimates that rail traffic would increase by approximately 9.3 trains per day.
- Hiawatha, Kansas to Upland, Kansas, where UP estimates that rail traffic would increase by approximately 15 trains per day.

UP also proposes to construct a connection between the existing UP and NEKM rail lines in Hiawatha, Kansas. The proposed connection would allow northbound empty coal trains to be rerouted west over the NEKM rail line to Upland, Kansas.

**TABLE 2.3-1  
BOARD'S THRESHOLDS FOR ENVIRONMENTAL ANALYSIS**

Environmental Impact Category	Activities Evaluated for Potential Environmental Effects	
	Rail Line Segments	Constructions
Safety		
Freight Rail Operations Safety	Rail line segments with an average increase of eight or more freight trains per day.	N/A <sup>a</sup>
Highway/Rail At-grade Crossing Safety	All highway/rail at-grade crossings on rail line segments with an average increase of eight or more trains per day.	Highway/rail at-grade crossings created by proposed constructions, on rail segments with an average increase of eight or more trains per day.
Traffic and Transportation		
Highway/Rail At-grade Crossing Delay	Highway/rail at-grade crossings on rail line segments with an average increase of eight or more trains per day <u>and</u> with average daily traffic (ADT) of 5,000 vehicles or greater.	Highway/rail at-grade crossings created by proposed constructions on rail line segments with an average increase of eight or more trains per day.
Emergency Vehicle Response	Rail line segments with an average increase of eight or more trains per day <u>and</u> when communities provide comment about potential local impacts.	N/A <sup>a</sup>

**TABLE 2.3-1  
BOARD'S THRESHOLDS FOR ENVIRONMENTAL ANALYSIS**

Environmental Impact Category	Activities Evaluated for Potential Environmental Effects	
	Rail Line Segments	Constructions
Energy		
	Analysis of change in fuel consumption for all Acquisition-affected rail lines and highway/rail at-grade crossings with ADT of 5,000 vehicles or greater.	N/A <sup>a</sup>
Noise		
	Rail line segments with an increase of eight or more trains per day <u>or</u> at least a 100% increase in rail traffic (measured in annual gross ton-miles).	All constructions.
Air Quality		
Attainment Areas	Rail line segments with an increase of eight or more trains per day <u>or</u> at least a 100% increase in rail traffic (measured in annual gross ton-miles).	All constructions.
Environmental Justice		
	Rail line segments with an increase of eight or more trains per day <u>or</u> at least a 100% increase in rail traffic (measured in annual gross ton-miles).	All constructions.

<sup>a</sup> N/A = Not Applicable.

## 2.4 SCOPE OF ENVIRONMENTAL REVIEW

SEA evaluated the environmental effects of the proposed Acquisition for the following issue areas:

- Safety, including freight rail operations and highway/rail at-grade crossings.
- Highway/rail at-grade crossing vehicle delay and emergency vehicle response time.
- Energy.
- Air quality.
- Noise.
- Environmental justice.

- Cumulative effects.

SEA also evaluated the construction of a proposed rail line connection at Hiawatha, Kansas for potential effects outside of the railroad right-of-way.

## CHAPTER 3 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Chapter 3 presents SEA's evaluation of the potential environmental operational effects of the proposed Acquisition. SEA used information provided by UP to identify projected changes in rail traffic on rail line segments that could result in potential environmental effects. In its environmental rules at 49 Code of Federal Regulations (CFR) 1105.7(e) and during environmental review of previous railroad mergers and acquisitions, the Board has identified thresholds of railroad activity that warrant environmental review. (See Chapter 2, "Project Description," for a description of the Board's thresholds for environmental analysis and a description of the activities meeting the Board's thresholds.) SEA used these thresholds to screen proposed increases in rail activities and identify the specific increases SEA evaluated in this Draft EA.

For its evaluation of operational changes, SEA analyzed environmental effects for each of the following environmental issue areas:

- Safety, including freight rail operations and safety at highway/rail at-grade crossings.
- Highway/rail at-grade crossings, including vehicle delay and emergency vehicle response delay.
- Energy.
- Air Quality, including operational changes on rail line segments and vehicle delay at highway/rail at-grade crossings.
- Noise.
- Environmental Justice.

For each environmental issue area, SEA presents:

- Summary of Issue.
- SEA's Evaluation Approach.
- Board Thresholds for Analysis, where appropriate.
- Methods.
- Criteria of Significance.
- Existing Conditions.
- Analysis Results.
- SEA's Conclusions.

To conduct its evaluation of the potential environmental effects of the proposed Acquisition, SEA used operating information provided by UP and considered the effect the proposed operational changes would have on each of these environmental issue areas. For each issue area, SEA used analytical methods developed in previous cases, modified where appropriate to address specific conditions of this case.

SEA did not evaluate the following issue areas because the proposed Acquisition would not affect these issue areas:

- Rail line abandonment.
- Operational changes at rail yards, intermodal facilities, or other railroad facilities.
- Freight diversion to or from other modes of transportation.
- Transportation of recyclable commodities, energy resources, and ozone depleting materials.
- Transportation of hazardous materials.
- Effects on navigation from changes in rail operation over movable bridges.

### 3.1 FREIGHT RAIL OPERATIONS SAFETY

SEA evaluated how the proposed Acquisition would affect freight rail operations safety. UP provided SEA with estimates of rail traffic changes that would occur from the proposed Acquisition. The number of daily freight trains would increase on five rail line segments affected by the proposed Acquisition. Three of these rail line segments would experience increases of more than eight trains per day. Ten rail line segments would experience decreases in daily freight train levels and one rail line segment would experience no change in daily freight train activity. An increase in freight train traffic could affect safety in two ways. First, as the number of trains increases, the number of train accidents could increase. SEA measured the potential change in accidents by calculating:

- The potential change in accident frequencies on individual rail line segments.
- The potential overall change in the accident frequency on all rail line segments affected by the proposed Acquisition.

For this evaluation, SEA defined freight train accidents to include freight train collisions with other trains and train derailments. SEA addresses reportable train-vehicle accidents in Section 3.2, “Highway/Rail At-grade Crossing Safety.”

#### 3.1.1 Freight Rail Operations Safety: Individual Rail Line Segment Analysis

SEA studied the change in the likelihood of two types of freight train accidents on a mainline: (1) collision between two trains, and (2) derailment of cars in a train. In general, SEA assumed that the number of accidents that could occur correlated to the number of freight trains that travel on a rail line. In other words, if the number of trains using a rail line increased, then the chance of a collision or derailment also increased. However, other non-traffic factors such as train speed, track conditions, and weather conditions also contribute to the risk of freight train accidents.

## SEA's Evaluation Approach

To conduct its evaluation, SEA considered the safety risks resulting from changes in freight rail operations on three affected rail line segments in Kansas: (1) Kansas City-Atchison; (2) Atchison-Hiawatha; and (3) Hiawatha-Upland. SEA used analytical methods from past cases to estimate potential effects on freight rail operations safety for individual rail line segments.

## Board Thresholds for Analysis

For each rail line segment that would exceed the Board's threshold for environmental analysis of an increase of eight freight trains per day, SEA analyzed the effect of the increase on the predicted number of freight train accidents that could occur annually. Based on Applicant's plan for changes in freight rail traffic following the proposed Acquisition, three rail line segments would experience an increase of eight or more trains per day. The Board uses the overall change in the number of trains per day rather than the change in gross ton-miles because the frequency of trains primarily influences the risk of accidents rather than the tonnage of freight.

## Methods

SEA calculated the freight accident rate before and after the proposed Acquisition for rail line segments that would exceed the Board's threshold increase of eight trains per day. To do this, SEA calculated an accident rate for each of these rail line segments, which consisted of the sum of the derailment rate and the collision rate. SEA analyzed the following two categories of accidents:

- Derailments (based on segment train-miles and car-miles).
- Collisions and other accidents (based on segment train-miles and car-miles).

For each of these accident categories, SEA calculated the train accident frequency using methods developed by the Interindustry Rail Safety Task Force (IIRSTF).<sup>10</sup> The IIRSTF includes the Association of American Railroads, the Chemical Manufacturers' Association, and the Railway Progress Institute. The cause of an accident can involve either a car or the entire train. For example, faulty brakes or a broken wheel are "car causes," whereas excessive speed or radio communication errors are "train causes." Accidents resulting from car causes are generally expressed in terms of accidents per billion car-miles, and the train-caused accidents are expressed in terms of accidents per million train-miles.

For a particular type of accident on a certain class of track, the accident rate from car causes is equal to the total accident rate per billion car-miles multiplied by the percentage of accidents attributable to car causes for that track class. Similarly, the accident rate from train causes is equal to the total accident

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<sup>10</sup> Risk Assessment for the Transportation of Hazardous Materials by Rail (Reference Manual) - Arthur D. Little, Inc.

rate per million train-miles multiplied by the percentage of accidents attributable to train causes for that track class. SEA used these historical accident rates to calculate pre- and post-Acquisition accident frequencies for the affected rail line segments.

### Criteria of Significance

SEA developed a criterion of significance for rail line segment freight accidents based on recent historical accident data for UP. SEA determined that Acquisition-related increases in rail activity could potentially create adverse safety effects if the post-Acquisition accident rate was more frequent than one accident every 150 years per track-mile; in which case SEA considered mitigation measures for those safety effects. SEA based this criterion of significance on UP's accident data for 1995, 1996, and 1997. In 1995, 266 freight train accidents occurred on UP's mainline rail system. SEA determined that this is equivalent to one accident every 165 years per track-mile. Similarly, 277 mainline freight train accidents occurred on UP's rail system in 1996 (equivalent to one accident every 152 years per track-mile), and 171 mainline freight train accidents occurred on UP's rail system in 1997 (equivalent to one accident every 235 years per track-mile). Based on this three year period, SEA used a conservative accident rate of one accident every 150 years per track-mile as the significance criterion that would trigger mitigation analysis.

### Existing Conditions

The NEKM currently operates about one train per day on its existing rail system between Hiawatha, Kansas and Upland, Kansas. Based on the type of track class and historical freight train accident rates for the NEKM, SEA calculated the pre-Acquisition accident interval to be one accident every 1,218 years per track-mile for the rail line segment between Hiawatha and Upland.

UP operates about 14 trains per day on the Kansas City-Atchison rail line segment and approximately 12.8 trains per day on the Atchison-Hiawatha rail line segment. Based on UP's track class and historical freight train accident rates, SEA determined the pre-Acquisition accident interval to be one accident every 152 years per track-mile on the Kansas City-Atchison rail line segment and one accident every 164 years per track-mile on the Atchison-Hiawatha rail line segment.

### Analysis Results

Because of the variation in segment lengths, SEA reported the results of the mainline freight accident analysis by track-mile. SEA normalized the results per track-mile to allow comparison among segments.

SEA presented the results of the mainline freight accident analysis in terms of accident intervals, which is the number of years between accidents per track-mile. For example, a predicted accident interval of 150 years means that one accident per track-mile would occur every 150 years.

Table 3.1-1, “Mainline Freight Accident Analysis,” shows the affected rail line segments and the change in the predicted accident intervals because of the proposed Acquisition. SEA concluded that the overall accident frequency depends mainly on number of trains per day; however, other factors such as track class and train speed also contribute to the overall risk of freight accidents. For the three rail line segments analyzed, SEA predicted the accident interval per track-mile would increase because of the proposed Acquisition. SEA determined that the Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland rail line segments would meet the criterion of significance of one accident every 150 years per track-mile—the post-Acquisition frequency of accidents on these rail line segments would increase to one accident every 86, 90, and 35 years, respectively.

**TABLE 3.1-1  
MAINLINE FREIGHT ACCIDENT ANALYSIS**

<b>Segment Origin</b>	<b>Segment Destination</b>	<b>Segment Miles</b>	<b>Pre-Acquisition Accident Interval Per Track-Mile (Years)</b>	<b>Post-Acquisition Accident Interval Per Track-Mile (Years)</b>
Kansas City, KS	Atchison, KS	44.6	152	86
Atchison, KS	Hiawatha, KS	38.2	164	90
Hiawatha, KS	Upland, KS	64.7	1,218	35

#### SEA’s Conclusions on Individual Rail Segment Operations Safety

SEA concluded that the post-Acquisition accident frequency on the three affected rail line segments would exceed the criterion of significance for individual rail line segment freight accidents; therefore, SEA proposes preliminary mitigation measures to reduce the risk of accidents on these rail line segments.

SEA proposes the following mitigation measure to reduce the risk of freight train accidents on the Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland rail line segments:

- Increase the frequency of inspections of the rail line segments for internal rail flaws. The inspection intervals would be based on FRA’s Final Rule for gross ton-mile based inspections or an annual inspection, whichever is more frequent.<sup>11</sup>

<sup>11</sup> 49 CFR Part 213.237, Docket No. RST-90-1.

### 3.1.2 Freight Rail Operations Safety: Regional Analysis

SEA evaluated whether overall changes in rail activity on the 16 rail line segments affected by the proposed Acquisition would increase the risk of a freight rail accident.

#### SEA's Evaluation Approach

To conduct its evaluation, SEA considered the safety risks from changes in freight rail operations because of the proposed Acquisition. SEA used analytical methods from past cases to estimate potential effects on freight rail operations safety.

#### Board Thresholds for Analysis

For the regional analysis, SEA considered changes in rail activity over all rail line segments affected by the proposed Acquisition.

#### Methods

The FRA has primary responsibility for the enforcement of railroad safety regulations. Whenever a collision, derailment, or other accident occurs, FRA regulations require a railroad to report the incident to FRA if the property or personal injury damages from the incident exceed \$6,500 (1997 FRA reporting threshold).<sup>12</sup> In addition, a railroad must report all train-vehicle accidents to FRA, regardless of the severity. FRA maintains databases with details about the types and locations of accidents reported.

SEA analyzed potential freight rail operations safety issues using data from UP, FRA, Kansas Department of Transportation, and Association of American Railroads. SEA supplemented the data with information about UP's anticipated changes in rail operations.

The general approach that SEA used to evaluate the potential safety risks of the estimated increases in freight train traffic is as follows:

- SEA obtained system-wide accident information for train derailments and collisions between trains, expressed in freight train accidents per million train-miles, from UP.
- SEA applied the system-wide accident rate to UP's estimated freight train activity to predict a post-Acquisition accident frequency.

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<sup>12</sup> 49 CFR 225, Railroad Accidents/Incidents: Reports Classification, and Investigation.

SEA used a weighted average of the individual UP and NEKM historical accident rates from 1995 through 1997. To calculate the average, SEA obtained the total number of accidents for UP and NEKM during the 3-year period and the total number of train-miles traveled by UP and NEKM during the same period.<sup>13</sup> SEA averaged the total number of accidents over the total number of train-miles for UP and NEKM. SEA then applied the system-wide accident rate to calculate the number of accidents that could occur before the proposed Acquisition and after the proposed Acquisition, based on estimated train activity provided by UP.

### Existing Conditions

Both UP and NEKM keep records of the number of accidents that occur per mile of train travel (i.e., train-mile). A train-mile is the movement of a train for a distance of 1 mile. From 1995 through 1997, UP's mainline accident rate declined from 1.72 accidents per million train-miles (i.e., accidents meeting FRA reporting thresholds) to 1.14 accidents per million train-miles. There were no accidents reported for NEKM in 1995 and 1996, and one accident reported in 1997. In 1997, the calculated accident rate for NEKM was 132.89 accidents per million train-miles, but since this accident rate was based on only one accident, the calculated accident rate overstates the actual accident pattern. Table 3.1-2, "Accident Rates and Train-miles for UP and NEKM from 1995 Through 1997," shows the annual number of train-miles, accident rates, and total annual accidents for UP and NEKM for 1995 through 1997.

**TABLE 3.1-2  
ACCIDENT RATES AND TRAIN-MILES FOR UP AND NEKM  
FOR 1995 THROUGH 1997**

Year	UP			NEKM		
	Train-miles (Millions)	Mainline Accidents per Million Train-miles <sup>a</sup>	Total Accidents	Train-miles (Millions)	Accidents per Million Train-miles	Total Accidents
1995	154.29	1.72	266	0.021	0.00	0
1996	159.20	1.74	277	0.014	0.00	0
1997	149.92	1.14	171	0.008	132.89	1

<sup>a</sup> Excludes accidents at rail yards, intermodal facilities, rail line spurs, and highway/rail at-grade crossings.

<sup>13</sup> SEA used mainline accident statistics, excluding rail yards, intermodal facilities, and rail spurs, for derailments and collisions between trains for this analysis. SEA did not include train-vehicle accidents at highway/rail at-grade crossings in its calculation of a system-wide accident rate.

**Analysis Results**

SEA estimated an average annual accident rate for the combined UP/NEKM rail system by analyzing the number of accidents that occurred on UP and NEKM rail lines between 1995 and 1997. The result was a combined system-wide accident rate of 1.54 accidents per million train-miles. Using UP's estimates for pre-Acquisition and post-Acquisition annual train-miles for all rail line segments that the proposed Acquisition would affect, SEA estimates that there would be a slight reduction in annual accidents per year on the 16 rail line segments affected by the proposed Acquisition. This predicted reduction in accidents is primarily due to a decrease in total train-miles on UP's rail system after the proposed Acquisition. Table 3.1-3, "Accident Frequencies for Pre-Acquisition and Post-Acquisition Rail Systems," shows the number of freight-rail accidents that SEA predicts could occur because of the proposed Acquisition.

**TABLE 3.1-3  
ACCIDENT FREQUENCIES FOR PRE-ACQUISITION  
AND POST-ACQUISITION RAIL SYSTEMS**

<b>Rail System</b>	<b>Total Train-miles (Millions)</b>	<b>Accidents per Million Train- miles</b>	<b>Accidents per Year</b>
<b>Pre-Acquisition</b>			
1995 UP/NEKM System-wide (Actual)	154.31	1.72	266
1996 UP/NEKM System-wide (Actual)	159.21	1.74	277
1997 UP/NEKM System-wide (Actual)	149.93	1.15	172
UP/NEKM Affected Rail Segments Only <sup>a</sup> (Predicted)	9.60	1.54	14.8
<b>Post-Acquisition</b>			
UP/NEKM Affected Rail Segments Only <sup>a</sup> (Predicted)	9.49	1.54	14.6

<sup>a</sup> The affected rail line segments include 14 UP rail segments between Kansas City, Kansas and Gibbon, Nebraska, plus two NEKM rail line segments between St. Joseph, Missouri and Upland, Kansas.

**SEA's Conclusions on Regional Freight Rail Operations Safety**

SEA concluded that the proposed Acquisition would result in fewer rail accidents because of a reduction in total train-miles traveled by UP's freight trains; therefore, mitigation measures are not warranted.

## 3.2 HIGHWAY/RAIL AT-GRADE CROSSING SAFETY

SEA evaluated whether changes in rail activity on the rail line segments affected by the proposed Acquisition would affect safety at highway/rail at-grade crossings. This section describes SEA's analysis of the potential for increasing safety risks at such crossings.

### SEA's Evaluation Approach

To conduct its evaluation, SEA considered potential safety risks resulting from changes in freight rail operations at highway/rail at-grade crossings. SEA used analytical methods it developed in previous cases to estimate potential safety effects at public highway/rail at-grade crossings.

### Board Thresholds for Analysis

The Board's threshold for evaluating highway/rail at-grade crossing safety is an increase of eight or more trains per day. If train traffic is estimated to increase by eight or more trains per day on a rail line segment, SEA evaluates the change in risk of train-vehicle accidents at highway/rail at-grade crossings along the rail line segment. Three rail line segments in Kansas exceeded the Board's thresholds for environmental analysis, as follows: (1) Kansas City-Atchison; (2) Atchison-Hiawatha; and (3) Hiawatha-Upland.

### Methods

SEA calculated the pre-Acquisition and post-Acquisition risk of accidents at each highway/rail at-grade crossing using standard methods and formulas developed by FRA.<sup>14</sup> These formulas use the physical and functional characteristics of the highway/rail at-grade crossing and statistical information on historic accident experience maintained by the FRA. SEA used the following three-step process to calculate these accident rates:

- SEA calculated the initial predicted number of accidents per year at each highway/rail at-grade crossing using site-specific data from the FRA's accident/incident database.<sup>15</sup>
- Because the FRA data cannot describe the precise characteristics of each highway/rail at-grade crossing, such as sight distances, SEA adjusted its calculation of predicted accident rates with actual accident experience at each highway/rail at-grade crossing. FRA recommends that the

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<sup>14</sup> Federal Railroad Administration, *Summary of the DOT Rail-Highway Crossing Resource Allocation Procedure - Revised, 1998*.

<sup>15</sup> Federal Railroad Administration, Office of Safety Analysis, *PC Accident Prediction System, Version 1*, July 1997.

adjustment for actual accident experience be limited to accident data for the most recent 5-year period, from 1992 through 1996.

- SEA adjusted the predicted accident rate at each highway/rail at-grade crossing by a constant that is specific for the type of warning device at the highway/rail at-grade crossing. The three categories of warning devices are: (1) passive devices (signs or cross bucks); (2) flashing lights; and (3) gates. These constants adjust the accident predictions to reflect more recent levels of accident experience. SEA obtained updated warning device constants from FRA for 1998.

### Criteria of Significance

SEA established the following two-step process to determine whether the proposed Acquisition would potentially affect safety at highway/rail at-grade crossings:

- SEA identified the highway/rail at-grade crossings on rail line segments with increases of eight or more trains per day and with high accident frequencies under pre- and post-Acquisition conditions.
- SEA established the level of increase in accident frequency that would require mitigation measures.

SEA considered a highway/rail at-grade crossing to have a high accident frequency if it was among the top 50 for the state, or if it had an accident frequency of at least 0.15 accidents per year (equivalent to one accident every 7 years). For high accident frequency highway/rail at-grade crossings, SEA considered an increase of at least 0.01 accidents per year (or one additional accident for every 100 years) to be potentially significant.

For highway/rail at-grade crossings that did not have a high accident frequency, SEA considered an increase of at least 0.05 accidents per year (or one additional accident every 20 years) as potentially significant.

### Existing Conditions

Using information obtained from the Kansas Department of Transportation, SEA identified the following public highway/rail at-grade crossings for analysis of highway/rail at-grade crossing safety:

- 10 highway/rail at-grade crossings on the Kansas City-Atchison rail line segment.
- 42 highway/rail at-grade crossings on the Atchison-Hiawatha rail line segment.
- 79 highway/rail at-grade crossings on the Hiawatha-Upland rail line segment.

Table 3.2-1, “Highway/Rail At-Grade Crossing Accident Frequency,” lists these highway/rail at-grade crossings along with SEA’s calculation of change in the number of accidents per year for each highway/rail at-grade crossing.

### Analysis Results

Based on data maintained by FRA, SEA determined that one highway/rail at-grade crossing in Wyandotte County (Wolcott Drive) is listed in the top 50 for Kansas, based on accident frequency. None of the other highway/rail at-grade crossings on the three affected rail line segments have an accident frequency of at least 0.15 accidents per year; therefore, SEA did not consider these highway/rail at-grade crossings to be high accident frequency crossings. The following paragraphs summarize SEA’s analysis for each affected rail line segment. Table 3.2-1, “Highway/Rail At-Grade Crossing Accident Frequency,” presents the results of SEA’s analysis.

**Kansas City-Atchison.** SEA’s analysis showed that for all the highway/rail at-grade crossings on the Kansas City-Atchison rail line segment, the predicted increase in accident frequency would range from 0.008 to 0.002. This is equivalent to an increase in accident frequency ranging from one accident every 125 years to one accident every 500 years. SEA determined that the predicted increases in accident frequency resulting from the proposed Acquisition were below the criteria of significance.

**Atchison-Hiawatha.** SEA’s analysis showed that for all highway/rail at-grade crossings on the Atchison-Hiawatha rail line segment, the predicted increase in accident frequency would range from 0.009 to 0.002. This is equivalent to an increase in accident frequency ranging from one accident every 111 years to one accident every 500 years. SEA determined that the predicted increases resulting from the proposed Acquisition were below the criteria of significance.

**Hiawatha-Upland.** SEA’s analysis showed that for all highway/rail at-grade crossings on the Hiawatha-Upland rail line segment, the predicted increases in accident frequency would range from 0.056 to 0.003. This is equivalent to an increase in accident frequency ranging from one accident every 18 years to one accident every 333 years. SEA determined that the predicted increases from the proposed Acquisition exceeded the significance criteria at two highway/rail at-grade crossings in Nemaha County (i.e., 6<sup>th</sup> Street in Sabetha, KS and 5<sup>th</sup> Street in Seneca, KS).<sup>16</sup> SEA determined the predicted increases at the other highway/rail at-grade crossings would be below the criteria of significance.

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<sup>16</sup> As shown in Table 3.2-1, “Highway/Rail At-grade Crossing Accident Frequency,” the predicted accident frequency for 5<sup>th</sup> Street in Seneca, Kansas is 0.049. SEA determined that this was close enough to the significance criterion of 0.05 to warrant a preliminary mitigation recommendation.

**SEA's Conclusions on Highway/Rail At-grade Crossing Safety**

SEA concluded that Acquisition-related changes in freight rail traffic would not adversely affect highway/rail at-grade crossings on the Kansas City-Atchison and Atchison-Hiawatha rail line segments; therefore, SEA does not recommend mitigation measures for any of the highway/rail at-grade crossings on these two rail line segments.

SEA concluded that two highway/rail at-grade crossings in Nemaha County, Kansas, (i.e., 6<sup>th</sup> Street in Sabetha and 5<sup>th</sup> Street in Seneca) on the Hiawatha-Upland rail line segment would exceed SEA's significance criteria for highway/rail at-grade crossing safety. SEA determined that cross bucks are used as warning devices at these highway/rail at-grade crossings. SEA recommends upgrading the existing warning devices to flashing lights to mitigate adverse effects on highway/rail at-grade crossing safety at 6<sup>th</sup> Street in Sabetha and 5<sup>th</sup> Street in Seneca. If these upgrades are made, the change in predicted yearly accident frequency would be 0.029 at 6<sup>th</sup> Street in Sabetha and 0.024 at 5<sup>th</sup> Street in Seneca, which are less than SEA's significance criteria of 0.05 for highway/rail at-grade crossing safety. As stated, the remaining highway/rail at-grade crossings on the Hiawatha-Upland rail line segment did not exceed SEA's significance criterion for highway/rail at-grade crossing safety; therefore, SEA does not recommend mitigation measures for these highway/rail at-grade crossings.

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Kansas City-Atchison					
Leavenworth	Leavenworth	437426F	Cherokee St.	Gates	0.002
	Leavenworth	437427M	Dakota	Gates	0.003
	Leavenworth	437433R	C-5	Passive	0.004
Wyandotte	Kansas City	429473T	Quindaro St.	Flashing Lights	0.008
	Kansas City	437385D	12 <sup>th</sup> St.	Flashing Lights	0.004
	Kansas City	437396R	Nearman Rd	Gates	0.005
	Kansas City	437402S	Wolcott Drive	Gates	0.008
	Kansas City	429475G	10 <sup>th</sup> St.	Gates	0.004
	Kansas City	437387S	18 <sup>th</sup> St.	Passive	0.003
	Kansas City	437391G	49 <sup>th</sup> St.	Passive	0.003

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Atchison-Hiawatha					
Atchison	Atchison	437454J	Fourth St.	Gates	0.005
	Atchison	437457E	K-7	Gates	0.009
	Atchison	437473N	US-73 / Woodlawn	Gates	0.006
	Atchison	437476J	T-344	Passive	0.004
	Huron	437506Y	Main St.	Flashing Lights	0.003
	Huron	437507F	T-24	Passive	0.004
	Huron	437508M	T-101	Passive	0.003
	Lancaster	437484B	OLDU-73	Gates	0.004
	Lancaster	437490E	Broadway St.	Gates	0.002
	Lancaster	437479E	T-240	Passive	0.004
	Lancaster	437482M	T-138	Passive	0.004
	Lancaster	437491L	Congress	Passive	0.004
	Lancaster	437495N	T-28	Passive	0.004
	Lancaster	437498J	T-13	Passive	0.004
	Lancaster	437500H	T-26	Passive	0.004
Brown	Everest	437513J	C287	Gates	0.002
	Everest	437515X	Elm St.	Gates	0.002
	Everest	437517L	K-20, Main	Gates	0.003
	Everest	437521B	RS68	Gates	0.003
	Everest	437510N	T-548	Passive	0.003
	Everest	437511V	T-446	Passive	0.003
	Everest	437519A	T-242	Passive	0.003
	Everest	437520U	T-43	Passive	0.002
	Everest	437522H	T-241	Passive	0.003
	Hiawatha	433205P	RS1295	Gates	0.003
	Hiawatha	433443H	Iowa St.	Gates	0.003

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Brown	Hiawatha	433447K	Oregon St.	Gates	0.008
	Hiawatha	433448S	Miami St.	Gates	0.003
	Hiawatha	433207D	T-227	Passive	0.003
	Hiawatha	433202U	T-131	Passive	0.003
	Hiawatha	433203B	T-129	Passive	0.003
	Hiawatha	433209S	T-425	Passive	0.005
	Hiawatha	433441U	T-330	Passive	0.003
	Willis	433190C	Court St.	Gates	0.002
	Willis	433199N	RS60	Gates	0.002
	Willis	433192R	T-332	Passive	0.003
	Willis	433196T	T-330	Passive	0.002
	Willis	433197A	T-137	Passive	0.003
	Willis	433201M	T-33	Passive	0.003
	Willis	437525D	T-40	Passive	0.003
	Willis	437526K	T-38	Passive	0.003
	Willis	437527S	RS1742	Passive	0.006
Hiawatha-Upland					
Brown	Hamlin	814760R	T-124/Horned Owl	Passive	0.008
	Hamlin	814757H	T-122/Hazelnut	Passive	0.009
	Hamlin	814754M	RS61/Goldfinch	Passive	0.025
	Hamlin	814753F	T-18	Passive	0.007
	Hiawatha	814765A	T-130	Passive	0.003
	Hiawatha	814763L	RS1293/Kestrel Rd.	Passive	0.011
	Hiawatha	814762E	T-217	Passive	0.008
	Morrill	814437H	Fanning	Flashing Lights	0.007
	Morrill	814438P	Roxana	Gates	0.009
	Morrill	814752Y	RS63/290th	Passive	0.018

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Brown	Morrill	814439W	T-516/Falcon Rd.	Passive	0.008
	Morrill	814435U	K-246/Coyote Rd.	Passive	0.031
	Morrill	814434M	Bittersweet	Passive	0.010
	Sabetha	814431S	T-113	Flashing Lights	0.008
	Sabetha	814433F	T-4/Antelope	Passive	0.008
Marshall	Axtell	814487L	RS1230/Cone St.	Passive	0.024
	Axtell	814486E	6 <sup>th</sup> St./Murray	Passive	0.019
	Axtell	814485X	5 <sup>th</sup> St.	Passive	0.031
	Axtell	814484R	4 <sup>th</sup> St.	Passive	0.019
	Axtell	814483J	1 <sup>st</sup> St.	Passive	0.011
	Axtell	814489A	T-560	Passive	0.008
	Axtell	814482C	T-158	Passive	0.008
	Axtell	814481V	T-256	Passive	0.008
	Axtell	814480N	T-417	Passive	0.008
	Axtell	814477F	T-52	Passive	0.008
	Axtell	814475S	K-99	Passive	0.026
	Beattie	814470H	K-99	Flashing Lights	0.013
	Beattie	814465L	Center St.	Gates	0.010
	Beattie	814471P	Sheldon St.	Passive	0.008
	Beattie	814474K	T-48	Passive	0.008
	Beattie	814473D	T-417	Passive	0.008
	Beattie	814472W	T-46	Passive	0.008
	Beattie	814464E	T-142/Guitard St.	Passive	0.008
	Beattie	814462R	T-842	Passive	0.008
	Beattie	814461J	T-38	Passive	0.008
	Home	814456M	US 36	Flashing Lights	0.028
	Home	814460C	T-121	Passive	0.008

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Marshall	Home	814459H	T-36	Passive	0.008
	Home	814457U	T-134	Passive	0.008
	Home	814455F	3rd St.	Passive	0.008
	Home	814453S	T-130	Passive	0.008
	Home	814452K	T-125	Passive	0.008
Nemaha	Baileyville	814493P	1 <sup>st</sup> St.	Flashing Lights	0.012
	Baileyville	814494W	US-36	Flashing Lights	0.023
	Baileyville	814490U	T-21	Passive	0.012
	Baileyville	814491B	T-110	Passive	0.007
	Baileyville	814492H	Main St.	Passive	0.007
	Baileyville	814496K	T-18	Passive	0.007
	Baileyville	814497S	T-112	Passive	0.007
	Oneida	814408X	T-526	Passive	0.007
	Oneida	814410Y	RS5042	Passive	0.010
	Oneida	814411F	T-258	Passive	0.007
	Oneida	814412M	T-362	Passive	0.007
	Oneida	814413U	Fifth Ave.	Passive	0.024
	Oneida	814416P	RS687	Passive	0.011
	Oneida	814417W	T-136	Passive	0.007
	Oneida	814418D	T-38	Passive	0.008
	Oneida	814419K	T-40	Passive	0.007
	Oneida	814420E	T-221	Passive	0.007
	Sabetha	814425N	14 <sup>th</sup> St.	Gates	0.013
	Sabetha	814426V	11 <sup>th</sup> St.	Gates	0.007
	Sabetha	814427C	9 <sup>th</sup> St.	Passive	0.028
Sabetha	814428J	6 <sup>th</sup> St.	Passive	0.056	
Sabetha	814429R	Gravel St.	Passive	0.025	

**TABLE 3.2-1  
HIGHWAY/RAIL AT-GRADE CROSSING ACCIDENT FREQUENCY**

County	City	FRA ID	Route/ Street	Present Safety Device	Annual Change in the Number of Accidents
Nemaha	Sabetha	814421L	T-42	Passive	0.007
	Sabetha	814423A	T-119	Passive	0.008
	Sabetha	814424G	T-80	Passive	0.008
	Seneca	814499F	K-187	Flashing Lights	0.016
	Seneca	814404V	US-36	Flashing Lights	0.029
	Seneca	814394S	11 <sup>th</sup> St.	Gates	0.008
	Seneca	814398U	6 <sup>th</sup> St.	Gates	0.010
	Seneca	814393K	14 <sup>th</sup> St.	Passive	0.026
	Seneca	814395Y	9 <sup>th</sup> St.	Passive	0.022
	Seneca	814399B	5 <sup>th</sup> St.	Passive	0.049
	Seneca	814400T	4 <sup>th</sup> St.	Passive	0.027
	Seneca	814401A	3 <sup>rd</sup> St.	Passive	0.030
	Seneca	814390P	T-116	Passive	0.007
	Seneca	814405C	T-121	Passive	0.007
	Seneca	814407R	T-121	Passive	0.007

### 3.3 HIGHWAY/RAIL AT-GRADE CROSSING DELAY

The Board’s regulations at 49 CFR 1105.7(e)(7) require an analysis of potential effects of the proposed Acquisition on safety, including vehicle delay time at highway/rail at-grade crossings. This section presents the results of SEA’s analysis of potential effects on vehicle delays at highway/rail at-grade crossings. Vehicle delays occur at locations where rail line segments cross roadways and vehicles must wait for trains to pass. Obviously, vehicle delays do not occur where rail line segments pass over or under roadways. The following paragraphs describe the methods for analyzing vehicle delays at highway/rail at-grade crossings and the results of SEA’s evaluation.

#### SEA’s Evaluation Approach

To conduct its evaluation, SEA considered potential effects of the proposed Acquisition on highway/rail at-grade crossing delay from projected train traffic increases on three rail line segments in Kansas: (1)

Kansas City-Atchison; (2) Atchison-Hiawatha; and (3) Hiawatha-Upland. SEA used analytical methods from past cases to estimate potential effects on highway/rail at-grade crossing delay.

### Board Thresholds for Analysis

SEA used the Board's thresholds for environmental analysis to identify rail line segments with sufficient increases in freight train activity to evaluate vehicle delays at highway/rail at-grade crossings. Since all areas that the proposed Acquisition would affect are in attainment with air quality standards, the relevant Board threshold for environmental analysis of vehicle delays at highway/rail at-grade crossings is an increase of eight or more trains per day or a 100 percent increase in annual gross ton-miles.

In past cases, SEA evaluated all public highway/rail at-grade crossings with an average daily traffic (ADT) volume of 5,000 vehicles per day on rail line segments that would meet or exceed the Board's thresholds for environmental analysis. SEA reviewed the list of public highway/rail at-grade crossings obtained from the Kansas Department of Transportation (Kansas DOT) and determined that there are two public highway/rail at-grade crossings that have an ADT volume of more than 5,000 vehicles per day on the three rail line segments that would meet the Board's thresholds for environmental analysis.

### Methods

As in past cases, SEA determined the potential effects on vehicle delays for each highway/rail at-grade crossing analyzed, by estimating the crossing delay per stopped vehicle and the level of service (LOS), as follows:

**Crossing Delay per Stopped Vehicle.** SEA estimated potential delay effects caused by individual trains by developing an estimate for the crossing delay per stopped vehicle for each highway/rail at-grade crossing. To conduct this analysis, SEA estimated pre-Acquisition and post-Acquisition average train length, average train speed, and number of trains per day for each highway/rail at-grade crossing analyzed.<sup>17</sup> SEA used these factors to calculate the blocked crossing time per train, which is the time required for a train to pass a highway/rail at-grade crossing. Next, using highway/rail at-grade crossing information obtained from the FRA, Kansas DOT, and field visits, SEA determined the number of roadway lanes, ADT volume, average vehicle arrival rate, and vehicle departure rate for each highway/rail at-grade crossing. Using these factors, SEA then calculated the crossing delay per stopped vehicle, using SEA's formula developed for the Conrail Acquisition, for pre-Acquisition and post-Acquisition conditions and the estimated blocked crossing time per train.

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<sup>17</sup> SEA obtained the pre- and post-Acquisition train estimates from UP. For the Kansas City-Atchison and Atchison-Hiawatha rail line segments, SEA used an average train speed of 40 miles per hour for both pre- and post-Acquisition conditions, except for the City of Atchison, where SEA used an average train speed of 20 miles per hour. For the Hiawatha-Upland rail line segment, SEA used a pre-Acquisition average train speed of 25 miles per hour and a post-Acquisition average train speed of 35 miles per hour.

**Level of Service.** SEA evaluated vehicle delays caused by multiple trains by estimating the change in level of service (LOS) that would occur following the proposed Acquisition for each highway/rail at-grade crossing analyzed. The LOS is a grading system that the Transportation Research Board<sup>18</sup> developed to indicate traffic congestion at signalized intersections. LOS is expressed in terms of a letter grade ranging from A (free flowing traffic) to F (severely congested traffic). The LOS is based on the average delay for all vehicles passing the highway/rail at-grade crossing during an entire day. SEA calculated the average delay for all vehicles before and after the proposed Acquisition using the estimated number of freight trains, the estimated blocked crossing time per train, and the estimated crossing delay per stopped vehicle. SEA compared the estimated average delay for all vehicles to the LOS ratings in Table 3.3-1, “Traffic Level of Service Ratings,” to determine the LOS rating for each analyzed highway/rail at-grade crossing before and after the proposed Acquisition.

**TABLE 3.3-1  
TRAFFIC LEVEL OF SERVICE RATINGS**

Level of Service (LOS)	Average Delay for All Vehicles (in seconds)
A	≤5.0
B	>5.0 to ≤15.0
C	>15.0 to ≤25.0
D	>25.0 to ≤40.0
E	>40.0 to ≤60.0
F	>60.0

#### Criteria of Significance

In past cases, SEA determined that vehicle delay could be significant if the crossing delay per stopped vehicle increased by 30 seconds or more following the proposed Acquisition or if one of the following conditions existed for LOS:

- The post-Acquisition LOS would be E or F (regardless of the LOS before the proposed Acquisition). An LOS of E would occur if the average delay for all vehicles at the highway/rail at-grade crossing is 40 to 60 seconds, while an LOS of F would occur if the average delay for all vehicles is more than 60 seconds.

<sup>18</sup> Transportation Research Board, *Highway Capacity Manual, Special Report 209*, Third Edition, 1994.

- The LOS would decrease to D (or worse) from a LOS of C (or better) before the proposed Acquisition. An LOS of D would occur if the average delay for all vehicles at the highway/rail at-grade crossing is 25 to 40 seconds.

If the analysis results show that delays resulting from the proposed Acquisition would exceed SEA’s criteria of significance for crossing delay per stopped vehicle or LOS, then SEA would consider mitigation to reduce the potential impacts.

### Existing Conditions

Kansas DOT’s database of highway/rail at-grade crossings lists 52 public highway/rail at-grade crossings on the UP mainline between Kansas City and Hiawatha and 79 public highway/rail at-grade crossings on the NEKM mainline between Hiawatha and Upland. Of these 131 public highway/rail at-grade crossings, SEA identified and analyzed two individual public highway/rail at-grade crossings with ADT volumes exceeding 5,000 vehicles per day. Table 3.3-2, “Highway/Rail At-grade Crossings Analyzed,” lists the total number of highway/rail at-grade crossings and the number of highway/rail at-grade crossings that meet or exceed the Board’s thresholds for each county on the Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland rail line segments.

**TABLE 3.3-2  
PUBLIC HIGHWAY/RAIL AT-GRADE CROSSINGS ANALYZED**

<b>County</b>	<b>Total Public Highway/Rail At-grade Crossings <sup>a</sup></b>	<b>Public Highway/Rail At-grade Crossings with ADT Volume of 5,000 Vehicles per Day or Greater</b>
Atchison	15	2
Brown	42	0
Leavenworth	3	0
Marshall	27	0
Nemaha	37	0
Wyandotte	7	0
<b>Total</b>	<b>131</b>	<b>2</b>

<sup>a</sup> Source: Kansas Department of Transportation.

Both of individual highway/rail at-grade crossings with an ADT volume greater than 5,000 vehicles per day are in the City of Atchison, Atchison County, Kansas. SEA determined that these two highway/rail

at-grade crossings have an existing LOS of B, corresponding to an average delay for all vehicles of 5 to 10 seconds.

### **Analysis Results**

SEA's vehicle delay analysis determined that the post-Acquisition LOS would remain at B for both Fourth Street and Tenth Street in the City of Atchison, Atchison County. The increase in average delay for all vehicles from pre-Acquisition to post-Acquisition would be about 7.2 seconds at both highway/rail at-grade crossings. The crossing delay per stopped vehicle increased by about 9 seconds at both highway/rail at-grade crossing.

Table 3.3-3, "Individual Highway/Rail At-grade Crossing Vehicle Delay," presents SEA's analysis of the two individual highway/rail at-grade crossings in detail. The table also presents the location and use of each highway/rail at-grade crossing, the crossing delay per stopped vehicle, average delay for all vehicles, LOS, as well as the change in average delay for all vehicles before and after the proposed Acquisition.

### **SEA's Conclusions on Highway/Rail At-grade Crossing Delay**

SEA concluded that the proposed Acquisition would not adversely affect vehicle delay at highway/rail at-grade crossings; therefore, SEA does not recommend mitigation measures for vehicle delay.

**TABLE 3.3-3  
INDIVIDUAL HIGHWAY/RAIL AT-GRADE CROSSING DELAY**

City	Street Name	ADT	Pre-Acquisition				Post-Acquisition				Change in Average Delay for all Vehicles (Seconds)
			Trains per Day	Crossing Delay per Stopped Vehicle (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service	Trains per Day	Crossing Delay per Stopped Vehicle (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service	
Atchison County											
Atchison	4 <sup>th</sup> St.	5,950	12.8	1.89	7.32	B	22.1	2.03	14.49	B	7.17
Atchison	10 <sup>th</sup> St.	6,035	12.8	1.90	7.32	B	22.1	2.03	14.50	B	7.18

### 3.4 HIGHWAY/RAIL AT-GRADE CROSSING EMERGENCY VEHICLE RESPONSE

In some communities, response to emergency incidents by fire, police, and emergency medical service vehicles requires crossing railroad tracks at a highway/rail at-grade crossing. A train could block the highway/rail at-grade crossing when the emergency vehicle needs to cross the track, potentially delaying the response. Specific local conditions including roadway design, the location of separated highway/rail crossings, and the location of emergency response facilities influence potential effects to emergency response vehicles.

#### SEA's Evaluation Approach

In previous cases, SEA evaluated the effects on emergency vehicle response when Acquisition-related changes in freight train traffic would meet or exceed the Board-specified threshold level and communities presented specific information to SEA about potential local impacts. The Board's threshold for evaluating emergency vehicle response delay is an increase of eight or more trains per day. In this case, the Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland rail line segments would exceed the Board's threshold for analysis of eight trains per day.

#### Methods

For this Draft EA, SEA conducted a general analysis of potential effects on emergency vehicle response. SEA determined that a detailed analysis would have to consider site-specific conditions as well as input and comment from local communities about potential local impacts. SEA will review the comments from local communities and, if warranted, will analyze site-specific conditions to determine potential effects on emergency vehicle response for the Final EA. These site-specific conditions would include: (1) location of emergency response services; (2) design of the existing highway and road network, including the locations of nearby grade-separated highway/rail crossings; (3) service area covered by emergency service providers; (4) emergency dispatch procedures; (5) routes used by emergency vehicles; and (6) typical train speeds.

SEA's general analysis of potential emergency vehicle response effects included the following:

- An estimate of the change in level of service at all highway/rail at-grade crossings that have ADT volume of 5,000 vehicles per day or greater on rail line segments that would experience an increase of eight trains per day or greater.
- An estimate for the crossing delay per stopped vehicle, total daily blocked time, and average delay for all vehicles for various combinations of roadway lanes, train speeds and ADT volume. SEA developed these general estimates for 2-lane and 4-lane roads with ADTs of 500 and 1,000 vehicles, and train speeds that would represent pre-Acquisition and post-Acquisition conditions.

Using the estimate for average delay for all vehicles, SEA determined the pre-Acquisition and post-Acquisition level of service for these highway/rail at-grade crossings.

### **Existing Conditions**

SEA obtained a list of all public highway/rail at-grade crossings on the Kansas City-Atchison, Atchison-Hiawatha, and Hiawatha-Upland rail line segments from the Kansas DOT. Kansas DOT lists 131 public highway/rail at-grade crossings on these three rail line segments. Two of these 131 public highway/rail at-grade crossings have ADT volume of 5,000 vehicles per day or greater. SEA determined that both of these highway/rail at-grade crossings have an existing level of service of B. (See Section 3.3, “Highway/Rail At-grade Crossing Delay.”)

### **Analysis Results**

SEA estimated the level of service for highway/rail at-grade crossings with ADTs of 500 and 1,000 vehicles on each of the three rail line segments that exceeded the Board’s thresholds for environmental analysis. Table 3.4-1, “General Analysis of Highway/Rail At-Grade Crossing Delay,” shows the sensitivity of vehicle delays using pre- and post-Acquisition average train lengths, train speeds, and various roadway lane and ADT volume combinations. For all cases, SEA determined that the level of service would be A or B under both pre- and post-Acquisition conditions.

SEA also analyzed the two highway/rail at-grade crossings with ADT volumes greater than 5,000 vehicles and determined that the post-Acquisition level of service would remain unchanged from pre-Acquisition conditions. (See Section 3.3, “Highway/Rail At-grade Crossing Delay.”)

### **SEA’s Conclusions on Highway/Rail At-grade Crossing Emergency Vehicle Response**

SEA concluded that Acquisition-related changes in rail traffic would cause increased vehicle delays at highway/rail at-grade crossings. SEA conducted a detailed analysis of two individual highway/rail at-grade crossings with ADT volumes of 5,000 vehicles or greater and a general analysis of highway/rail at-grade crossings with lower volume ADTs. SEA determined that the level of service for these highway/rail at-grade crossings would not change before and after the proposed Acquisition. Since the level of service would remain unchanged, SEA concluded that potential Acquisition-related effects on emergency vehicle response time would be minimal. SEA recognizes that individual communities may have concerns about potential effects on emergency vehicle response relative to community-specific conditions and Acquisition-related effects. SEA invites public comment about the potential effects of the proposed Acquisition on emergency vehicle response.

**TABLE 3.4-1  
GENERAL ANALYSIS OF HIGHWAY/RAIL AT-GRADE CROSSING DELAY**

Roadway Lanes	Train Speed	ADT	Pre-Acquisition				Post-Acquisition			
			Crossing Delay per Stopped Vehicle (Minutes)	Total Daily Blocked Time (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service	Crossing Delay per Stopped Vehicle (Minutes)	Total Daily Blocked Time (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service
Kansas City-Atchison										
2	20	500	1.81	50.19	7.55	B	1.94	89.55	14.44	B
		1000	1.82	50.19	7.61	B	1.95	89.55	14.55	B
2	40	500	1.03	28.59	2.45	A	1.09	50.60	4.61	A
		1000	1.04	28.59	2.47	A	1.10	50.60	4.65	A
4	20	500	1.80	50.19	7.52	B	1.93	89.55	14.39	B
		1000	1.81	50.19	7.55	B	1.94	89.55	14.44	B
4	40	500	1.03	28.59	2.44	A	1.09	50.60	4.59	A
		1000	1.03	28.59	2.45	A	1.09	50.60	4.61	A
Atchison-Hiawatha										
2	20	500	1.82	46.36	7.05	B	1.95	85.72	13.95	B
		1000	1.84	46.36	7.10	B	1.97	85.72	14.06	B
2	40	500	1.04	26.38	2.28	A	1.10	48.38	4.45	A
		1000	1.05	26.38	2.30	A	1.11	48.38	4.48	A

**TABLE 3.4-1  
GENERAL ANALYSIS OF HIGHWAY/RAIL AT-GRADE CROSSING DELAY**

Roadway Lanes	Train Speed	ADT	Pre-Acquisition				Post-Acquisition			
			Crossing Delay per Stopped Vehicle (Minutes)	Total Daily Blocked Time (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service	Crossing Delay per Stopped Vehicle (Minutes)	Total Daily Blocked Time (Minutes)	Average Delay for All Vehicles (Seconds)	Level of Service
Atchison-Hiawatha (continued)										
4	20	500	1.82	46.36	7.02	B	1.95	85.72	13.90	B
		1000	1.82	46.36	7.05	B	1.95	85.72	13.95	B
4	40	500	1.03	26.38	2.27	A	1.10	48.38	4.43	A
		1000	1.03	26.38	2.28	A	1.10	48.38	4.45	A
Hiawatha-Upland										
2	25	500	0.47	0.93	0.04	A	1.68	53.22	7.43	B
		1000	0.47	0.93	0.04	A	1.69	53.22	7.48	B
2	35	500	N/A <sup>a</sup>	N/A	N/A	N/A	1.27	40.30	4.26	A
		1000	N/A	N/A	N/A	N/A	1.27	40.30	4.29	A
4	25	500	0.47	0.93	0.04	A	1.67	53.22	7.40	B
		1000	0.47	0.93	0.04	A	1.68	53.22	7.43	B
4	35	500	N/A	N/A	N/A	N/A	1.26	40.30	4.24	A
		1000	N/A	N/A	N/A	N/A	1.27	40.30	4.26	A

<sup>a</sup> Not Applicable. Pre-acquisition maximum train speed on the NEKM rail line is 25 miles per hour.

### 3.5 ENERGY

This section presents SEA's evaluation of the change in fuel consumption that would result from the proposed Acquisition. The following paragraphs summarize the methods and results of SEA's analysis of energy including SEA's conclusions on the overall effect of the proposed Acquisition on fuel consumption changes.

#### SEA's Evaluation Approach

To conduct its evaluation of changes in fuel consumption, SEA identified activities that would result in a change in fuel consumption. They are as follows: (1) rail traffic changes on the 16 rail line segments affected by the proposed Acquisition; and (2) changes in delays of vehicles at highway/rail at-grade crossings. SEA also reviewed potential fuel consumption changes from rail-to-truck and rail-to-rail freight diversions on UP's rail system or other railroad systems.

#### Board Thresholds for Analysis

The Board's regulations at 49 CFR 1105.7(e)(4) require an analysis of the following energy-related effects of the proposed Acquisition:

- The effect on overall energy efficiency, as described by an overall increase or decrease in fuel consumption.
- The change in energy consumption that would result from rail-to-truck diversions of freight.

UP has stated that there would be no rail-to-rail or rail-to-truck freight diversions because of the proposed Acquisition; therefore, SEA's analysis focused on fuel consumption changes for Acquisition-related rail traffic changes and vehicle delays at highway/rail at-grade crossings. SEA developed its estimate of the change in annual fuel consumption for idling vehicles at highway/rail at-grade crossings where the average daily traffic (ADT) volume is greater than 5,000 vehicles on rail line segments where post-Acquisition rail traffic would increase by eight trains per day or more.

#### Methods

SEA determined that the proposed Acquisition would result in changes in fuel consumption because of the following: (1) changes in freight rail traffic; and (2) longer delays of vehicles at highway/rail at-grade crossings that would result from increased numbers and length of freight trains.

**Fuel Consumption from Changes in Freight Rail Traffic.** SEA analyzed the overall change in fuel consumption from changes in rail traffic on all rail line segments affected by the proposed Acquisition. To calculate the annual fuel consumption change, SEA divided UP's estimate for annual change in

gross ton-miles on each affected rail line segment by a fuel efficiency factor provided by UP for that rail line segment. SEA used the route-specific fuel efficiency factors presented in Table 3.6-2, "Route-specific Line-haul Locomotive Fuel Efficiency Factors." (See Section 3.6, "Air Quality. ") SEA summed the estimated change in fuel consumption for all rail line segments to obtain the estimated change in overall fuel consumption.

**Fuel Consumption from Vehicle Delays.** For each highway/rail at-grade crossing analyzed, SEA determined the change in delay time by calculating the pre- and post Acquisition number of vehicles delayed per day and the crossing delay per stopped vehicle. Section 3.3, "Highway/rail At-grade Crossing Delay," provides a description of the methods SEA used to estimate the number of vehicles delayed per day and crossing delay per stopped vehicle. Next, SEA estimated the annual change in fuel consumption by multiplying the estimate of total delay time by a fuel consumption factor for idling vehicles of 0.65 gallons/hour. This fuel consumption factor represents a composite of idle fuel consumption rates for a variety of gasoline powered vehicles.<sup>19</sup>

### Analysis Results

Table 3.5-1, "Summary of Fuel Consumption Changes," summarizes SEA's estimate for changes in fuel consumption from the proposed Acquisition. Table 3.5-1 shows that estimated overall fuel consumption would decrease by approximately 1.03 million gallons per year as a result of the proposed Acquisition.

**TABLE 3.5-1  
SUMMARY OF FUEL CONSUMPTION CHANGES**

Activity	Change in Fuel Consumption (Gallons per Year)
Rail Traffic Changes	-1,034,354
Vehicle Delays at Highway/rail At-grade Crossings	2,835
Total	-1,031,519

### SEA's Conclusions on Energy

SEA concluded that the proposed Acquisition would have a beneficial effect on overall energy consumption because it would cause overall fuel consumption to decrease by more than one million gallons per year.

<sup>19</sup> U.S. Department of Transportation, Federal Highway Administration, *Procedure for Estimating Highway User Costs, Fuel Consumption and Air Pollution*, March 1980.

### 3.6 AIR QUALITY

This section presents SEA's evaluation of potential air quality effects that would result from the proposed Acquisition. SEA's analysis of the air quality effects of the proposed Acquisition focused on estimated emissions from diesel locomotives and automobiles because these vehicles are major sources of emissions that the proposed Acquisition would affect.

The following paragraphs summarize the methods and the results of SEA's analysis of air quality at both a regional and County-wide level, including the following: (1) a description of existing conditions; (2) an estimate and evaluation of the changes in emissions resulting from the proposed Acquisition; and (3) SEA's recommendation concerning the need for mitigation measures.

#### SEA's Evaluation Approach

To conduct its evaluation, SEA considered potential effects of the proposed Acquisition on emissions from diesel locomotives and vehicles at highway/rail at-grade crossings. Diesel locomotives and vehicles emit pollutants that include the following: nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), volatile organic compounds (VOCs), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), and lead. EPA has developed National Ambient Air Quality Standards (NAAQS) for each of these pollutants, except VOCs, which contribute to the formation of ozone (O<sub>3</sub>). EPA has established an NAAQS for ozone. These standards identify the allowed concentrations of these criteria pollutants to protect public health and welfare.

EPA classifies each county as being in "attainment" or "nonattainment" with respect to each criteria pollutant. EPA defines an attainment area as an area that has air quality as good as, or better than, the NAAQS for all of the criteria pollutants. In a nonattainment area, the air quality does not meet one or more of the NAAQS. EPA bases its attainment status designations on the results of ongoing air monitoring studies and the number of exceedances of NAAQS for specific criteria pollutants.

#### Board Thresholds for Analysis

The Board established thresholds for environmental analysis of air quality that are based on specific increases in operations on rail line segments and at rail yards and intermodal facilities. In this case, SEA determined that only rail line segments would experience a change in operations as a result of the proposed Acquisition. Table 3.6-1, "Board Thresholds for Environmental Analysis of Air Quality for Rail Line Segments," presents the Board's thresholds for environmental analysis for rail line segments.

**TABLE 3.6-1  
BOARD'S THRESHOLDS FOR ENVIRONMENTAL ANALYSIS  
OF AIR QUALITY FOR RAIL LINE SEGMENTS**

NAAQS Attainment Status	Threshold
Attainment Areas [49 CFR 1105.7(e)(5)(I)]	Increase of eight trains/day or at least 100% increase in freight activity (measured in annual GTM <sup>a</sup> )
Nonattainment Areas and Class I Areas [49 CFR 1105.7(e)(5)(ii)]	Increase of three trains/day or at least 50% increase in freight activity, (measured in annual GTM)

<sup>a</sup> GTM— Gross ton-miles.

SEA determined that all counties that would be affected by the proposed Acquisition are currently classified by EPA as attainment areas for all criteria pollutants; therefore, the applicable Board threshold for the air quality analysis is an increase of eight or more trains per day or a 100 percent increase in annual gross ton-miles.

#### Methods

SEA conducted both regional and County-wide analyses of potential air quality effects of the proposed Acquisition. These analyses were conducted for two emission sources that the proposed Acquisition would affect: (1) diesel locomotives hauling freight trains on rail line segments; and (2) idling vehicles delayed at highway/rail at-grade crossings. The following sections provide detailed information on these analyses and emission sources.

**Regional Analysis of Rail Segments.** SEA conducted a regional analysis of emissions from diesel locomotives on all rail line segments that would experience changes in freight traffic from the proposed Acquisition. SEA's analysis included rail segments that would experience both increases and decreases in freight train activity.

SEA conducted its analysis of estimated emissions changes from locomotives using route-specific fuel efficiency factors provided by UP, as presented in Table 3.6-2, "Route-specific Line-Haul Locomotive Fuel Efficiency Factors."

**TABLE 3.6-2  
ROUTE-SPECIFIC LINE-HAUL LOCOMOTIVE FUEL EFFICIENCY FACTORS**

Rail Line Segment	Fuel Efficiency Factors (Gross Ton-miles/Gallon)
Kansas City-Marysville	367.6
Marysville-Gibbon	333.3
Kansas City-Atchison	347.2
Atchison-Hiawatha	347.2
Hiawatha-Omaha	348.4
Omaha-Gibbon	348.4
Hiawatha-Upland	377.4
St. Joseph-Hiawatha	377.4

Using these fuel efficiency factors, SEA calculated the change in fuel consumed by locomotives on each affected rail line segment by dividing the total GTM change on the rail line segment by the associated fuel efficiency factor. SEA obtained the estimated change in GTM for each rail line segment from UP.

Then, for each criteria pollutant, SEA estimated the annual emission change, in tons per year, by multiplying the change in annual fuel consumption for each affected rail line segment by an established emissions factor for that pollutant. SEA obtained the emissions factors, representative of the 1998 locomotive fleet for all U.S. railroads, from EPA's Office of Mobile Sources. SEA converted the emissions factors for line-haul locomotives to units of pounds of pollutant per 1,000 gallons of diesel fuel consumed. Table 3.6-3, "Line-Haul Locomotives Emissions Factors," presents these emissions factors.

SEA made the following assumptions in its calculations of estimated emissions changes on rail line segments:

- Fuel density of 7.08 pounds per gallon.
- Fuel sulfur content of 0.26 percent by weight, based on mass balance (SEA assumed 100 percent of the sulfur content in the fuel converted to SO<sub>2</sub>).
- Emissions factors for VOCs, CO, NO<sub>x</sub>, and PM<sub>10</sub> represent the 1998 locomotive fleet for U.S. railroads. SEA conservatively assumed that all particulate matter emissions represent emissions of PM<sub>10</sub>.

**TABLE 3.6-3  
LINE-HAUL LOCOMOTIVE EMISSIONS FACTORS**

<b>Pollutant</b>	<b>Emissions Factor <sup>a</sup> (Pounds/1,000 gallons)</b>
VOCs <sup>b</sup>	21.99
NO <sub>x</sub> <sup>b</sup>	595.59
CO <sup>b</sup>	58.64
SO <sub>2</sub> <sup>c</sup>	36.82
PM <sub>10</sub> <sup>b</sup>	14.66
Lead <sup>d</sup>	0.0015

<sup>a</sup> SEA converted EPA's emissions factors to pounds per 1,000 gallons using EPA's recommended conversion factor of 20.8 horsepower-hour per gallon of fuel consumed.

<sup>b</sup> SEA used the following reference source: Technical Highlights, EPA, Office of Mobile Sources, EPA 420-F-97-051, December 1997.

<sup>c</sup> SEA calculated an emissions factor for SO<sub>2</sub> based on an average fuel sulfur content of 0.26 percent by weight and fuel density of 7.08 pounds per gallon.

<sup>d</sup> SEA based lead emissions on Table 1.3-10 Emissions Factors for Metals from No. 6 Fuel Oil Combustion of AP-42 Compilation of Air Pollutant Emissions Factors, EPA, October 1996. EPA has not developed lead emissions factors for internal combustion engines.

**Regional Analysis of Highway/Rail At-grade Crossings.** SEA conducted a regional analysis of emissions from idling vehicles delayed at highway/rail at-grade crossings. SEA reviewed highway/rail at-grade crossings with an average daily traffic (ADT) volume of more than 5,000 vehicles per day and where the increase in rail traffic meets or exceeds the Board's threshold of an eight train per day increase. SEA's analysis of highway/rail at-grade crossings with an ADT volume greater than 5,000 vehicles per day is consistent with SEA's approach for analysis of vehicle delays at highway/rail at-grade crossings (See Section 3.3, "Highway/Rail At-grade Crossing Delay"). SEA used the following procedure to estimate emissions from idling vehicles at highway/rail at-grade crossings for pre- and post-Acquisition conditions.

- SEA used several values from its analysis of vehicle delays at highway/rail at-grade crossings (See Section 3.3, "Highway/Rail At-grade Crossing Delay"), including: (1) blocked crossing time per train; (2) crossing delay per stopped vehicle; and (3) the change in total number of vehicles delayed per day.

- SEA determined the total daily vehicle delay time for all vehicles by multiplying the number of vehicles delayed per day by the crossing delay per stopped vehicle at each highway/rail at-grade crossing. SEA then multiplied the total daily vehicle delay time by 365 days per year to obtain the total annual vehicle delay at each highway/rail at-grade crossing.
- SEA used EPA's MOBILE5a (for VOCs, NO<sub>x</sub>, and CO) and PART5 (for PM<sub>10</sub> and SO<sub>2</sub>) emissions factor models to obtain emissions factors in units of grams per vehicle-mile, then multiplied those numbers by 2.5 miles per hour to produce an emissions factor representative of an idling vehicle in units of grams of pollutant per vehicle hour of operation. SEA conservatively incorporated all sources of VOCs emissions (such as refueling, diurnal, and hot soak emissions) in the emissions factors calculations.
- SEA incorporated national average data for vehicle ages and types, operating conditions, vehicle-miles traveled, vehicle mix, registration/mileage accumulation, and tampering rates in its analysis. SEA also assumed the following: (1) no inspection/maintenance or anti-tampering programs were in place; (2) the analysis did not consider the effects of oxygenated and reformulated fuel; and (3) Reid vapor pressure was 9.0 psi and model operating modes were set at default values.
- Because the highway/rail at-grade crossings SEA analyzed are in northeastern Kansas, SEA used two sets of emissions factors for VOCs, NO<sub>x</sub>, and CO that represent the Kansas City, Kansas area (representative maximum/minimum winter and summer temperatures). SEA averaged the two emissions factors to produce a single emissions factor for VOCs, NO<sub>x</sub>, and CO. Table 3.6-4, "Composite Emissions Factors for Vehicles Delayed at Highway/Rail At-grade Crossings," presents the composite emissions factors that SEA used in its analysis of emissions from vehicle delays at highway/rail at-grade crossings.

**TABLE 3.6-4  
COMPOSITE EMISSIONS FACTORS FOR VEHICLES DELAYED AT  
HIGHWAY/RAIL AT-GRADE CROSSINGS <sup>a</sup>**

Pollutant	Emissions Factor (Grams/Hour)
VOCs <sup>b</sup>	43.702
NO <sub>x</sub> <sup>b</sup>	10.051
CO <sup>b</sup>	403.383
SO <sub>2</sub> <sup>c</sup>	0.283
Exhaust PM <sup>c</sup>	0.175

<sup>a</sup> SEA obtained maximum/minimum winter and summer air temperatures representative of Kansas City from the National Oceanic and Atmospheric Administration's "Local Climatological Data Annual Summaries for 1990, Part III—Central Region."

<sup>b</sup> SEA calculated emissions factors from EPA's MOBILE5a (emissions factor model). SEA used a vehicle speed of 2.5 miles per hour for idling vehicles pursuant to EPA guidance. SEA multiplied the resultant emissions factor in grams of pollutant per vehicle per mile by 2.5 miles per hour to determine emissions factors in grams per hour. SEA conservatively incorporated all sources of VOCs emissions (such as refueling, diurnal, and hot soak emissions) in emissions factors calculations.

<sup>c</sup> SEA calculated emissions factors from EPA's PART5 (emissions factor model). SEA used a vehicle speed of 2.5 miles per hour for idling vehicles pursuant to EPA guidance. SEA multiplied the resultant emissions factor in grams of pollutant per vehicle per mile by 2.5 miles per hour to determine emissions factors in grams per hour.

**County-wide Analysis of Rail Segments.** If rail activity in a specific county exceeded the Board's thresholds for environmental analysis, SEA estimated the changes in emissions from these activities for that county. SEA used the method described above, (See "Regional Analysis of Rail Line Segments") to obtain County-wide emissions estimate from rail line segments. SEA used the segment specific county mileage for this analysis. SEA then compared the estimated changes in emissions for each of these individual counties with a set of screening criteria that EPA has established to determine whether emissions changes at stationary sources (i.e., power plants or industrial facilities) require a Federal or a state permit for construction or operation. This approach provides conservative screening for potential air quality impacts because stationary sources do not benefit from the dispersion effects that mobile sources experience. If the County-wide emissions for each pollutant were less than the screening criteria, SEA considered the impacts to air quality insignificant for that county.

If the estimated emissions increases exceeded the EPA screening thresholds, SEA conducted further detailed County-wide analyses to incorporate: (1) all rail line segments that would be affected by the proposed Acquisition (i.e., the rail line segments that are above and below the Board's threshold for

environmental analysis); and (2) idling vehicles delayed at all public highway/rail at-grade crossings where the increase in rail traffic meets or exceeds the Board's thresholds for environmental analysis. SEA compared the results of this detailed analysis with the levels of potential significance that SEA developed for other cases to assess whether potential adverse impacts on air quality could occur.

**EPA Screening Criteria for County-wide Rail Segment Analysis.** Table 3.6-5, "EPA Screening Criteria," presents the screening criteria that SEA used in its analysis of County-wide emissions from the proposed Acquisition.

**TABLE 3.6-5  
EPA SCREENING CRITERIA**

Air Pollutant	Area Designation	Emission Screening Criteria in Tons/Year (and Basis) <sup>a</sup>
NO <sub>x</sub>	NO <sub>x</sub> Attainment/Maintenance or O <sub>3</sub> Marginal/Moderate NAA <sup>b</sup>	100 (GC, TV)
	O <sub>3</sub> Serious NAA	50 (GC, TV)
	O <sub>3</sub> Severe NAA	25 (GC, TV)
VOCs	O <sub>3</sub> Attainment/Maintenance or O <sub>3</sub> Marginal/Moderate NAA	100 (GC, TV)
	O <sub>3</sub> Serious NAA	50 (GC, TV)
	O <sub>3</sub> Severe NAA	25 (GC, TV)
CO	CO Attainment/Maintenance or CO Moderate NAA	100 (GC, TV)
	CO Serious NAA	50 (TV)
PM <sub>10</sub>	PM <sub>10</sub> Attainment/Maintenance or Moderate NAA	100 (GC, TV)
	PM <sub>10</sub> Serious NAA	70 (GC, TV)
SO <sub>2</sub>	SO <sub>2</sub> Attainment or NAA	100 (GC, TV)
Lead	Lead Attainment or NAA	0.6 (NSR)

<sup>a</sup> Basis for selection of most stringent emission threshold:

GC = EPA General Conformity emission threshold

TV = CAAA Title V emission threshold

NSR = EPA New Source Review emission threshold major modification

<sup>b</sup> NAA = Nonattainment Area

**County-wide Analysis of Highway/Rail At-grade Crossings.** If SEA’s estimate of County-wide emissions exceeded the EPA screening criteria, then SEA conducted a more detailed analysis of estimated County-wide emissions. SEA’s detailed analysis included additional emissions from vehicles delayed at highway/rail at-grade crossings on rail segments that would meet or exceed the Board’s thresholds for environmental analysis. SEA reviewed all highway/rail at-grade crossings on these rail segments, including those with an ADT volume less than 5,000 vehicles per day. SEA used the method described above (See “Regional Analysis of Highway/rail At-grade Crossings”) to obtain County-wide emissions estimates from vehicles delayed at highway/rail at-grade crossings.

**Level of Potential Significance**

SEA obtained the existing emissions inventory for each county that would be affected by the proposed Acquisition from an EPA database that tracks emissions trends<sup>20</sup>. SEA compared the estimated County-wide changes in emissions from Acquisition-related activities to significance criteria it developed for previous cases. For air quality attainment areas, SEA used a level of significance criterion of 1.6 percent of the total emissions inventory for the county. If the estimated emissions increase for a county exceeded 1.6 percent of the total emissions inventory, then SEA considered the emissions increase to be potentially significant and considered potential mitigation measures.

**3.6.1 Regional Air Quality Analysis**

**Existing Conditions**

Figure 3-1, “Counties Affected by Proposed Rail Traffic Changes” shows the area affected by the proposed Acquisition. All of the counties in the affected area are currently in attainment with the NAAQS for all criteria pollutants. Table 3.6-6, “Existing Emissions Inventory for the Affected Counties,” presents the existing emissions levels in the affected counties.

**TABLE 3.6-6  
EXISTING EMISSIONS INVENTORY FOR THE AFFECTED COUNTIES**

Existing Emissions Inventory <sup>a</sup> (Tons/Year)				
VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>
117,314	185,710	479,054	121,279	327,568

<sup>a</sup> SEA used the following reference source: National Emission Trends Viewer, CD, 1985-1995, Version 1.0, September 1996, EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC. SEA

<sup>20</sup> National Emission Trends Viewer, CD, 1985-1995, Version 1.0, September 1996, EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC.



## Analysis Results

SEA evaluated emissions changes from all Acquisition related activities that would affect air quality on a regional level. They include: (1) emissions changes from freight train activity on rail line segments; and (2) emissions changes from potential traffic delays at highway/rail at-grade crossings with an ADT volume of 5,000 or greater on rail line segments that would meet or exceed the Board's thresholds for environmental analysis. Table 3.6-7, "Summary of Regional Emissions Estimates," presents the summary of regional emissions changes for all criteria pollutants (lead emissions changes are negligible; therefore, SEA did not include them in the summary below.)

**TABLE 3.6-7  
SUMMARY OF REGIONAL EMISSIONS ESTIMATES**

Emissions Source	Estimated Emissions Changes (Tons/Year)				
	VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>
Rail Line Segments Activity <sup>a</sup>	-11.4	-308.0	-30.3	-19.0	-7.6
Idling Vehicles Delayed at Highway/Rail At-grade Crossings <sup>b</sup>	0.2	0.05	1.9	0.001	0.001
Total Change	-11.2	-308.0	-28.4	-19.0	-7.6

<sup>a</sup> SEA based this emissions estimate on analysis of all Acquisition-related rail line segments.

<sup>b</sup> This estimate represents emissions from highway/rail at-grade crossings with an ADT volume of 5,000 or greater on rail line segments that would meet or exceed the Board's thresholds for environmental analysis.

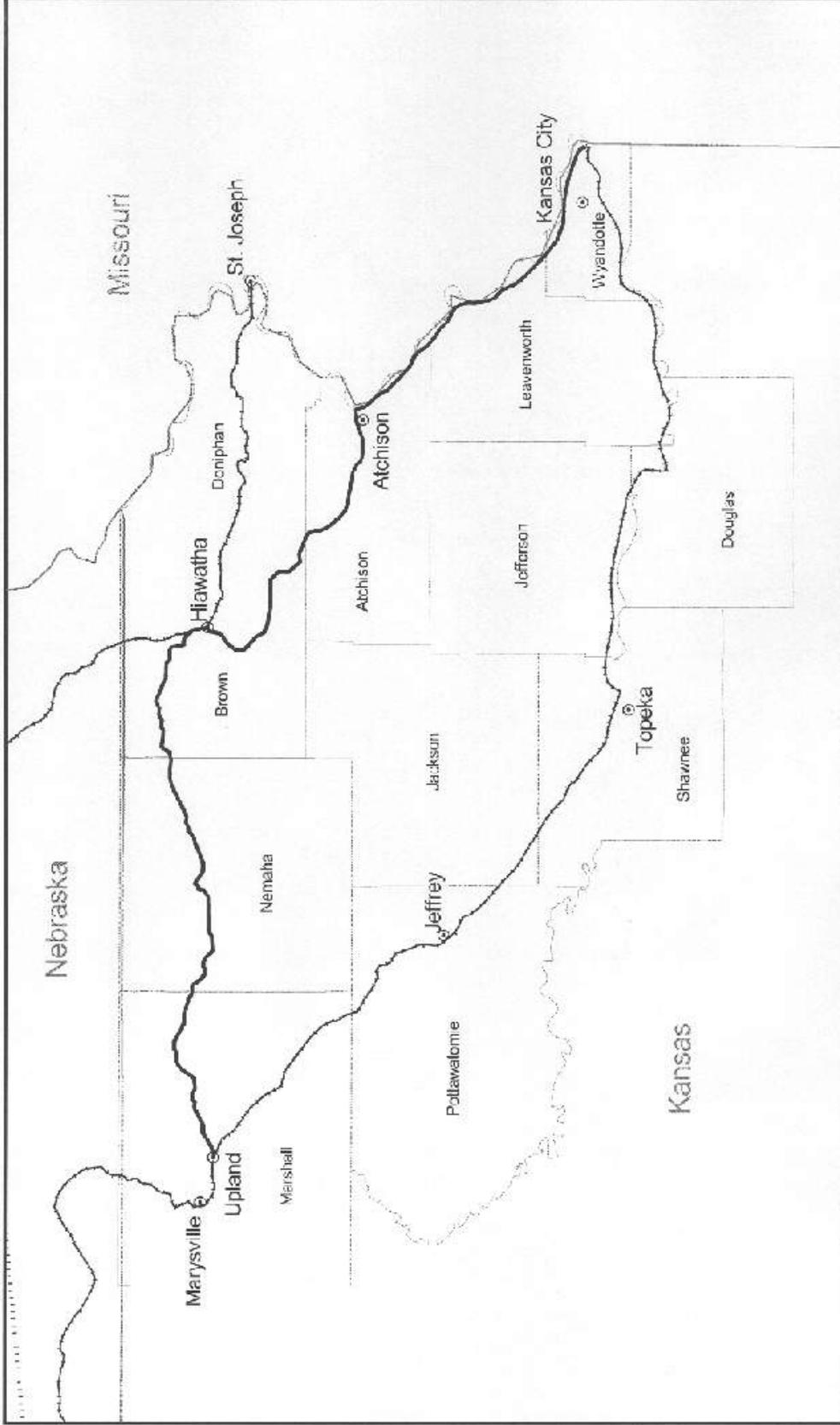
## SEA's Conclusions on Regional Air Quality

SEA determined that the proposed Acquisition would result in an overall regional decrease in emissions for all pollutants. SEA notes that the estimated decrease in emissions, particularly NO<sub>x</sub> emissions, would have a beneficial effect on regional air quality. Therefore, SEA concludes that mitigation measures would not be necessary to reduce regional emissions.

### 3.6.2 County-wide Air Quality Analysis

#### Existing Conditions

Figure 3-2, “Rail Line Segments that Exceed Board Thresholds for Environmental Analysis,” shows the location of rail line segments that SEA investigated in the County-wide analysis.



Draft Environmental Assessment

- Ⓟ City
- Rail Line Segments Exceeding Thresholds
- UP/NEXM Line
- County

Source: Geographic Data Technology

Proposed Acquisition  
 Union Pacific and Northeast Kansas & Missouri



**Figure 3-2**  
**Rail Line Segments that**  
**Exceed Board Thresholds**  
**for Environmental Analysis**

SEA identified the following six counties in Kansas where proposed rail line activities would meet or exceed the Board's thresholds for environmental analysis:

- Atchison County.
- Brown County.
- Leavenworth County.
- Marshall County.
- Nemaha County.
- Wyandotte County.

For each of these counties, SEA reviewed:

- EPA air attainment designation for all criteria pollutants.
- EPA monitoring results. SEA determined (where data were available) the number of exceedances of the NAAQS for each criteria pollutant during the 6-year period from 1993 through 1998. This is the most recent 6-year period for which EPA's monitoring results are available.
- Existing emissions inventory data. SEA also reviewed EPA emissions inventory data to determine the existing levels of emissions in each of the six counties. SEA summarized annual emissions from all existing stationary and mobile sources in each county to determine the total emissions inventory.

Table 3.6-8, "Summary of Existing Emissions Inventory by County," presents these data for each county.

#### Analysis Results—EPA Screening

SEA identified rail line segments in each county that would meet or exceed the Board's thresholds for environmental analysis. Table 3.6-9, "Screening Analysis Results for Counties with Rail Line Segments that Meet or Exceed Board's Thresholds for Environmental Analysis" presents SEA's estimated County-wide emissions increases and a comparison of these emissions increases to the EPA screening criteria.

SEA concluded that in each of the six counties, the estimated emissions increases would exceed the EPA screening criteria for NO<sub>x</sub>. Therefore, SEA performed a detailed NO<sub>x</sub> emissions analysis for these counties.

**TABLE 3.6-8  
SUMMARY OF EXISTING EMISSIONS INVENTORY BY COUNTY**

County <sup>b</sup>	Existing Emissions Inventory <sup>a</sup> (Tons/Year)					Number of Exceedances in the Last Six Year Period <sup>c</sup>
	VOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	
Atchison	1,501	2,219	7,354	1,448	7,760	N/A <sup>d</sup>
Brown	1,316	1,025	5,647	47	10,565	N/A
Leavenworth	4,893	4,360	22,408	198	9,706	N/A
Marshall	1,516	1,090	7,134	49	14,676	N/A
Nemaha	1,275	1,297	6,569	52	11,727	N/A
Wyandotte	17,112	23,887	47,455	21,411	16,312	3 <sup>e</sup>

<sup>a</sup> SEA used the following reference source: National Emission Trends Viewer, CD, 1985-1995, Version 1.0, September 1996, EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC. SEA summed all emissions from stationary and non-point emissions sources for 1995 (most recent available data), for each county. Emissions Trends Viewer does not provide data on lead emissions.

<sup>b</sup> All counties listed in this table are in attainment with the NAAQS for all criteria pollutants.

<sup>c</sup> SEA used the following reference source: Internet website: <http://www.epa.gov/airsweb>. SEA used data for the 6-year period from 1993 through 1998.

<sup>d</sup> N/A - EPA has no available monitoring data for this county.

<sup>e</sup> Two exceedances of the NAAQS for ozone (one occurring in 1993 and one occurring in 1996), and one exceedance of the NAAQS for PM<sub>10</sub> in 1996.

**TABLE 3.6-9  
SCREENING ANALYSIS RESULTS  
FOR COUNTIES WITH RAIL LINE SEGMENTS THAT MEET OR EXCEED  
THE BOARD'S THRESHOLDS FOR ENVIRONMENTAL ANALYSIS**

<b>County</b>	<b>Analysis Results</b>	<b>VOCs</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>10</sub></b>
Atchison	Emissions increase from the Kansas City-Atchison rail line segment within Atchison County (Tons/Year)	5.2	141.8	14.0	8.8	3.5
	Emissions increase from the Atchison-Hiawatha rail line segment within Atchison County (Tons/Year)	6.0	162.5	16.0	10.0	4.0
	Total emissions increase from rail segments in Atchison County (Tons/Year)	11.2	304.3	30.0	18.8	7.5
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Atchison County?	No	Yes	No	No	No
Brown	Emissions increase from the Atchison-Hiawatha rail line segment within Brown County (Tons/Year)	8.5	230.7	22.7	14.3	5.7
	Emissions increase from the Hiawatha-Upland rail line segment within Brown County (Tons/Year)	9.6	259.6	25.6	16.0	6.4
	Total emissions increase from rail segments in Brown County (Tons/Year)	18.1	490.4	48.3	30.3	12.1
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Brown County?	No	Yes	No	No	No

**TABLE 3.6-9  
SCREENING ANALYSIS RESULTS  
FOR COUNTIES WITH RAIL LINE SEGMENTS THAT MEET OR EXCEED  
THE BOARD'S THRESHOLDS FOR ENVIRONMENTAL ANALYSIS**

<b>County</b>	<b>Analysis Results</b>	<b>VOCs</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>10</sub></b>
Leavenworth	Emissions increase from the Kansas City-Atchison rail line segment within Leavenworth County (Tons/Year)	7.0	189.4	18.6	11.7	4.7
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Leavenworth County?	No	Yes	No	No	No
Marshall	Emissions increase from the Hiawatha-Upland rail line segment within Marshall County (Tons/Year)	11.2	303.9	29.9	18.8	7.5
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Marshall County?	No	Yes	No	No	No
Nemaha	Emissions increase from the Hiawatha-Upland rail line segment within Nemaha County (Tons/Year)	15.7	424.6	41.8	26.2	10.5
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Nemaha County?	No	Yes	No	No	No
Wyandotte	Emissions increase from the Kansas City-Atchison rail line segment within Wyandotte County (Tons/Year)	4.7	127.8	12.6	7.9	3.1
	EPA Screening Criteria (Tons/Year)	100	100	100	100	100
	Are EPA Screening Criteria exceeded in Wyandotte County?	No	Yes	No	No	No

### Analysis Results—Detailed Analysis

SEA's detailed County-wide analysis included additional NO<sub>x</sub> emissions estimates for the following Acquisition-related emissions sources: (1) all rail line segments; and (2) vehicle delays at all highway/rail at-grade crossings for rail line segments that meet or exceed the Board's thresholds for environmental analysis. SEA compared this detailed County-wide NO<sub>x</sub> emissions estimate to the level of potential significance for ozone attainment areas (i.e., 1.6 percent of the existing NO<sub>x</sub> emissions inventory for the county). Table 3.6-10, "NO<sub>x</sub> Emissions Changes for All Acquisition-related Emissions Sources by County," presents the results of SEA's detailed County-wide analysis.

SEA made the following conclusions based on the detailed analysis:

- The estimated increase in NO<sub>x</sub> emissions from all Acquisition-related sources is less than the level of potential significance for ozone attainment areas in Leavenworth and Wyandotte Counties. Furthermore, SEA's detailed analysis shows that estimated NO<sub>x</sub> emissions in Wyandotte County would decrease by approximately 62 tons per year when all Acquisition-related activities are analyzed.
- The level of potential significance for NO<sub>x</sub> emissions would be exceeded in four counties: Atchison, Brown, Marshall, and Nemaha. SEA noted that the levels of potential significance in these four counties (i.e., 35.5; 16.4; 17.4; and 20.8 tons of NO<sub>x</sub> emissions for Atchison, Brown, Marshall and Nemaha counties, respectively) are very low because these counties are primarily rural areas with a small population and few industrial emission sources.

**TABLE 3.6-10  
NO<sub>x</sub> EMISSIONS CHANGES FOR ALL  
ACQUISITION-RELATED EMISSIONS SOURCES BY COUNTY**

<b>County</b>	<b>Emissions Source</b>	<b>Estimated NO<sub>x</sub> Emissions Change (Tons/Year)</b>
Atchison	Rail Line Segments <sup>a</sup>	304.3
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.1
	Total Net Emissions	304.4
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	35.5
	Is Level of Potential Significance Exceeded?	Yes
Brown	Rail Line Segments <sup>a</sup>	428.8
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.01
	Total Net Emissions	428.8
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	16.4
	Is Level of Potential Significance Exceeded?	Yes
Leavenworth	Rail Line Segments <sup>a</sup>	32.9
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.001
	Total Net Emissions	32.9
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	69.8
	Is Level of Potential Significance Exceeded?	No
Marshall	Rail Line Segments <sup>a</sup>	173.1
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.02
	Total Net Emissions	173.1
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	17.4
	Is Level of Potential Significance Exceeded?	Yes

**TABLE 3.6-10  
NO<sub>x</sub> EMISSIONS CHANGES FOR ALL  
ACQUISITION-RELATED EMISSIONS SOURCES BY COUNTY**

<b>County</b>	<b>Emissions Source</b>	<b>Estimated NO<sub>x</sub> Emissions Change (Tons/Year)</b>
Nemaha	Rail Line Segments <sup>a</sup>	424.6
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.04
	Total Net Emissions	424.6
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	20.8
	Is Level of Potential Significance Exceeded?	Yes
Wyandotte	Rail Line Segments <sup>a</sup>	-61.71
	Vehicle Delays at Highway/Rail At-grade Crossings <sup>b</sup>	0.01
	Total Net Emissions	-61.70
	Level of Potential Significance (1.6% of total County-wide NO <sub>x</sub> emissions <sup>c</sup> )	382.2
	Is Level of Potential Significance Exceeded?	No

<sup>a</sup> Emissions changes are from all Acquisition-related rail line segments within the county.

<sup>b</sup> Emissions increases are from vehicle delays at all highway/rail at-grade crossings for rail line segments that would meet or exceed the Board's thresholds for environmental analysis.

<sup>c</sup> Table 3.6-8 presents the total County-wide NO<sub>x</sub> emissions inventory.

## Review of Potential Air Quality Mitigation Alternatives

SEA conducted an additional review of County-wide NO<sub>x</sub> emissions increases in Atchison, Brown, Marshall, and Nemaha counties to determine if mitigation would be warranted. SEA conducted this review because Acquisition-related NO<sub>x</sub> emissions in these counties would exceed SEA's level of potential significance. SEA considered several factors in its review, as presented below.

**Change in Emissions Standards for Locomotives.** On April 16, 1998 EPA issued a final rule establishing standards for locomotives and locomotive engines (40 CFR Parts 85, 89, and 92). This rule will take effect in the year 2000 and will ultimately result in more than a 60 percent reduction in NO<sub>x</sub> emissions from locomotives. Railroads will achieve these reductions by employing new or remanufactured locomotives equipped with an emissions control system (e.g., locomotives equipped with a retrofitting kit to control NO<sub>x</sub> emissions). In addition to these new NO<sub>x</sub> standards, EPA established new emissions standards for hydrocarbons (HC), carbon monoxide (CO), PM, and smoke. This national program to control locomotive emissions will result in health and environmental benefits. This program will also help states comply with new NAAQS for ozone and PM. EPA proposed to adopt the new emissions standards in three phases known as: (1) Tier 0—emissions standards that will be applicable to locomotives manufactured before 2002 and to certain model year remanufactured locomotives; (2) Tier 1—emissions standards that apply to locomotives manufactured between 2002 and December 31, 2004; and (3) Tier 2—emissions standards that apply to locomotives manufactured on or after January 1, 2005.

In this Draft EA, SEA estimated the changes in emissions from locomotives on UP's rail line segments using uncontrolled emissions factors that were representative of the 1998 locomotive operating fleet. The emissions standards in the final rule will take effect in the year 2000; therefore, UP's NO<sub>x</sub> emissions will be lower than the emissions estimates provided in this analysis when UP complies with these new standards. SEA did not apply emissions factors representative of EPA's final rule for locomotive emissions standards because UP has not yet modified the current fleet of locomotives to emit lower levels of NO<sub>x</sub>. Table 3.6-11, "Comparison of Emissions Factors for Line-haul Locomotives," presents a comparison of line-haul locomotive emissions factors that are representative of the 1998 locomotive fleet and emissions standards for Tiers 0, 1, and 2.

**TABLE 3.6-11  
COMPARISON OF EMISSIONS FACTORS FOR LINE-HAUL LOCOMOTIVES<sup>a</sup>**

<b>Pollutant</b>	<b>1998 Emissions Factors<sup>b</sup></b>	<b>Tier 0 Emissions Standards<sup>c</sup></b>	<b>Tier 1 Emissions Standards<sup>d</sup></b>	<b>Tier 2 Emissions Standards<sup>e</sup></b>
VOCs	0.48	1.0	0.55	0.30
CO	1.28	5.0	2.2	1.5
NO <sub>x</sub>	13.0	9.5	7.4	5.5
PM <sub>10</sub>	0.32	0.6	0.45	0.20

<sup>a</sup> Emission factors in units of grams of pollutant per brake horsepower-hour.

<sup>b</sup> Data Source: Technical Highlights, EPA420-F-97-051.

<sup>c</sup> Data Source: 40 CFR Parts 85, 89, and 92, Tier 0 (locomotives manufactured before 2002 and certain model year remanufactured locomotives).

<sup>d</sup> Data Source: 40 CFR Parts 85, 89, and 92, Tier 1 (locomotives manufactured between 2002 and December 31, 2004).

<sup>e</sup> Data Source: 40 CFR Parts 85, 89, and 92, Tier 2 (locomotives manufactured on or after January 1, 2005).

When establishing new locomotive emissions standards, EPA primarily focused on NO<sub>x</sub> emissions reductions for the following reasons: (1) NO<sub>x</sub> is the largest constituent of locomotive emissions; and (2) EPA estimates that current unregulated locomotives contribute almost five percent of the total nationwide emissions of NO<sub>x</sub>, while contributions of locomotive emissions of other pollutants are only a fraction of a percent of nationwide emissions. EPA predicts that during the Tier 0 and 1 periods most locomotives will use injection timing to control NO<sub>x</sub> emissions. Injection timing reduces NO<sub>x</sub> emissions; however it causes an increase of particulates and volatile organic compounds (VOCs) emissions. Because the benefits of NO<sub>x</sub> emissions reductions outweigh the increase of PM and VOCs emissions, EPA Tier 0 and Tier 1 emissions standards for pollutants other than NO<sub>x</sub> are actually higher than 1998 emissions factors. EPA estimates that continuous improvements in locomotive engine design and additional control technologies will ultimately lead to VOC and PM emissions reductions by 50 percent (Tier 2 emissions standards). SEA concluded that the new emissions standards regulations will ultimately lead to a decrease of locomotive emissions and thus will benefit ambient air quality.

Table 3.6-12, "Estimated NO<sub>x</sub> Emissions Reductions Based on the New Locomotive Emissions Standards," presents SEA's estimated Acquisition-related NO<sub>x</sub> emissions reductions in Atchison, Brown, Marshall, and Nemaha Counties using the new emission standards for diesel locomotives beginning in the year 2000.

SEA concluded that the implementation of the new locomotive emission standards would offset Acquisition-related NO<sub>x</sub> emissions increases by the year 2001 in Marshall County; 2007 in Atchison County, and 2008 in Brown County. The new locomotive emissions standards would also offset Acquisition-related increases in NO<sub>x</sub> emissions in Nemaha County by approximately 50 percent by the year 2015.

**TABLE 3.6-12  
ESTIMATED NO<sub>x</sub> EMISSIONS REDUCTIONS BASED ON THE NEW  
LOCOMOTIVE EMISSIONS STANDARDS <sup>a</sup>**

Year	NO <sub>x</sub> Emissions Factor <sup>b</sup> (Pounds/1,000 gallons)	Estimated Acquisition-related NO <sub>x</sub> Emissions Increases (Tons/Year)			
		Atchison County	Brown County	Marshall County	Nemaha County
1998	595.59	304.3	428.8	173.1	424.6
2000	588.26	294.7	416.6	101.1	419.3
2001	565.81	265.2	379.4	0	403.2
2002	526.41	213.5	314.0		374.8
2003	488.39	163.5	251.0		347.4
2004	449.44	112.4	186.4		319.3
2005	404.09	52.8	111.1		286.7
2006	369.27	7.1	53.4		261.6
2007	348.65	0	19.2		246.7
2008	336.74		0		238.2
2015	300.55				212.1

<sup>a</sup> 40 CFR Parts 85, 89, and 92; Emissions Standards for Locomotives and Locomotive Engines; Final Rule, April 16, 1998.

<sup>b</sup> SEA used the following data source: EPA, Office of Mobile Sources, August 1998, Emissions factors for Class I line-haul locomotives.

**Comparative Review of NO<sub>x</sub> Emissions.** SEA reviewed the existing County-wide emissions inventories for Atchison, Brown, Marshall, and Nemaha Counties to determine the three most

substantial types of NO<sub>x</sub> emissions sources.<sup>21</sup> The most prevalent emission source types in Atchison County, in order of significance, are as follows: (1) fuel combustion industrial sources; (2) highway vehicles; and (3) off-highway vehicles (i.e., non-road gasoline and diesel vehicles, aircraft, marine vessels, and railroads). For Marshall County, the most prevalent emission sources were: (1) highway vehicles; (2) off-highway vehicles; and (3) miscellaneous combustion sources. For Brown and Nemaha Counties, the sources were: (1) highway vehicles; (2) off-highway vehicles; and (3) fuel combustion industrial sources.

To gain a better understanding of the potential significance of Acquisition-related NO<sub>x</sub> emissions increases, SEA reviewed EPA's source ranking report<sup>22</sup> for 165 existing NO<sub>x</sub> air pollution sources in Kansas. SEA determined that the additional 304 tons of Acquisition-related NO<sub>x</sub> emissions in Atchison County would rank 94<sup>th</sup> on the list of 165 largest NO<sub>x</sub> emissions sources in Kansas. For Brown and Nemaha counties, the additional 429 and 425 tons of NO<sub>x</sub>, respectively, would rank 75<sup>th</sup> on the list. Finally, for Marshall County, the additional 173 tons of NO<sub>x</sub> would rank 139<sup>th</sup> on the list. In addition, SEA compared the estimated NO<sub>x</sub> emissions increases with emissions generated by typical stationary sources. Table 3.6-13, "Comparison of Acquisition-related NO<sub>x</sub> Emissions Increases to NO<sub>x</sub> Emissions from Typical Stationary Sources," presents a comparison of the projected Acquisition-related NO<sub>x</sub> emissions to NO<sub>x</sub> emissions generated by typical stationary emission sources.

SEA also compared the pre- and post-Acquisition emissions estimates for Atchison, Brown, Marshall, and Nemaha Counties with the existing emissions inventories for other counties in Kansas. Table 3.6-14, "Comparison of Acquisition-related NO<sub>x</sub> Emission Levels to State-wide Levels," shows the pre- and post-Acquisition ranking for these three counties relative to other counties in Kansas.

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<sup>21</sup> National Emission Trends Viewer, CD, 1985-1995, Version 1.0, September 1996, EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC.

<sup>22</sup> Internet website: <http://www.epa.gov/airsweb>.

**TABLE 3.6-13  
COMPARISON OF ACQUISITION-RELATED NO<sub>x</sub> EMISSIONS INCREASES  
TO NO<sub>x</sub> EMISSIONS FROM TYPICAL STATIONARY SOURCES**

Emissions Source	NO <sub>x</sub> Emissions (Tons/Year)
Estimated Acquisition-Related Increases in NO <sub>x</sub> Emissions:	
Atchison County	304
Brown County	429
Marshall County	173
Nemaha County	425
Typical Natural Gas Compressor Station <sup>a</sup>	387
Typical Natural Gas-fired Power Plant <sup>b</sup>	1,456
Typical Coal-fired Power Plant <sup>c</sup>	3,428

<sup>a</sup> SEA based these data on EPA's 1996 source ranking report for 165 nitrogen dioxide air pollution sources in Kansas. Source rank is as follows: 81/165 (51<sup>st</sup> percentile).

<sup>b</sup> SEA selected a stationary gas turbine for electricity generation with power output of 250 megawatts as an example of a typical gas-fired power plant stationary source. SEA assumed 8,760 hours of operation per year, natural gas fueling, and water injection as a NO<sub>x</sub> emissions control method. SEA used the following data source: EPA's AP-42, Section 3.1, November, 1996 edition.

<sup>c</sup> SEA selected a stationary coal-fired boiler for electricity generation with power output of 250 megawatts as an example of a typical pulverized coal-fired power plant stationary source. SEA assumed 8,760 hours of operation per year, sub-bituminous New Source Performance Standard boiler. SEA used the following data source: EPA's AP-42, Section 1.1, September, 1998 edition.

**TABLE 3.6-14**  
**COMPARISON OF ACQUISITION-RELATED NO<sub>x</sub> EMISSION LEVELS**  
**TO STATE-WIDE LEVELS<sup>a</sup>**

County	Pre-Acquisition			Post-Acquisition		
	Total County-wide NO <sub>x</sub> Emissions Inventory (Tons/Year)	County Rank	Percentile Rank (%)	Total County-wide NO <sub>x</sub> Emissions Inventory (Tons/Year)	County Rank	Percentile Rank (%)
Atchison	2,218.7	35/106	67.3	2,523.1	32/106	70.1
Brown	1,025.2	62/106	41.3	1,454.0	50/106	52.8
Marshall	1,089.6	60/106	43.2	1,262.7	56/106	47.1
Nemaha	1,297.3	52/106	50.9	1,722.0	45/106	57.6

<sup>a</sup> SEA used the following reference source: National Emission Trends Viewer, CD, 1885-1995, Version 1.0, September 1996, EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC. For pre Acquisition levels SEA summed all emissions from stationary and non-point emissions sources for 1995 (most recent available data), for each county. For post Acquisition levels SEA summed the pre Acquisition values and projected acquisition related increase in NO<sub>x</sub> emissions.

### SEA's Conclusions on County-wide Air Quality

SEA concluded that estimated emissions levels for NO<sub>x</sub> in six counties in Kansas would exceed the EPA screening criteria, based on an analysis of rail segments that would exceed the Board's thresholds for environmental analysis. To further evaluate the potential for a significant adverse effect on air quality, SEA conducted a more detailed analysis of NO<sub>x</sub> emissions, which included emissions estimates for all Acquisition-related activity in each county. In its detailed analysis, SEA determined that estimated emissions increases would be potentially significant for Atchison, Brown, Marshall, and Nemaha counties, when compared with the existing level of NO<sub>x</sub> emissions in these counties. The remaining two counties—Leavenworth and Wyandotte—would not exceed the level of potential significance for NO<sub>x</sub>.

SEA concluded that the combined Acquisition-related increases in NO<sub>x</sub> emissions for Atchison, Brown, Nemaha, and Marshall counties would be comparable to the annual level of emissions from a typical natural gas-fired power plant. SEA also concluded that the proposed Acquisition would not significantly increase the total NO<sub>x</sub> emission inventories of these four counties, relative to other counties in Kansas. SEA does not recommend mitigation of County-wide air emissions for the following reasons:

- EPA's new emission standards for locomotives will effectively mitigate the level of Acquisition-related NO<sub>x</sub> emissions in Atchison, Brown and Wyandotte Counties, beginning in the year 2000.

- In Nemaha County, the new emissions standards for locomotives will reduce NO<sub>x</sub> emissions by approximately 50%. The remaining emissions (i.e., about 212 tons per year) are small, in absolute terms, compared to other potential industrial sources of NO<sub>x</sub> and to the overall emissions inventory of the region.
- Overall regional emissions of air pollutants will be reduced because of the proposed Acquisition.

### 3.7 NOISE

UP expects to increase rail traffic on five rail line segments following the proposed Acquisition, but does not expect any significant changes in operations at any rail yards or other rail facilities. Additional train traffic on the NEKM rail line and two of UP's rail lines could increase noise in the communities through which the rail lines pass. To determine whether these noise increases would have potential adverse effects, SEA evaluated potential increases in noise on the three rail line segments that met the Board's thresholds for noise analysis. This section describes the results of SEA's analysis of Acquisition-related noise effects.

#### SEA's Evaluation Approach

To conduct its evaluation, SEA considered potential effects of the proposed Acquisition on noise from projected train traffic increases on three rail line segments in Kansas: (1) Kansas City-Atchison; (2) Atchison-Hiawatha; and (3) Hiawatha-Upland. SEA used analytical methods developed for past cases to estimate potential effects on noise.

#### Board Thresholds for Analysis

SEA used the Board's thresholds for environmental analysis, as defined by 49 CFR 1105.7(e)(6), to identify rail line segments with sufficient increases in freight train activity to evaluate potential noise effects. The relevant Board threshold for analysis of noise effects on rail segments is an increase of eight or more trains per day or a 100 percent or greater increase in annual gross ton-miles.

The Board's rules further specify that the noise analysis should determine the number of noise-sensitive receptors (residences, churches, schools, hospitals) in two areas:

- Those areas that would experience an L<sub>dn</sub> of 65 dBA or greater (regardless of the incremental increase).
- Those areas with an incremental increase of 3 dBA L<sub>dn</sub> or greater.

In past cases, SEA determined that counting the number of noise-sensitive receptors that would be exposed to an L<sub>dn</sub> of 65 dBA or greater before and after the proposed Acquisition is sufficient to satisfy

both of these noise level criteria. Therefore, SEA did not identify noise effects associated with an increase of 3 dBA  $L_{dn}$  for areas exposed to less than 65 dBA  $L_{dn}$ .

These Board thresholds for noise are consistent with other Federal agencies' noise criteria and are based on well-established noise annoyance studies of transportation activities. Agencies charged with environmental noise assessment and the scientific community agree that noise levels at or above these thresholds are adverse.

### Methods

As specified by the Board's environmental regulations, SEA used  $L_{dn}$ , the day-night equivalent sound level, to characterize community noise.  $L_{dn}$  is a measure of cumulative noise over a 24-hour period, adjusted to account for the perception that a noise at night is more bothersome than the same noise during the day. The unit for  $L_{dn}$  is the dBA, or A-weighted decibel. A-weighting approximates the manner in which the human ear responds to sound.

The proposed Acquisition would change noise levels along rail line segments where operating changes would occur. UP's post-Acquisition train volume estimates on three rail line segments exceed the Board's threshold for a noise analysis. The following discussion summarizes the procedures SEA used to estimate the noise levels near these rail lines. Similar procedures have been used by SEA to evaluate noise effects for other rail acquisitions and mergers.<sup>23</sup>

The operation of freight trains results in noise from a number of sources. Some of the main noise sources include the following: (1) steel wheels of locomotives and rail cars rolling on steel rails; (2) engine and exhaust noise associated with locomotives; and (3) train horns at highway/rail at-grade crossings. SEA used field measurements of empty and full coal trains on UP's rail line between Kansas City, Kansas and Upland, Kansas, along with published data, to estimate the noise produced by these sources. SEA then used noise models developed by the FRA and other experts on noise analysis to predict noise levels at different distances from the rail lines under a variety of operating conditions. Table 3.7-1, "Reference Sound Levels Used to Estimate Levels of Train Noise," is a summary of the reference sound levels that SEA used in the noise models to estimate noise levels along the rail line segments.

**TABLE 3.7-1  
REFERENCE SOUND LEVELS USED TO ESTIMATE  
LEVELS OF TRAIN NOISE**

Source	Train Speed	Reference Level (100 feet from Track Centerline)
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<sup>23</sup> Surface Transportation Board, Section of Environmental Analysis, "Final Environmental Impact Statement, Finance Docket No. 33388, "Proposed Conrail Acquisition", May 1998.

Horns at Highway/Rail At-grade Crossings	— <sup>a</sup>	SEL <sup>b</sup> = 110.1 dBA
Locomotives without Horns, Assuming an Average of Two Powered Locomotives per Train	40 mph	SEL = 97.2 dBA
Railcars	40 mph	L <sub>eq</sub> <sup>c</sup> = 81.5 dBA

- <sup>a</sup> SEA assumed that total sound energy from horn noise is independent of train speed.
- <sup>b</sup> SEL, the sound exposure level, is a measure of the total sound energy of a noise event.
- <sup>c</sup> The energy average sound level during the period that rail cars pass by.

SEA used the noise models to calculate areas where the noise levels would be at least 65 dBA before and after the proposed Acquisition. Federal agencies have accepted an L<sub>dn</sub> of 65 dBA as a basis for assessing land use compatibility. Federal agencies, including the Federal Aviation Administration and the Department of Housing and Urban Development, consider noise levels up to 65 dBA L<sub>dn</sub> to be compatible with most noise-sensitive receptors (residences, schools, hospitals, and churches).

The basis for estimating noise levels includes the following: (1) the number of trains per day; (2) the average train length; (3) the average number of locomotives per train; and (4) the reference sound levels for locomotives, train horns at highway/rail at-grade crossings, and freight cars. SEA used existing and projected future operating conditions to estimate noise levels along the rail line segments. The operating parameters that SEA used for the noise estimates are shown in Table 3.7-2, “Noise Modeling Assumptions.” These assumptions are based on information provided by UP. The trains were generally assumed to be evenly distributed through the day. The only exception is existing traffic on the NEKM Hiawatha-Upland rail line, which is currently one train per day that SEA assumed would run during the daytime hours (i.e., between 7 a.m. and 10 p.m.).

By using detailed maps, aerial photographs, and field surveys, SEA identified noise-sensitive receptors where the L<sub>dn</sub> would equal at least 65 dBA before and after the proposed Acquisition.

**TABLE 3.7-2  
NOISE MODELING ASSUMPTIONS**

Rail Line Segment	Number of Trains/Day		Average Train Length (Feet)	Average No. Locomotives	Avg. Train Speed (Miles/Hour)
	EB <sup>a</sup>	WB <sup>b</sup>			
Pre-Acquisition					
Kansas City-Atchison	2.7	11.3	5,430	3	40 <sup>c</sup>
Atchison-Hiawatha	3.1	9.7	5,494	3	40 <sup>c</sup>
Hiawatha-Upland	0.5	0.5	950	1	25
Post-Acquisition					
Kansas City-Atchison	2.7	20.6	5,884	2.9	40 <sup>c</sup>
Atchison-Hiawatha	3.1	19.0	5,946	2.9	40 <sup>c</sup>
Hiawatha-Upland	0.5	15.5	6,218	2.7	35

<sup>a</sup> Trains moving in the eastbound direction from Nebraska to Kansas City, Kansas.

<sup>b</sup> Trains moving in the westbound direction from Kansas City, Kansas to Nebraska. The increase in trains is primarily empty coal trains returning to the Powder River Basin in Wyoming.

<sup>c</sup> Train speed reduced to a maximum of 20 mph within Atchison City limits.

### Criteria of Significance

SEA established the following thresholds for determining whether Acquisition-related noise effects would be adverse and require analysis: (1) 65 dBA or greater  $L_{dn}$  from rail operations, and (2) an increase in  $L_{dn}$  of 3 dBA or greater. SEA also considered the local context of any noise effects to determine if the effects would be potentially adverse. SEA evaluated noise mitigation measures wherever SEA identified noise-sensitive receptors that would experience noise levels of 65 dBA  $L_{dn}$  and an increase of at least 3 dBA  $L_{dn}$ .

### Existing Conditions

SEA estimated existing noise levels for each of the three rail line segments that exceeded the Board's threshold for environmental analysis of noise effects. Table 3.7-3, "Rail Line Segment—Community Descriptions," summarizes the characteristics of the communities and receptors found along these rail line segments.

**TABLE 3.7-3  
RAIL LINE SEGMENT–COMMUNITY DESCRIPTIONS**

<b>Segment</b>	<b>State</b>	<b>Operator</b>	<b>Community Descriptions</b>
Kansas City-Atchison	Kansas	UP	The are two large housing projects near the tracks in Kansas City. From Kansas City-Atchison, the tracks run along the Missouri River, mostly at the bottom of bluffs that are more than 100 feet high. The town of Wolcott between Leavenworth and Kansas City was destroyed by floods in 1993, although it is still shown on many maps.
Atchison-Hiawatha	Kansas	UP	The land use along this track segment is primarily agricultural. The segment passes through eight communities. All except Atchison and Hiawatha are small farming communities that typically have a small downtown area with several commercial buildings and a couple of grain silos near the tracks. The residences are almost all single family and are generally scattered throughout the town. Although Hiawatha is a larger community, the western part of town that the tracks pass though is similar to one of the small farming communities.
Hiawatha-Upland	Kansas	NEKM	The land use along this track segment is primarily agricultural. The segment passes through ten communities. All except Seneca and Sabetha are small farming communities that typically have a small downtown area with several commercial buildings and a couple of grain silos near the tracks. The residences are almost all single family and are generally scattered throughout the town. The two larger towns, Seneca and Sabetha, have multiple highway/rail at-grade crossings, a large downtown, and more closely-spaced buildings.

The three rail line segments all included highway/rail at-grade crossings, where train operators sound horns as they approach the highway/rail at-grade crossings. SEA calculated existing (i.e., pre-Acquisition) noise levels (expressed in  $L_{dn}$ ) for both horn noise and the wayside noise for each rail segment using the models described in the Methods section. Using the model results, SEA estimated the existing 65 dBA  $L_{dn}$  noise contour for each rail line segment and then counted the number of noise-sensitive receptors within the contour. Table 3.7-4, “Pre-Acquisition Number of Noise-sensitive Receptors Within the 65 dBA  $L_{dn}$  Contour,” shows the results of this analysis. In all, SEA estimated that 485 noise-sensitive receptors, consisting of 480 residences, one school and four churches, are within the 65 dBA  $L_{dn}$  contour for the pre-Acquisition train volumes.

**TABLE 3.7-4  
NUMBER OF NOISE-SENSITIVE RECEPTORS WITHIN  
PRE-ACQUISITION 65 dBA L<sub>dn</sub> CONTOUR**

Rail Line Segments	Present Owner	Pre-Acquisition Number of Noise-sensitive Receptors within the 65 dBA L <sub>dn</sub> Contour		
		Residences	Schools	Churches
Kansas City-Atchison	UP	265	0	0
Atchison-Hiawatha	UP	213	1	4
Hiawatha-Upland	NEKM	2	0	0
	Total	480	1	4

For rail line segments, SEA calculated both wayside noise and horn noise. The source of wayside noise is steel wheels of locomotives and rail cars rolling on steel rails and engine and exhaust noise associated with locomotives. SEA assumed that beyond ¼ mile of the highway/rail at-grade crossings, the primary source of noise is wayside noise. In developing train horn noise estimates, SEA assumed that the operators would sound train horns before every highway/rail at-grade crossing, starting ¼ mile before the crossing using the required long-long-short-long sequence that is completed as the lead locomotive enters the crossing. Train horns are designed to be very loud to provide sufficient warning to the public that a train is approaching a highway/rail at-grade crossing. At highway/rail at-grade crossings where operators sound warning horns on a regular basis, the 65 dBA contour extends much further from the tracks than along rail line segments where wayside noise is the only source of noise. All of the 485 noise-sensitive receptors listed in Table 3.7-4 are within ¼ mile of highway/rail at-grade crossings where SEA has assumed that trains horns are the dominant source of train noise.

### Noise Analysis Results

Following is a summary of SEA’s noise analysis for the three rail line segments where UP’s post-Acquisition train volume estimates would exceed the Board’s threshold for noise analysis:

**Kansas City-Atchison.** UP estimates that train volume on this rail line segment would increase from 14 trains per day to 23.3 trains per day following the proposed Acquisition. SEA estimates that approximately 427 noise-sensitive receptors would be within the post-Acquisition 65 dBA L<sub>dn</sub> contour. SEA determined that because the increase in L<sub>dn</sub> at all of these receptors would be less than 3 dBA, the noise effects along this rail line segment are below the criteria of significance; therefore, SEA does not recommend noise mitigation on this rail line segment.

**Atchison-Hiawatha.** UP estimates that train volume on this rail line segment would increase to approximately 22.1 trains per day from the current level of about 12.8 trains per day. SEA estimates that approximately 408 noise-sensitive receptors would be within the post-Acquisition 65 dBA L<sub>dn</sub> contour. SEA determined that because the increase in L<sub>dn</sub> at all of these receptors would be less than

3 dBA, the noise effects along this rail line segment are below the criteria of significance; therefore SEA does not recommend noise mitigation on this rail line segment.

**Hiawatha-Upland.** SEA determined that the proposed Acquisition would result in adverse noise effects along this rail line segment. UP estimates that an average of 15 additional trains per day would use this rail line segment, and that this would result in a substantial improvement in the efficiency and capacity of UP's rail system. SEA estimates that the Acquisition-related changes would result in adverse effects on approximately 648 noise-sensitive receptors. All but nine of these receptors are located in areas affected by train horn noise, which is a deliberate sound to promote safety at highway/rail at-grade crossings. SEA projects that post-Acquisition train noise at all 648 sensitive receptors would exceed the criteria of significance.

SEA's detailed analysis results are presented below.

Using information provided by UP, SEA estimated the location of the post-Acquisition 65 dBA  $L_{dn}$  noise contours. Table 3.7-5, "Increase in  $L_{dn}$  and Distance to 65 dBA  $L_{dn}$  Contour," shows, by rail line segment, the projected increase in both wayside and horn noise levels and SEA's estimate of the distance to the 65 dBA  $L_{dn}$  contour for the pre- and post-Acquisition cases. SEA estimated that the 65 dBA  $L_{dn}$  contour would extend to a distance of 165 to 1,095 feet from the centerline of the mainline track for these three rail line segments. For the post-Acquisition case, the three rail line segments would have more trains heading west toward Nebraska. Because the westbound trains would sound their horns east of highway/rail grade crossings, the distance to the 65 dBA  $L_{dn}$  contour is substantially greater east of the highway/rail at-grade crossings.

**TABLE 3.7-5  
INCREASE IN  $L_{dn}$  AND DISTANCE TO 65 dBA  $L_{dn}$  CONTOUR**

Rail Line Segment	Average Number of Trains Per Day				Increase in $L_{dn}$		
	Pre- Acquisition		Post-Acquisition		Rail Line Segment <sup>c</sup>	At-grade Crossings <sup>d</sup>	
	EB <sup>a</sup>	WB <sup>b</sup>	EB <sup>a</sup>	WB <sup>b</sup>		East of Crossings	West of Crossings
Kansas City-Atchison	2.7	11.3	2.7	20.6	2.6 dBA	2.6 dBA	1.1 dBA
Kansas City-Atchison (within Atchison city limits)	2.7	11.3	2.7	20.6	2.2 dBA	2.6 dBA	0.6 dBA
Atchison-Hiawatha	3.1	9.7	3.1	19.0	2.7 dBA	2.9 dBA	1.1 dBA
Atchison-Hiawatha (within Atchison city limits)	3.1	9.7	3.1	19.0	2.4 dBA	2.9 dBA	0.6 dBA
Hiawatha-Upland	0.5	0.5	0.5	15.5	25.3 dBA	21.3 dBA	11.1 dBA
					Distance to 65 dBA $L_{dn}$ Contour		
Kansas City-Atchison					280 ft	1,095 ft	420 ft
Kansas City-Atchison (within Atchison city limits)					170 ft	1,055 ft	340 ft
Atchison-Hiawatha					270 ft	1,040 ft	435 ft
Atchison-Hiawatha (within Atchison city limits)					165 ft	1,000 ft	360 ft
Hiawatha-Upland					185 ft	875 ft	190 ft

<sup>a</sup> Eastbound trains.

<sup>b</sup> Westbound trains.

<sup>c</sup> The increase in  $L_{dn}$  is on the portions of rail line segments located more than ¼ mile from a highway/rail at-grade crossing.

<sup>d</sup> The increase in  $L_{dn}$  within ¼ mile of highway/rail at-grade crossings where train horns sound as a warning to motorists and pedestrians. The increase is substantially greater east of the crossings since the increased train volume would all be empty coal trains returning to the Powder River Basin in Wyoming. These westbound trains would only sound their horns east of the highway/rail at-grade crossings.

SEA counted the number of noise-sensitive receptors that lie within the post-Acquisition 65 dBA  $L_{dn}$  contour. Using UP's estimate for post-Acquisition train volumes, SEA determined that approximately 1,483 noise-sensitive receptors would be within the 65 dBA  $L_{dn}$  contours for these three rail line segments. Compared with the pre-Acquisition case, this would represent an increase of 981 residences, three schools and 14 churches. All but 13 of the residences and one of the churches lie within ¼ mile of a highway/rail at-grade crossing, where the predominant source of noise is train horns.

SEA then determined whether any of the 1,483 receptors would experience an increase greater than 3 dBA  $L_{dn}$ . Table 3.7-5 shows, by rail line segment, SEA's projected increase in both wayside noise and

train horn noise. SEA concluded that the  $L_{dn}$  would increase by more than 3 dBA on the Hiawatha-Upland rail line segment only.

In all, SEA determined that 635 residences, three schools and ten churches on the Hiawatha-Upland rail line segment would experience a post-Acquisition noise level of 65 dBA  $L_{dn}$  or greater, and an increase in  $L_{dn}$  of 3 dBA or greater. The communities where SEA projects a greater than 3 dBA increase in  $L_{dn}$  are:

- Hiawatha, Kansas. The rail line segment starts in the extreme northwestern part of Hiawatha, at the proposed connection to the UP rail line. There are no noise-sensitive receptors in this part of Hiawatha located near the rail line.
- Hamlin, Kansas. This is a very small town with only a few residences that are not abandoned. The tracks run through the southern edge of this community. There are no commercial buildings aside from grain silos. There is one highway/rail at-grade crossing at the western edge of this small town. SEA projects that most of the noise-sensitive receptors in Hamlin would be within the post-Acquisition 65 dBA  $L_{dn}$  contour because of horn noise from westbound trains approaching the grade crossing. This includes 26 residences and one church.
- Morrill, Kansas. The rail line runs through the southern part of Morrill. Most of the buildings are single-family residences, and a number of them are abandoned. There are a few commercial buildings located near the rail line in the center part of the town. SEA projects that all but two of the 57 noise-sensitive receptors within the post-Acquisition 65 dBA  $L_{dn}$  contour are located north of the rail line in the eastern part of Morrill.
- Sabetha, Kansas. The rail line runs through the northern part of Sabetha. The buildings to the north of the rail line are primarily single-family residences. South of the rail line are some commercial areas and single-family residences. A small apartment complex is adjacent to the rail line in the eastern part of the town. The buildings along the rail line provide some acoustic shielding, especially north of the rail line. SEA projects a total of 170 residences, one school and one church are within the post-Acquisition 65 dBA  $L_{dn}$  contour.
- Oneida, Kansas. Oneida has a small area of commercial buildings, but the majority of the town is single-family residences including a number of abandoned residences. The rail line runs through the southern part of town. SEA projects that 25 residences are within the 65 dBA  $L_{dn}$  contour, the majority of which are north of the rail line.
- Seneca, Kansas. The rail line runs east to west through the south central part of Seneca. There are a number of single family residences and a large commercial/industrial area on both sides of the rail line. SEA estimates that 120 residences and one church are within the post-Acquisition 65 dBA  $L_{dn}$  contour. These sensitive receptors are located along the rail line throughout Seneca. The commercial and industrial buildings near the center of town provide acoustic shielding for

residences farther from the rail line. Without this shielding, there would be a substantially greater number of noise-sensitive receptors within the post-Acquisition 65 dBA  $L_{dn}$  contour.

- Baileyville, Kansas. The rail line runs through the southern part of town. The majority of the town is single-family residences, with a few commercial buildings. SEA projects that 22 residences, one school and one church are within the post-Acquisition 65 dBA  $L_{dn}$  contour. The majority of the residences are on the eastern side of the town.
- Axtell, Kansas. The rail line runs northwest to southeast through the center of Axtell. There are residences on both sides of the rail line, and a small downtown area in the center of town, south of the rail line. SEA projects that within Axtell there are 158 residences, one school and three churches within the post-Acquisition 65 dBA  $L_{dn}$  contour. Because of the many highway/rail at-grade crossings in Axtell, the affected sensitive receptors are spread throughout the town, on both sides of the rail line.
- Beattie, Kansas. There are a number of residences in Beattie, along with a number of commercial buildings. The rail line runs through the southern part of town and the commercial area is north of the rail line. SEA estimates that there are 29 residences within the post-Acquisition 65 dBA  $L_{dn}$  contour. Because all of the highway/rail at-grade crossings are on the eastern side of Beattie, the majority of the adversely affected residences are in the eastern part of the town.
- Home, Kansas. The rail line runs through the southeastern edge of this small town. The town consists of a few residences, a small commercial section in the center of town and one church. SEA projects that 30 of the residences are within the post-Acquisition 65 dBA  $L_{dn}$  contour. The majority of these residences are in the eastern part of Home.

Table 3.7-6, “Noise Analysis Results,” summarizes the results of SEA’s noise analysis.

**TABLE 3.7-6  
NOISE ANALYSIS RESULTS**

Rail Line Segment/Community	Number of Noise-sensitive Receptors within 65 dBA L <sub>dn</sub> Contour <sup>a</sup>						Number of Noise-sensitive Receptors that would Meet the Board's Thresholds
	Pre-Acquisition			Post-Acquisition			
	Resid.	School	Church	Resid.	School	Church	
<b>Kansas City-Atchison</b>							
Kansas City	239	0	0	376	0	0	0
Leavenworth	20	0	0	44 (3)	0	0	0
Fort Leavenworth	6	0	0	7	0	0	0
Atchison	0	0	0	0	0	0	0
Total Kansas City- Atchison	265	0	0	427 (3)	0	0	0
<b>Atchison-Hiawatha</b>							
Atchison	9	0	0	26	0	0	0
Shannon	0	0	0	2 (2)	0	0	0
Lancaster	30	0	0	43	0	2	0
Huron	21	0	0	35	0	0	0
Everest	70	1	1	118	1	2	0
Willis	14	0	1	32	0	1	0
Baker	2	0	0	2	0	0	0
Hiawatha	67	0	2	141	0	3	0
Total Atchison-Hiawatha	213	1	4	399 (2)	1	8	0
<b>Hiawatha-Upland</b>							
Hiawatha	0	0	0	0	0	0	0
Hamlin	0	0	0	26	0	1	27
Morrill	0	0	0	55 (1)	0	2 (1)	57
Sabetha	0	0	0	170	1	1	172
Oneida	0	0	0	25	0	0	25
Seneca	0	0	0	120	0	1	121
Baileyville	0	0	0	22	1	1	24
Axtell	2	0	0	158 (3)	1	3	162
Beattie	0	0	0	29 (2)	0	0	29
Home	0	0	0	30 (2)	0	1	31
Total Hiawatha-Upland	2	0	0	635 (8)	3	10 (1)	648
<b>Total</b>	<b>480</b>	<b>1</b>	<b>4</b>	<b>1,461 (13)</b>	<b>4</b>	<b>18 (1)</b>	<b>648</b>

<sup>a</sup> Numbers in parentheses are receptors more than ¼ mile from highway/rail at-grade crossings that train horns would not affect.

## Review of Potential Noise Mitigation Alternatives

Effective noise mitigation for the proposed Acquisition would require consideration of train horn noise at approximately 34 highway/rail at-grade crossings on the Hiawatha-Upland rail line segment. Means for reducing the effects of horn noise include: (1) eliminating the horns; (2) reducing the loudness of the horns; and (3) interrupting the path between the horns and the sensitive receptors. Unlike other potentially adverse environmental effects, train horn noise is a deliberately created annoyance imposed to enhance safety, which means that any noise mitigation must not compromise public safety. The following sections provide some of the specific mitigation approaches that SEA considered.

**Reduce the Loudness of Train Horns.** SEA considered this option impractical because of the following reasons:

- For safety reasons, FRA regulations require that train horns produce a minimum sound level of 96 dBA at 100 feet forward of the locomotive.<sup>24</sup> Reducing the train horn warning volume could increase the potential for motor vehicle/train and pedestrian/train accidents at highway/rail at-grade crossings. In the past, the Board has consistently declined to mitigate noise caused by horns, stating that “any attempt to significantly reduce [train horn] noise levels at grade crossings would jeopardize safety, which we consider to be of paramount importance.”<sup>25</sup> Reducing loudness below certain levels could increase train-vehicle accidents. As the Board has found, reducing the duration of the horn sounding could result in similar negative impacts on safety.
- Reducing the train horn warning volume would require adjustments to the horns on all locomotives used on the Hiawatha-Upland rail line segment. This option would force UP to either modify the entire locomotive fleet or limit which locomotives it uses on this rail line segment.

**Close or Grade-separate Highway/Rail At-grade Crossings.** Closing highway/rail at-grade crossings is a step that must be implemented by state or local authorities. Closing highway/rail at-grade crossings and re-routing traffic to other highway/rail at-grade crossings can be a viable option when there is a low volume of vehicle traffic on the affected street and it is practical to re-route traffic. Another approach is to eliminate highway/rail at-grade crossings by constructing new grade separations, either overpasses or underpasses. Construction of grade separations is an expensive mitigation option and is a reasonable mitigation measure only when the noise affects large numbers of people. Because

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<sup>24</sup> 49 CFR 229.129

<sup>25</sup> Surface Transportation Board. Union Pacific Railroad—Control—Southern Pacific Railroad; Decision No. 44, Finance Docket No. 32760, August 12, 1996.

of the low population density along the Hiawatha-Upland rail line segment, SEA considers construction of new grade separations to be impractical as a noise mitigation measure.

**Ban the Use of Train Horns at Highway/Rail At-grade Crossings.** State of Kansas regulations and UP's operating procedures require the use of train horns at all public highway/rail at-grade crossings using a long-long-short-long horn sequence that starts ¼ mile before the crossing and ends as the lead locomotive clears the crossing. Across the country, there are a number of highway/rail at-grade crossings where use of train horns is banned except in emergency situations. The FRA has demonstrated in recent studies that there is a higher incidence of train/motor vehicle accidents at grade crossings where train horns are banned. The Swift Act (49 U.S.C. 20153), passed in 1994, directs the Secretary of Transportation to develop regulations relating to noise and rail safety measures. These regulations could establish the criteria for "quiet zones" for train horns. FRA is the Federal agency within DOT that has primary responsibility for establishing train horn requirements and alternatives. FRA has indicated that it is unlikely to have "Quiet Zone" or other regulations in place before 1999. Communities will have the opportunity to qualify for "quiet zones" once the final FRA regulations are in place. FRA has indicated that they will probably require safety devices such as four quadrant gates or normal crossing gates and roadway medians that make it difficult for motorists to drive around lowered gates before they would approve horn ban quiet zones.

**Construct Sound Walls Between the Tracks and the Residences.** Sound walls to reduce the levels of train horn noise must be fairly high to block the direct line between the train horns and the noise-sensitive receptors. Any walls that are parallel to the tracks must end at least 200 to 300 feet from the highway/rail at-grade crossings to prevent blocking the sight lines between the train and the roadway. In addition, the proximity of highway/rail at-grade crossings in many of the communities along the Hiawatha-Upland rail line segment would necessitate that sound walls be installed along the entire length of rail line through those communities. For these reasons, SEA determined that sound walls are not a practical means of controlling noise from train horns at highway/rail at-grade crossings on the Hiawatha-Upland rail line segment.

### SEA's Conclusions on Noise

SEA defined an adverse noise effect as a post-Acquisition noise level of 65 dBA  $L_{dn}$  and an Acquisition-related increase in noise of at least 3 dBA. SEA's noise analysis indicates the potential for adverse noise effects for 648 noise-sensitive receptors along the Hiawatha-Upland rail line segment.

SEA notes that most of the adverse noise effects would be caused by train horn noise and that the FRA anticipates promulgating new rules about safety alternatives to horn noise in the near future. These new rules would establish a community application process for FRA approval of alternatives to horn sounding. With FRA approval, communities could construct other safety measures such as four-quadrant gates, wayside mounted horns, and median barriers that would provide an equivalent level of safety at highway/rail at-grade crossings and allow UP to eliminate horn sounding through the quiet

zones. The FRA anticipates issuing its notice of proposed rulemaking in 1999. As in previous cases, SEA believes that this approach is the most effective means to address horn noise concerns.

SEA is not requiring UP to implement specific noise mitigation measures for each affected sensitive receptor. Instead, SEA recommends that UP work with state and local officials to find suitable approaches for mitigating the adverse noise effects in each community. SEA anticipates that mitigation for a specific community may include a combination of: (1) eliminating highway/rail at-grade crossings; (2) installing safety measures that meet the FRA requirements for no-horn quiet zones; or (3) other measures as UP and affected community may negotiate.

### 3.8 ENVIRONMENTAL JUSTICE

The Board's policy requires an analysis to determine if potential effects of the proposed Acquisition are predominately or disproportionately borne by minority or low-income (i.e., environmental justice) populations. This section presents the results of SEA's environmental justice analysis. The following paragraphs describe the methods for analyzing potential environmental justice effects and the results of SEA's evaluation.

#### SEA's Evaluation Approach

Executive Order No. 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations*, directs individual federal agencies to develop approaches that address environmental justice concerns in their programs, policies, and procedures. Although the Executive Order does not require independent agencies such as the Board to conduct environmental justice analyses, SEA conducted an environmental justice analysis of the proposed Acquisition because of the following:

- The President requested that independent agencies comply with the Executive Order, particularly during the National Environmental Policy Act (NEPA) process.
- Orders and guidance documents from various Federal agencies emphasize addressing environmental justice concerns.
- The Board is responsible for ensuring that the proposed Acquisition is consistent with the public interest.

In the context of the proposed Acquisition, SEA determined that the Executive Order, Federal agency guidance, and the public interest require the following issues to be reviewed:

- Whether the proposed Acquisition could have disproportionate high and adverse impacts on minority or low-income populations.

- If so, whether reasonable and feasible measures could eliminate or mitigate disproportionately high and adverse impacts.
- Whether it is appropriate to modify recommended mitigation measures to meet the needs of a disproportionately affected minority or low-income population.

In developing the approach, SEA examined relevant documents from other Federal agencies.<sup>26</sup>

The approach is designed to ensure that minority and low-income populations potentially affected by the proposed Acquisition have substantial opportunity to participate in the decision-making process and that potentially significant disproportionate high and adverse impacts on environmental justice populations, if such impacts are found to exist, are properly mitigated.

#### Board Thresholds for Analysis

To conduct its environmental justice analysis, SEA evaluated changes in the following categories of rail activities that would result from the proposed Acquisition:

- Increases in rail traffic on rail line segments.
- Constructions of new rail facilities, including rail line connections.

The Board's threshold for analysis of potential environmental justice effects is an increase of eight trains per day or a 100% increase in annual gross ton-miles on an affected rail line segment.

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<sup>26</sup> Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," February 11, 1994, 59 Fed. Reg. at 7630; U.S. Department of Transportation's Order "To Address Environmental Justice in Minority Populations and Low-income Populations," February 3, 1997; U.S. Environmental Protection Agency, "Interim Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses, Office of Federal Activities," September 30, 1997; Council on Environmental Quality, "Environmental Justice: Guidance Under the National Environmental Policy Act," Executive Office of the President, December 1997; U.S. Environmental Protection Agency, "Interim Guidance for Investigating Title VI Administrative Complaints Challenging Permits," February 1998.

Methods

SEA conducted its environmental justice analysis using a method similar to the one employed in the recent Conrail Acquisition.<sup>27</sup> The six steps of the method are listed in Table 3.8-1, “Environmental Justice Evaluation Method.”

**TABLE 3.8-1  
ENVIRONMENTAL JUSTICE EVALUATION METHOD**

Step	Description
1	Identify potential environmental and human health effects that could result from the proposed Acquisition and identify those that could meet or exceed the Board’s thresholds for environmental analysis.
2	Determine whether potential significant effects would impact minority or low-income populations.
3	Use established methods for each environmental resource area with potential significant effects on environmental justice populations to assess whether potential effects on those populations could be high and adverse.
4	Identify disproportionate effects in areas with minority and low-income populations. SEA defines effects to be disproportionate if they are predominately borne, more severe, or greater in magnitude in environmental justice areas than in other areas.
5	Conduct extended outreach to environmental justice populations bearing disproportionate high and adverse impacts.
6	Review potential mitigation measures in areas where disproportionate high and adverse impacts are found to be borne by minority and low income populations. Determine whether additional potential mitigation measures are appropriate.

First, SEA examined a broad range of potential effects and identified those activities that could meet or exceed the Board’s thresholds for environmental analysis. Such effects can include effects on safety, vehicle delay, emergency vehicle response delay, air quality, and noise.

Second, SEA determined whether these potential effects could occur in areas with minority or low-income populations. To make this determination, SEA identified the geographic areas over which potential effects could occur (areas of potential effects) and the demographic characteristics of the population in each area. SEA defined the areas of potential effects around relevant rail line segments

<sup>27</sup> Surface Transportation Board, Conrail Acquisition, Final Environmental Impact Statement, Appendix M, “Cumulative Impacts Methods and Analysis,” 1998, provides a complete description of the methods used in environmental justice evaluation of the Conrail Acquisition.

and facilities based on the change in rail activity and the nature of the potential impact. (See Table 3.8-2, “Areas of Potential Effects.”)

**TABLE 3.8-2  
AREAS OF POTENTIAL EFFECTS**

<b>Rail Activity</b>	<b>Area of Potential Effect</b>
Rail line segments with increase of eight to 15 trains per day	1,100 feet on both sides of the rail line segment
Construction projects, including rail line connections	1,100 feet on both sides of the rail line segment

SEA used uniform distances in its definition of potentially affected areas to facilitate data gathering and statistical evaluation of potential environmental justice impacts across the portion of the rail system that would be affected by the proposed Acquisition. SEA defined areas of potential effects in a manner consistent with the analysis performed for the recent Conrail Acquisition.<sup>28</sup> For this evaluation, SEA determined that the appropriate area of potential effects distance for rail line segments with an increase of eight to 15 trains per day was 1,100 feet on both sides of the rail line segment.

SEA then gathered the following census information on each census block group area of potential effects.<sup>29</sup>

- Total population.

<sup>28</sup> Conrail Acquisition Draft Environmental Impact Statement (DEIS), p. 3-50; Conrail Acquisition Final Environmental Impact Statement (FEIS), p. M-5. “SEA defined the area of potential effect corridor as the maximum area potentially exposed to the Board’s noise threshold [for analysis] of 65 dBA. SEA chose the 65 dBA threshold because it offered a practical, uniform approach to identifying the communities which would experience the most significant noise impacts and also encompassed areas that could be expected to experience other localized effects such as traffic congestion, grade crossing delays, visual intrusion, pedestrian and safety effects, and construction impacts associated with the proposed Acquisition.” For this analysis, the 1,100 foot area of potential effects corridor was selected because it encompasses the maximum extent of the 65 dBA noise threshold for analysis.

<sup>29</sup> The demographic characteristics of areas of potential effects were examined at the census block group level using data provided in the 1990 U.S. Census because the census block group is the smallest geographic unit for which the U.S. Census provides information on racial background, ethnic heritage, and household income used in the environmental justice evaluation. The boundaries of an area of potential effects created as described above will not generally correspond with the boundaries of census block groups. Where part of a census block group was included in the area, SEA treated that part as a separate census block group. Data for the census block group was scaled in proportion to the share of the geographic area of the census block group contained within the area of potential effects.

- Percent of population of minority status. SEA defined a “minority” person to be someone who is Black (Non-Hispanic), Hispanic, Asian American, American Indian, or Alaskan Native, as defined in the 1990 U.S. Census.
- Percent of population of low-income status. SEA defined a “low-income” person as one whose household income is below U.S. Department of Health and Human Services poverty guidelines.
- Percent of population of minority status in the entire county in which the census block group area of potential effects is located.
- Percent of population of low-income status in the entire county in which the census block group area of potential effects is located.<sup>30</sup>

SEA then determined whether the population residing within each individual area of potential effects constituted an “environmental justice population.” SEA defined an environmental justice population to be one that meets any of the following criteria.<sup>31</sup>

- At least one-half of the population is of minority status.
- At least one-half of the population is of low-income status.
- The percentage of the population of minority status is at least ten percentage points higher than for the entire county in which the population is located.
- The percentage of the population of low-income status is at least ten percentage points higher than for the entire county in which the population is located.

Third, SEA assessed whether potential effects on minority and low-income populations could be high and adverse. SEA determined that a “high and adverse effect” would include only a significant human health or environmental effect. SEA evaluated all potential effects on all populations living in census block group areas of potential effects and identified potential adverse impacts in the noise and

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<sup>30</sup> Poverty thresholds vary by family size. In 1989 the poverty income threshold was \$12,674 annually for a family of four. SEA used 1989 data, the most recent year for which actual population counts, rather than statistical estimates, are available. The U.S. Bureau of the Census will issue new data following the 2000 U.S. Census.

<sup>31</sup> This definition is identical to the one SEA used in its evaluation of the Conrail Acquisition. (See Conrail Acquisition DEIS, p. 3-50.)

highway/rail at-grade crossing safety resource categories. SEA determined that potential effects in the noise resource category were the only potential adverse impacts on environmental justice populations.<sup>32</sup>

Fourth, SEA determined whether potentially high and adverse effects could disproportionately affect minority and low-income communities in the absence of mitigation measures. SEA defined effects to be “disproportionate” if either of the following would occur: (1) the effects would predominantly occur in areas with environmental justice populations; or (2) the effects would be greater in magnitude in areas with environmental justice populations than in other areas. SEA created a ranking system to categorize potential adverse noise impacts in each block group area of potential effects within the area affected by the proposed Acquisition. Each potential pre-mitigation noise impact in each area of potential effects received an environmental resource score (ERS) of zero to eight. SEA assigned ERSs for potential noise impacts without considering the benefits of mitigation measures proposed to address those impacts.

The ERS for potential pre-mitigation noise impacts was defined to be the average of the following components:

- The total potential post-Acquisition noise level, absent mitigation, at a point 400 feet from rail line segments.
- The potential increase in post-Acquisition noise level, absent mitigation, at a point 400 feet from rail line segments. (See Table 3.8-3, “Environmental Resource Score for Noise.”)

For the purpose of statistical analysis, SEA divided areas of potential effects into those where potential pre-mitigation noise impacts received an ERS of 3.5 or more and those where potential pre-mitigation impacts received an ERS of less than 3.5.

SEA used statistical methods at the regional level to identify potential high and adverse noise impacts disproportionately borne by environmental justice populations. The first statistical test SEA applied is the chi-squared test. This statistical procedure is used to determine whether probabilities associated with one variable are related to probabilities associated with another. The chi-square test yields a number between zero and 100 percent, which represents the level of certainty that the probability that an area

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<sup>32</sup> No block group areas of potential effects having environmental justice populations are affected by highway/rail at-grade crossing safety impacts. See Table 3.8-4, “Environmental Resource Score Information for Block Group Areas of Potential Effects.”

of potential effects is an environmental justice population is not independent of the probability that an area of potential effects would experience an ERS of 3.5 or more for noise impacts.

**TABLE 3.8-3  
ENVIRONMENTAL RESOURCE SCORE FOR NOISE**

<b>Total Post-Acquisition Noise Level 400 Feet from Rail Line Segment Without Mitigation<sup>a</sup> (dBA L<sub>dn</sub>)</b>	<b>Score</b>	<b>Increase in Noise Levels Pre- to Post-Acquisition at 400 Feet from Rail Line Segment Without Mitigation<sup>a</sup> (dBA L<sub>dn</sub>)</b>	<b>Score</b>
Less than 65	0	Less than 3.0	0
65-66	1	3.0-5.9	1
67-68	2	6.0-8.9	2
69-70	3	9.0-11.9	3
71	4	12.0-14.9	4
72	5	15.0-17.9	5
73 and above	6	18.0 to 20.9	6
		21.0 to 23.9	7
		24.0 to 26.9	8

<sup>a</sup> The values in these columns include estimates for rail horn noise near highway/rail at-grade crossings and wayside noise along all potentially effected rail line segments.

The chi-squared analysis tests whether there is statistical independence between the environmental justice population variable and the ERS for any given potential impact. However, a conclusion that the variables are dependent does not by itself indicate that disproportionate impacts are borne by minority or low-income populations. To make this determination, SEA also used a second statistical test, the ratio of means test, to indicate the direction of the statistical pattern.

Fifth, SEA assessed whether extended outreach to environmental justice populations that could experience potential high and adverse environmental effects was warranted.

Sixth, SEA evaluated proposed mitigation measures to determine if they adequately addressed the concerns of potentially impacted environmental justice populations.

## Criteria of Significance

SEA concluded that potential environmental justice impacts would be significant if the following two conditions existed:

- The environmental justice analysis resulted in a chi-squared result greater than 50 percent, indicating that the environmental justice and environmental resource variables are not independent.<sup>33</sup>
- The environmental justice analysis for potential noise impacts resulted in a means ratio greater than one, indicating that statistically significant disproportionate impacts are borne by environmental justice populations.

SEA performed the chi-squared and ratio of means statistical tests using regional data from census block group areas of potential effects for potential noise impacts.<sup>34</sup>

## Analysis Results

To identify the potential effects of the Acquisition, SEA examined a broad range of potential environmental and health effects, including effects on safety, vehicle delay, emergency vehicle response delay, energy, air quality, and noise. SEA identified three rail line segments that would meet or exceed the Board's thresholds for environmental analysis. SEA determined that potential environmental impacts on other rail line segments or at other rail facilities would not be adverse and did not warrant further environmental justice analysis.

SEA then evaluated whether any environmental justice populations occurred within the areas of potential effects for the rail activities that would meet or exceed the Board's thresholds for environmental analysis. For each census block group area of potential effects adjacent to the rail activities, SEA determined whether the population met the definition of an environmental justice population. Table 3.8-4, "Environmental Resource Score Information for Block Group Areas of Potential Effects," provides information, summarized at the county level, for each area of potential effects that SEA evaluated. SEA identified three rail line segments that would meet or exceed the Board's thresholds for environmental analysis and have environmental justice populations within the areas of potential effects.

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<sup>33</sup> In comparison, scholarly statistical analyses typically avoid concluding that variables are not independent at less than 90 percent certainty. The lower statistical threshold of 50 percent ensures that all potential disproportionate impacts are identified

<sup>34</sup> Use of multiple resource scores (MRS) and statewide and regional evaluations performed in other environmental justice analyses conducted by SEA (See, Conrail Acquisition Final Environmental Impact Statement, Appendix M for an example.) were not applied in this study due to the limited nature of the proposed Acquisition.

SEA identified noise and highway/rail at-grade crossing safety as resource areas that could result in potential adverse impacts.<sup>35</sup> Table 3.8-5, “Potential Adverse Impacts of the Proposed Acquisition on Environmental Justice Populations,” lists the rail line segments where potential adverse impacts could affect environmental justice populations. Figure 3-3, “Census Block Groups in Northeast Kansas With Potentially Affected Environmental Justice Populations,” shows the location of census block groups containing areas of potential effects with environmental justice populations. SEA determined that potential environmental impacts on the other rail line segments or at other rail facilities would not be adverse and did not warrant further environmental justice analysis.

SEA identified potential adverse impacts in the noise and highway/rail at-grade crossing safety resource categories. SEA identified a total of 87 census block group areas of potential effects as being potentially affected by noise impacts. SEA determined that 28 of these 87 census blocks have environmental justice populations. A total of three block group areas of potential effects were identified as being potentially affected by highway/rail at-grade crossing safety impacts. None of these block group areas of potential effects were identified as having environmental justice populations. Based on these data, SEA determined that potential effects in the noise resource category were the only potential adverse impacts on environmental justice populations.<sup>36</sup>

Next, SEA performed the chi-squared and ratio of means statistical analyses to assess whether potential adverse environmental impacts of the proposed Acquisition would disproportionately impact minority or low-income populations. SEA computed the ERS for potential noise impacts for each census block group area of potential effects. Table 3.8-6, “Results of Disproportionate Impacts Analysis,” displays the results of the statistical test for the regional analysis. The ratio of means test resulted in a ratio of less than one.

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<sup>35</sup> SEA also determined that County-wide emissions and freight rail operations safety would exceed the significance criteria for post-Acquisition rail operations between Kansas City, Hiawatha, and Upland, Kansas. SEA concluded that these two resource areas would not result in localized impacts for analysis of potential environmental justice impacts.

<sup>36</sup> No block group areas of potential effects having environmental justice populations are affected by highway/rail at-grade crossing safety or traffic delay impacts. See Table 3.8-4, “Demographic, Income, and Environmental Resource Score Information for Block Group Areas of Potential Effects.”

**TABLE 3.8-4  
ENVIRONMENTAL RESOURCE SCORE INFORMATION  
FOR BLOCK GROUP AREAS OF POTENTIAL EFFECTS**

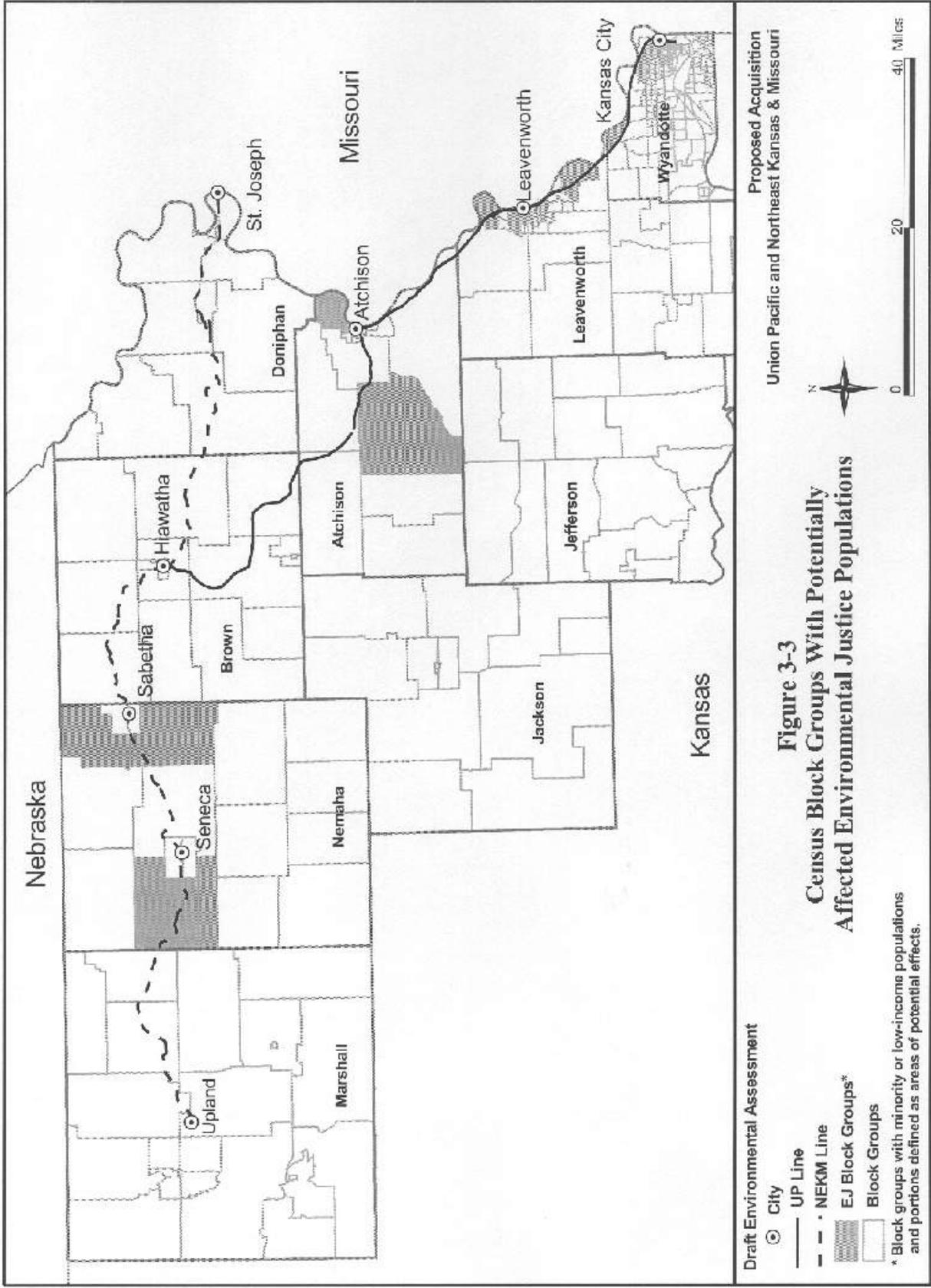
County	Number of Environmental Justice Areas of Potential Effects			Number of Non-environmental Justice Areas of Potential Effects		
	With Noise ERS 3.5 or Greater <sup>a</sup>	With Noise ERS Less Than 3.5	With Highway/Rail At-grade Crossing Safety Effects	With Noise ERS 3.5 or Greater	With Noise ERS Less Than 3.5	With Highway/Rail At-grade Crossing Safety Effects
Atchison	0	3	0	0	10	0
Brown	0	0	0	7	3	0
Leavenworth	0	10	0	0	6	0
Marshall	0	0	0	6	0	0
Nemaha	2	0	0	10	0	3
Wyandotte	0	13	0	0	17	0
Total	2	26	0	23	36	3

<sup>a</sup> ERS = Environmental Resource Score.

**TABLE 3.8-5  
POTENTIAL ADVERSE IMPACTS OF THE PROPOSED ACQUISITION ON  
ENVIRONMENTAL JUSTICE POPULATIONS**

Rail Line Segment	Potential Effects	
	Resource Category	Potentially Affects Environmental Justice Population
Kansas City-Atchison	Noise	Yes
Atchison-Hiawatha	Noise	Yes
Hiawatha-Upland	Noise	Yes
Hiawatha-Upland	Highway/Rail At-grade Crossing Safety	No





**TABLE 3.8-6  
RESULTS OF DISPROPORTIONATE IMPACTS ANALYSIS**

<b>Potential Impact</b>	<b>Statistical Confidence of Chi-Squared Result (Zero to 100 Percent)</b>	<b>Ratio of Means Result</b>	<b>Disproportionate Potential High and Adverse Impact on Minority and Low-income Populations?</b>
Noise	99.8%	0.42	No

This indicates that noise impact ERSs equal to or greater than 3.5 would not occur more frequently among environmental justice populations than among other populations potentially affected by the proposed Acquisition. The chi-squared test resulted in a confidence level above 99 percent, indicating a high level of statistical confidence for this conclusion.

Based on these results, SEA determined that further evaluation of the need for expanded outreach programs to environmental justice populations was not necessary. SEA also reviewed its preliminary recommended mitigation to address potential adverse impacts resulting from noise and highway/rail at-grade crossing safety impacts. SEA considered whether additional mitigation measures were necessary to address disproportionately high and adverse impacts to environmental justice populations. SEA concluded that the proposed Acquisition would not result in potential adverse effects for any of the potentially affected populations. Thus, mitigation of potential adverse impacts on environmental justice populations is unnecessary.

#### SEA's Conclusions on Environmental Justice

SEA concludes that the proposed Acquisition would not result in disproportionate high and adverse impacts on minority or low-income populations and that mitigation measures to address environmental justice are not warranted.

### 3.9 ACQUISITION-RELATED CONSTRUCTION PROJECTS

UP proposes to construct a new rail line connection that would join the UP and NEKM lines at Hiawatha, Kansas. The new rail line connection would be constructed entirely within the existing railroad right-of-way.

SEA completed a preliminary environmental review of the proposed connection at Hiawatha to determine if the connection would disturb only railroad property. SEA determined that the proposed connection would be built within the existing right-of-way; therefore, SEA's review focused on the project's potential to individually or cumulatively affect the environment beyond the existing right-of-way and to determine whether any aspect of the proposed activity warranted detailed environmental

review. SEA used the following criteria to evaluate the proposed connection and its potential for adverse environmental effects:

- Land Use. Would the proposed project be incompatible with adjacent land uses or have other adverse land use effects?
- Natural Resources. Would the proposed project adversely affect one or more bodies of water? Would the proposed project adversely affect threatened and endangered species?
- Air Quality. Would the proposed project adversely affect air quality in a nonattainment area? Would the proposed project generate fugitive dust emissions that would affect adjacent residential or other land uses?
- Noise. Would the proposed construction activities adversely affect average noise levels for surrounding land uses?
- Hazardous Waste Sites. Would the proposed project cause the disturbance of soil contaminated with hazardous materials?
- Cultural Resources. Would the proposed project adversely affect (demolish, abandon, change the usage of) buildings more than 50 years old? Would the proposed project disturb soils that contain archeological resources?
- Highway/Rail At-grade Crossings. Would the proposed project result in the construction or modification of highway/rail at-grade crossings that would adversely affect traffic on local streets and roadways?
- Environmental Justice. Would the proposed project disproportionately and adversely affect low-income or minority residents living near the project site?

SEA conducted an analysis of each of the areas listed above to determine the potential environmental effects of the proposed construction project at Hiawatha. Section 3.9.2 presents SEA's environmental review of the proposed construction project at Hiawatha.

### 3.9.1 Alternatives to the Hiawatha Connection

NEPA requires SEA to consider a "no-action" alternative to assess what effects, if any, would occur if UP did not construct the proposed connection. NEPA also requires SEA to consider any "reasonable" alternatives to the proposed action. The following sections discuss the no-action alternative and a build alternative for the proposed rail line connection in Hiawatha, Kansas.

### No-Action Alternative

Under the no-action alternative, UP would continue its current rail operations with empty coal trains routed between Kansas City, Kansas and Gibbon, Nebraska via two routes: (1) Kansas City west to Topeka, Kansas then north through Upland and Marysville, Kansas, then to Gibbon, Nebraska; and (2) Kansas City north through Hiawatha, Kansas and Omaha, Nebraska, then west to Gibbon, Nebraska. Under the no-action alternative, environmental effects would remain as they are today for the existing traffic on these rail line segments. The rail line corridor between Kansas City, Topeka and Upland is currently capacity-constrained and UP estimates that it would remain constrained due to the anticipated growth in train volumes and ongoing scheduled maintenance outages along this route. Furthermore, the Kansas City-to-Topeka rail line segment is a critical link in UP's Midwest-to-Los Angeles rail corridor. If empty coal trains are not diverted from this route, capacity constraints would continue to affect service on UP's existing rail system.

### Build Alternative

The existing UP and NEKM rail lines converge near the south end of Hiawatha, Kansas; run parallel to each other for approximately 2 miles through Hiawatha; then separate north of Hiawatha with the NEKM line running west to Upland, Kansas and the UP line running north to Omaha, Nebraska. Thus, reasonable build alternatives for the proposed connection would have to be located within the 2 mile corridor through Hiawatha. UP's proposed new connection is at the northern end of this 2 mile corridor. SEA considered a potential build alternative south of UP's proposed connection, but still within the 2 mile corridor.

The build alternative would require modifying an existing crossover connection between the UP rail line and the NEKM rail line near Iowa Street in Hiawatha, south of UP's proposed new connection. This crossover connection is controlled by a manual switch. For northbound UP trains to use the crossover connection, the trains would have stop on UP's mainline, operate the manual switch, then continue on the NEKM line through Hiawatha. Because the trains would come to a stop, this process would create congestion on UP's mainline track. There would also be increased congestion at highway/rail at-grade crossings in Hiawatha because the trains would not be up to track speed when they use the highway/rail at-grade crossings. Also, by connecting to the NEKM rail line at this location, UP's trains would use the main rail line serving the NEKM's Hiawatha Yard and commercial customers in Hiawatha. This would create difficulties for local trains to fully utilize the Hiawatha Yard tracks and to serve customers in Hiawatha. UP therefore rejected converting the manual-operated switch to a power-operated switch, which would reduce the track congestion problem but would not solve the local service issues. Environmental effects of the build alternative would be minimal for the installation of a power-operated switch. If the switch were not power-operated, adverse effects could result from slower trains and increased congestion in the Hiawatha area. SEA did not consider this build alternative to be feasible because, at a minimum, local service would be adversely affected.

### 3.9.2 Proposed Rail Line Connection at Hiawatha, Kansas

UP proposes to construct a rail line connection in the Town of Hiawatha, Brown County, Kansas to allow UP's trains to travel between the existing UP and NEKM lines at Hiawatha. The proposed connection would provide an alternate route for westbound empty coal trains traveling between Kansas City, Kansas and the Powder River Basin in Wyoming.

### Project Description, Purpose, and Need

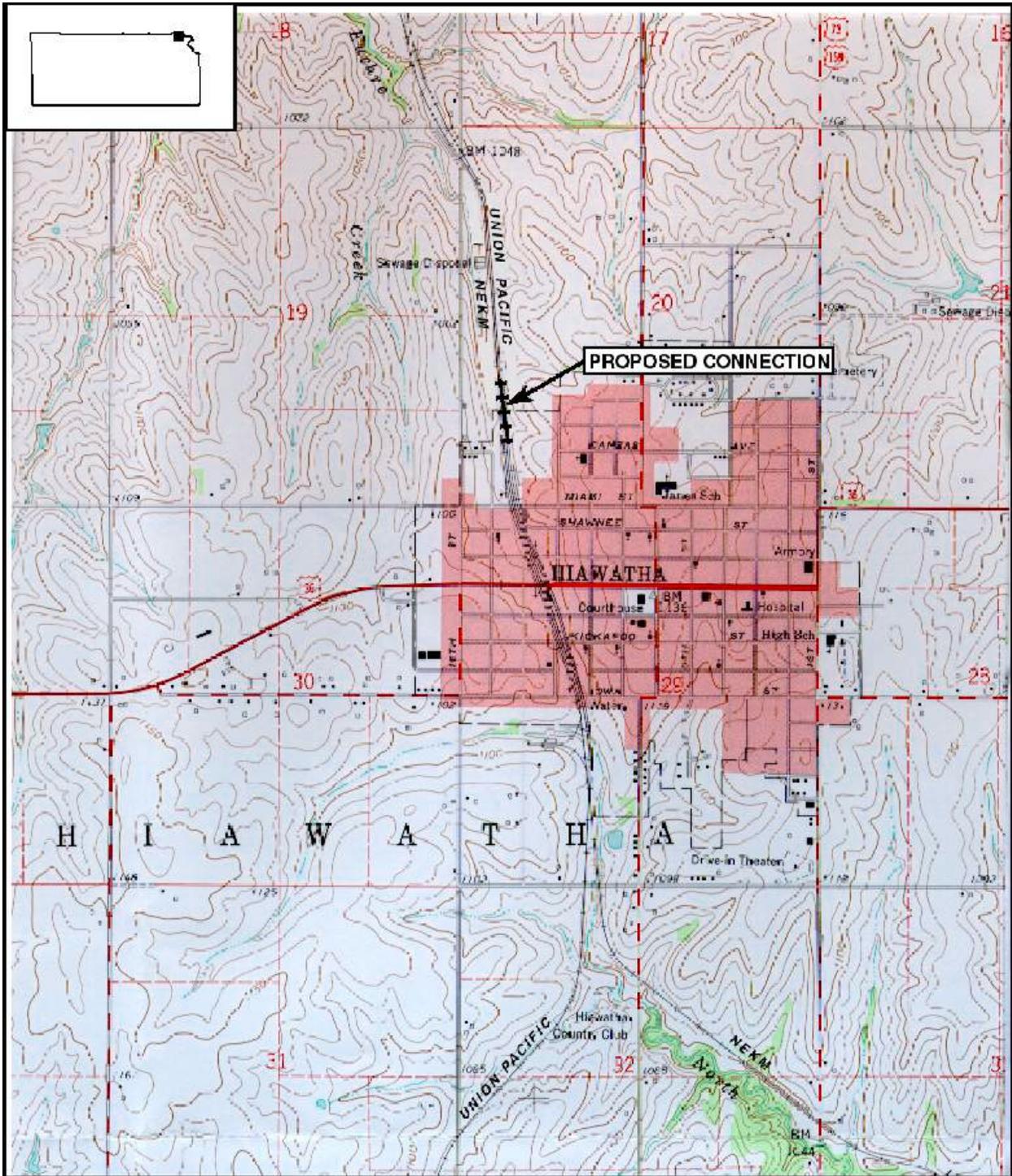
Hiawatha is located in northeastern Kansas, approximately 80 miles northwest of Kansas City, Kansas. (See Figure 3-4, "Proposed Rail Line Connection at Hiawatha, Kansas—Area Map.") The UP and NEKM lines traveling from the south (UP) and east (NEKM) meet, but do not connect, at the south end of Hiawatha. The two rail lines run adjacent to each other through Hiawatha, approximately 40 feet apart. Approximately 1 mile north of Hiawatha, the two lines separate and travel north (UP) and west (NEKM).

UP proposes to construct a rail line connection on the north side of Hiawatha, near Miami Street. (See Figure 3-5, "Proposed Connection at Hiawatha, Kansas.") The proposed connection would enable UP trains to connect to the NEKM line and travel west to Upland, Kansas, where they would connect to another UP line to Marysville, Kansas and travel north to Gibbon, Nebraska. (See Figure 2-1, "Existing NEKM and UP Rail Systems.") UP has proposed this alternate route because its current route for empty coal trains (Kansas City-Topeka-Upland) is capacity-constrained and is expected to remain constrained due to anticipated growth in the volume of freight trains on this mainline rail segment.<sup>37</sup>

The proposed 820-foot connection would be constructed between the UP line on the east and the NEKM line on the west. The connection would be constructed entirely within the existing railroad right-of-way, beginning approximately 900 feet north of Miami Street on the north side of Hiawatha. Approximately 375 feet of the connection would be located within the Hiawatha city limits and the remainder located north of the city boundary. UP estimates that construction of the proposed connection would require approximately 6 weeks to complete. UP estimates that an average of 16 trains per day would operate over the new connection following the proposed Acquisition.

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<sup>37</sup> Union Pacific Railroad Company, *Union Pacific Railroad Company—Acquisition and Operation Exemption—Mid Michigan Railroad, Inc. (Rail Line Between Saint Joseph, MO and Upland, KS)*, Filed before the Surface Transportation Board, Finance Docket No. 33652, August 25, 1998.



Draft Environmental Assessment

Proposed Acquisition Union Pacific and  
Northeast Kansas & Missouri

+++++ Proposed Connection

**Figure 3-4**  
**Proposed Rail Line Connection at**  
**Hiawatha, Kansas -**  
**Area Map**



SOURCE: USGS 7.5 Minute Topographic Map, HIAWATHA, KANSAS Quadrangle, 1961



## Land Use

SEA evaluated potential effects on land use that could result from construction of the proposed connection at Hiawatha. SEA conducted its evaluation in accordance with the Board's environmental regulations and NEPA, and included an analysis of the following:

- Consistency with land use plans in effect.
- Effect on prime farmland.
- Consistency with existing Coastal Zone Management Plans.
- Potential effects on Native American lands.

Since the proposed connection would be constructed within existing railroad right-of-way, SEA conducted a limited evaluation of potential land use effects, using U.S. Geological Survey (USGS) 7.5-minute topographic maps,<sup>38</sup> zoning maps, and aerial photographs of the proposed site area. SEA also visited the site and photographed the area along the proposed connection corridor. SEA obtained additional information, as needed, from local, county, and state planning agencies.

SEA determined that the proposed connection would be compatible with surrounding land uses, based on the following findings:

- There is no formal land use plan for Hiawatha. The area surrounding the proposed connection outside of the right-of-way is zoned as R-2, medium density residential, within the Hiawatha city limits.<sup>39</sup> The aerial photograph and site visit indicated that the area surrounding the proposed connection, both within and outside the city limits, is largely undeveloped and is currently used as pastureland.
- There are no prime farmlands near the area of the proposed connection.<sup>40</sup>
- There are no coastal zones, Native American reservations, or tribal lands in the area of the proposed connection.

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<sup>38</sup> U.S. Geological Survey, 7.5 Minute Topographic Map, *Hiawatha, Kansas*, 1961.

<sup>39</sup> Bartlett & West, Engineers, Inc., *Official Zoning Map—City of Hiawatha, Kansas*, September 1995, revised February 1996.

<sup>40</sup> Department of Agriculture, Brown County Conservation District, Telephone communication with Bradley Grier—Conservation Technician, October 22, 1998.

## Natural Resources

SEA conducted a limited evaluation of potential effects on natural resources since the proposed connection would be built within the existing right-of-way. SEA's analysis of water resources (i.e., surface waters and wetlands) was conducted through review of USGS topographic maps,<sup>41</sup> National Wetland Inventory (NWI) maps,<sup>42</sup> and Natural Resource Conservation Service (NRCS) maps.<sup>43</sup> SEA's analysis of biological resources (i.e., threatened and endangered species) was conducted through information obtained from the U.S. Fish and Wildlife Service (FWS) and the Kansas Department of Wildlife and Parks (KDWP).

SEA determined that three wetland areas occur within 500 feet of the proposed connection. (See Figure 3-5, "Proposed Connection at Hiawatha, Kansas.") A man-made drainage ditch, identified on the NWI map as a wetland area, runs adjacent to the west side of the existing NEKM rail line, approximately 200 feet west of the proposed connection. Two other areas, defined on the NWI map as farm-related impoundments (each less than 1 acre in size), are located about 200 feet and 300 feet, respectively, northeast of the proposed connection. SEA did not identify any other surface waters within 500 feet of the proposed connection.

SEA concluded that construction of the proposed connection would not affect the three wetland areas near the proposed connection since they are well outside of the proposed construction area. All three wetland areas are located on private property and would not be near any reasonable access routes to the construction area; therefore, SEA concluded that the wetlands would not be disturbed by construction vehicles or construction activities.

SEA conducted a site visit to the area of the proposed connection and observed vegetation, mainly consisting of grasses and trees, growing in the right-of-way between the existing UP and NEKM rail lines. Based upon the size of the right-of-way (approximately 40 feet between the UP and NEKM tracks) and type of ground cover present in the area, it is likely that small mammals, particularly rodents (i.e., rabbits, squirrels, rats, mice), and tree- and ground-nesting species of birds currently live within the right-of-way.

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<sup>41</sup> U.S. Geological Survey, 7.5 Minute Topographic Map, *Hiawatha, Kansas*, 1961.

<sup>42</sup> U.S. Fish & Wildlife Service, *National Wetland Inventory Map—Hiawatha, Kansas*, 1994.

<sup>43</sup> Natural Resource Conservation Service, *Soil Survey of Brown County, Kansas*.

SEA obtained information from the FWS and KDWP regarding the presence of threatened or endangered species in the vicinity of the proposed connection.<sup>44</sup> Neither agency's records identified threatened or endangered species or critical habitat in the proposed project area.

SEA determined that construction of the proposed connection would result in the permanent loss of all vegetation currently growing in the right-of-way between the UP and NEKM rail lines. The removal of vegetation and construction of the proposed connection would also destroy wildlife habitat between the existing rail lines. However, SEA concluded that the area surrounding the proposed connection offers suitable habitat for displaced wildlife and that the proposed project would not adversely affect wildlife. SEA also concluded that wildlife living adjacent to the construction area would temporarily avoid the area during construction activities but would subsequently return following completion of the connection.

Based on the analysis of water resources and biological resources described above, SEA concluded that the construction of the proposed connection would not have an adverse effect on natural resources.

### Air Quality

SEA evaluated potential air quality effects resulting from the proposed construction activities. Section 3.6, "Air Quality," presents SEA's evaluation of regional and County-wide air quality effects associated with increased train traffic over the UP and NEKM lines, including the proposed connection.

EPA has classified Brown County, Kansas as being in attainment with National Ambient Air Quality Standards (NAAQS). Predominant air emissions sources in the vicinity of the proposed connection include road vehicles, locomotives, and industrial facilities.

SEA evaluated the proposed construction project to determine whether the proposed project would lead to potentially adverse long-term increases in pollutant emissions or excessive fugitive dust emissions. SEA reviewed previous studies related to the types and amounts of pollutant emissions generated by heavy equipment during rail construction projects.<sup>45</sup> These studies indicated that pollutants emitted during rail construction projects have short-term impacts and would not affect the overall air quality or

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<sup>44</sup> U.S. Fish and Wildlife Service, Kansas Field Office, Written communication from William H. Gill, Field Supervisor, October 22, 1998; Kansas Department of Wildlife and Parks, Telephone communication with John Phillips-Ecologist, October 26, 1998.

<sup>45</sup> SEA prepared Environmental Assessments for several proposed rail line connections that relate to the acquisition of Conrail by CSX and Norfolk Southern Railway that evaluated effects of temporary rail line construction activities on air quality. See, for example, Section of Environmental Analysis. *Environmental Assessment. Greenwich, CSX/Conrail Rail Line Connections-Village of Greenwich, Huron County, Ohio*. Decision No. 28331, October 7, 1997.

attainment status of Brown County. Based on these data, SEA determined that a quantitative analysis of pollutant emissions from construction equipment would not be necessary.

SEA evaluated fugitive dust emissions by assessing the topography, soil conditions, and types of roadways (i.e., gravel, paved) that would be used to enter the site area during construction. SEA determined that fugitive dust emissions would increase during construction because of the following: (1) grading and relocation of soil to prepare the track bed, and (2) construction vehicles traveling to and from the site via unpaved roads. The State of Kansas, Brown County, and the Town of Hiawatha do not regulate fugitive dust emissions.<sup>46</sup>

SEA also reviewed historical information on wind speeds and precipitation patterns for the area of the proposed construction project to determine whether these climatic conditions would be conducive to generating fugitive dust emissions. Climatological data compiled over a 30-year period indicated that Brown County experiences an average annual wind speed of 10.8 miles per hour, with prevailing winds from the south. The average annual precipitation is 36.83 inches.<sup>47</sup> Based on a review of climatic conditions for the general site area, SEA determined that climatic effects would not adversely effect potential fugitive dust emissions.

## Noise

SEA evaluated potential noise effects resulting from the construction of the proposed rail line connection. (See Section 3.7, “Noise,” for a detailed discussion of SEA’s analysis of potential noise effects that would occur from Acquisition-related freight train operations, including operations over the proposed connection.)

UP would build the proposed connection near Hiawatha’s northwest city limits, with approximately 375 feet of the connection located within Hiawatha and 445 feet located north of the city limits. The proposed connection would be located in an area that is largely undeveloped and currently used as pastureland. SEA used maps and aerial photographs to identify noise-sensitive receptors (residences, schools, hospitals, and churches) in the vicinity of the proposed connection. The nearest sensitive receptor (a residence) is approximately 300 feet west of the proposed connection.

SEA determined that construction activities would result in a temporary change in noise levels in the vicinity of the construction activities; although SEA believes that there would be no potentially adverse

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<sup>46</sup> Kansas Department of Health and Environment, Air Monitoring Division, Telephone conversation with Thomas Gross, November 3, 1998; Brown County, Kansas, Telephone conversation with Grace Miller, County Clerk, November 3, 1998; Town of Hiawatha, Kansas, Telephone conversation with Rhonda Jones, Building Inspector, November 3, 1998.

<sup>47</sup> National Oceanic and Atmospheric Administration. *Local Climatological Data Annual Summaries for 1992, Part III - Central Region*, 1993.

noise effects because of the distance of sensitive receptors from the proposed construction area. While the proposed construction activities would create new noise sources, these noises would be confined to the daytime hours and would be limited to the duration of the project; therefore SEA concluded that construction activities would not be a source of long-term noise effects. The construction-related noise would also be minor compared with the wayside noise and horn noise generated by trains using the NEKM and Applicant's rail lines in the construction area.

### Hazardous Waste Sites and Hazardous Materials Spill Sites

SEA reviewed the proposed construction project for potential effects on hazardous waste sites and hazardous materials spill sites in the construction area. SEA used government environmental databases to identify hazardous waste sites and reported hazardous materials spills in the vicinity of the proposed construction site.

SEA determined that the nearest hazardous waste sites—three underground storage tanks (USTs), including a leaking UST were more than 1/4 mile to the south of the proposed construction area.<sup>48</sup> SEA concluded that these sites would not be disturbed by the proposed construction activities due to their distance from the proposed connection site. SEA did not identify any hazardous materials spill sites near the proposed construction area.<sup>49</sup> SEA concluded that construction activities would be unlikely to encounter or disturb hazardous materials spill sites.

### Cultural Resources

SEA reviewed potential effects of the proposed connection on cultural resources, in accordance with the following: (1) Section 106 of the National Historic Preservation Act of 1966 (NHPA); and (2) Advisory Council on Historic Preservation (ACHP) regulations at 36 CFR 800 for implementing Section 106 of NHPA.

SEA contacted the Kansas State Historic Preservation Officer (SHPO) to obtain information regarding potential archeological sites within the proposed construction area or potentially significant historic properties in close proximity to the proposed construction site that might be disturbed by construction

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<sup>48</sup> Environmental Data Resources, Inc., *Railroad Property, 11<sup>th</sup> and Miami Streets, Hiawatha, Kansas*, Inquiry Number 0303636.1r, October 19, 1998.

<sup>49</sup> Environmental Data Resources, Inc., *Railroad Property, 11<sup>th</sup> and Miami Streets, Hiawatha, Kansas*, Inquiry Number 0303636.1r, October 19, 1998; Federal Railroad Administration, *Railroad Accident/Incident Database*, 1993 through 1997.

activities. Records maintained by the SHPO did not indicate the presence of archeological or historic properties within, or in close proximity to, the proposed construction site.<sup>50</sup>

SEA verified the information obtained from the SHPO during a visit to the proposed construction area. SEA observed that construction of the existing UP and NEKM rail lines has altered the landscape by filling in and/or removing natural soils. SEA concluded that any archeological sites that might remain after such activities would already be compromised and would provide no information valuable to the archeological record.

SEA determined that no buildings or other structures exist within the proposed construction area. Furthermore, SEA did not identify any buildings or other structures within 300 feet of the proposed construction area during the visit to the site or review of aerial photographs. SEA concluded that the proposed connection would not affect any structures with potential historic significance near the construction area.

Based on its evaluation of archeologic and historic resources, SEA concluded that the construction of the proposed connection would not have an adverse effect on cultural resources.

### Highway/Rail At-grade Crossings

SEA reviewed UP's plan for the proposed connection to determine if it would require the construction of new highway/rail at-grade crossings or modification of existing crossings. SEA determined that the proposed connection would not require the construction or modification of any highway/rail at-grade crossings. SEA also determined that there are no highway/rail at-grade crossings within the proposed connection corridor.<sup>51</sup>

### Environmental Justice

SEA considered potential environmental justice effects of the proposed construction project as required by Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-income Populations," which directs Federal agencies to evaluate whether their programs, policies, and procedures would have a disproportionately high and adverse impact on low-income or minority populations.<sup>52</sup>

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<sup>50</sup> Kansas State Historical Society, Written communication from Richard Pankratz, Deputy State Historic Preservation Officer, October 27, 1998.

<sup>51</sup> Federal Railroad Administration, *Railroad Accident/Incident Database*, 1993 through 1997.

<sup>52</sup> See Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations," Section 1-01, February 11, 1994, 59 FR 7630.

Section 3.8, “Environmental Justice,” describes the methods used by SEA to assess the environmental justice effects resulting from the proposed Acquisition. That section presents a detailed discussion of SEA’s analysis of environmental justice effects, including potential effects of the proposed rail line connection in Hiawatha. SEA concluded that the proposed Acquisition would not result in adverse environmental justice effects on Hiawatha. Consequently, SEA concluded that the proposed construction project would not present a disproportionately high or adverse effect to low-income or minority populations living near the proposed connection.

#### **SEA’s Conclusions on the Proposed Connection at Hiawatha, Kansas**

SEA concluded that construction of the proposed connection at Hiawatha, Kansas would not have potentially adverse environmental effects outside of the existing railroad right-of-way; therefore, mitigation is not warranted.

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## CHAPTER 4 ENVIRONMENTAL CONSEQUENCES—CUMULATIVE EFFECTS

The National Environmental Policy Act (NEPA) guidelines define a cumulative effect as “the impact on the environment which results from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.”<sup>53</sup> Although certain actions may not directly relate to UP’s proposed acquisition of the NEKM rail line, their environmental effects, when added to or in interaction with the proposed Acquisition, constitute cumulative effects that may be potentially adverse. This chapter presents SEA’s evaluation of potential cumulative effects.

NEPA created the President’s Council on Environmental Quality (CEQ) to develop policy guidelines and oversee Federal agencies’ implementation of NEPA. To assist Federal agencies in assessing cumulative effects under NEPA, CEQ developed a handbook entitled “*Considering Cumulative Effects under the National Environmental Policy Act.*”

Using these guidelines, SEA evaluated the cumulative effects from the proposed Acquisition. SEA identified past, present, and reasonably foreseeable changes that could result in cumulative environmental effects of the nature and scale of the proposed Acquisition. Specifically, SEA evaluated activities that, when combined with the potential impacts of the proposed Acquisition, could result in potentially adverse cumulative environmental impacts on air quality, energy, and transportation systems. SEA evaluated two types of activities that could result in cumulative effects:

- Regulations that agencies have approved but have not implemented as of publication of the Draft EA.
- Other projects or activities, which potentially have cumulative effects, that agencies and the public may bring to SEA’s attention during the public comment period.

The geographic scope of the proposed Acquisition covers a small section of northeastern Kansas. As part of its environmental review, SEA considered the anticipated operational changes on 16 rail line segments owned by UP and NEKM. Of these segments, SEA determined that three of these rail line segments exceeded the Board’s thresholds for environmental analysis. SEA also evaluated one rail line connection that is a part of the proposed Acquisition.

### 4.1 AGENCY REGULATIONS

SEA considered the policies, activities, and conditions, both past and present, which are relevant to the analysis of potential air quality, energy, and transportation effects of the proposed Acquisition. These policies, activities, and conditions are the basis for the cumulative effects analysis. SEA identified and analyzed a U.S. Environmental Protection Agency (EPA) regulation for new standards for emissions

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<sup>53</sup> 40 CFR 1508.7

from locomotives that EPA has approved but that has not yet become effective for potential contributions to cumulative effects.

#### **New Emissions Standards for Locomotives and Locomotive Engines**

On April 16, 1998, EPA issued the final rule establishing standards for locomotives and locomotive engines (40 CFR Parts 85, 89, and 92). This rule will take effect in the year 2000 and will ultimately result in more than a 60 percent reduction in oxides of nitrogen (NO<sub>x</sub>) emissions from locomotives. SEA evaluated the potential cumulative effects of this new rule as part of the review of potential mitigation alternatives for County-wide air quality effects of the proposed Acquisition. (See Section 3.6.2, “County-wide Air Quality Analysis.”)

#### **4.2 PUBLIC INPUT**

As part of the cumulative effects analysis, SEA will evaluate projects or activities that relate to the proposed Acquisition, when local communities; local, regional, state or Federal officials; or other interested parties provide information to the Board. The information provided to the Board must describe: (1) the project or activity; (2) its relationship to the proposed Acquisition and; (3) the type and severity of the potential environmental effects. SEA will then determine the potential for potentially adverse cumulative effects. Interested parties must provide information on other projects and activities to the Board within a sufficient period to allow for review and analysis within the schedule for preparing the Final EA. If, during the public comment period, SEA receives additional information on local projects that could have cumulative effects, SEA will evaluate these effects in the Final EA.

## CHAPTER 5 SEA'S PRELIMINARY RECOMMENDED MITIGATION

Chapter 5 presents SEA's preliminary recommended environmental mitigation. The primary purpose of including SEA's recommendations in the Draft EA is to allow the public and agencies to comment on the recommendations. Based on public and agency comment, SEA will conduct additional analysis where necessary, modify, and finalize its recommendations. The Final EA will contain SEA's final recommendations for the Board to consider in its decision on the proposed Acquisition. Chapter 5 has two sections: Section 5.1 presents SEA's approach to developing mitigation. Section 5.2 contains SEA's specific mitigation recommendations. During its environmental review, SEA identified potential adverse impacts in the areas of:

- Freight rail operations safety.
- Highway/rail at-grade crossing safety.
- Noise.

Chapter 5 contains SEA's preliminary mitigation recommendations for these issue areas.

### 5.1 OVERVIEW OF SEA'S APPROACH TO MITIGATION

In its environmental review role, SEA conducted a thorough and comprehensive analysis of the potential environmental effects associated with increases in rail activities UP proposes in its petition to the Board. As part of its evaluation, SEA analyzed the potential environmental effects of the proposed Acquisition in the following areas:

- Safety, including effects on freight rail operations and highway/rail at-grade crossings.
- Vehicle delay at highway/rail at-grade crossings, including emergency response vehicle delay.
- Energy.
- Air quality.
- Noise.
- Environmental justice.
- Issues associated with proposed construction projects, including natural resources, biological resources, hazardous waste sites, cultural and historic resources, and land use.
- Cumulative effects.

### 5.1.1 Scope of the Board's Conditioning Power

The Board has limited authority to impose conditions to mitigate potential environmental impacts. As a government agency, the Board can only impose conditions that are consistent with its statutory authority. Accordingly, any conditions the Board imposes must relate directly to the transaction it is licensing, must be reasonable, and must be supported by the record before the Board. Thus, the Board's practice consistently has been to mitigate only those impacts that result directly from the proposed action. The Board does not have authority to require mitigation of preexisting conditions, such as existing railroad operations or land development in the vicinity of the railroads.

As an alternative to the mitigation that the Board would unilaterally impose on UP (notwithstanding mitigation required by other regulatory agencies that may have jurisdiction over potentially affected resources), SEA strongly encourages the railroad and affected parties to negotiate mutually acceptable agreements. The Board could then impose compliance with the terms of any mutually acceptable binding agreement as an environmental condition in any decision approving the proposed Acquisition.

### 5.1.2 Preliminary Nature of Mitigation

SEA emphasizes that the recommended mitigation measures in this Draft EA are **preliminary**. SEA invites public and agency comment on these proposed mitigation measures as well as alternative mitigation. In order for SEA to effectively assess the comments, it is critical that the public be specific regarding desired mitigation and provide specific reasons why the suggested mitigation would be appropriate. In addition, SEA requests that UP, communities, and other interested parties advise SEA of the status of any negotiations to address environmental concerns. If the parties execute a mutually acceptable binding agreement, they should immediately advise SEA in writing.

SEA will make its final recommendations to the Board for mitigation in the Final EA after considering all public comments on the Draft EA, conducting further environmental analysis and agency consultations, and conducting site visits as appropriate. The Board will make its decision regarding this project and any environmental conditions it might impose based upon its consideration of the public comments, the Draft EA, and the Final EA.

## 5.2 RECOMMENDED PRELIMINARY MITIGATION MEASURES

Based on independent environmental analysis, consideration of the available information, and agency consultation, SEA's preliminary recommendation is that the Board impose, as conditions to any decision approving the proposed Acquisition, the following environmental mitigation measures. SEA has designed these preliminary measures to address potential Acquisition-related environmental effects. SEA's preliminary conclusion is that, with these mitigation measures, the proposed Acquisition would not result in any significant environmental effects on the natural or human environment.

### Safety: Freight Rail Operations

**Condition 1.** UP shall comply with the requirements in the Federal Railroad Administration's (FRA) Proposed Rule for "gross ton-mile based" inspections (49 CFR Part 213.237, Docket No. RST-90-1) on the following rail line segments in Kansas:

- Kansas City-Atchison.
- Atchison-Hiawatha.
- Hiawatha-Upland.

FRA's Proposed Rule includes a provision that specifically requires railroads to conduct track inspections to detect rail flaws on a rail line segment at least once every 40 million gross tons per track mile or annually, whichever is more frequent. If FRA's Final Rule imposes a different inspection standard, then UP shall comply with the standard in the Final Rule.

#### Safety: Highway/Rail At-grade Crossings

**Condition 2.** UP shall upgrade the highway/rail at-grade crossing warning device at 6<sup>th</sup> Street in Sabetha, Kansas and 5<sup>th</sup> Street in Seneca, Kansas from crossbucks to flashing lights.

#### Noise

**Condition 3.** UP shall work with state and local officials to find suitable approaches for mitigating the adverse noise effects in the following communities on the Hiawatha-Upland rail line segment in Kansas:

- Hamlin.
- Morrill.
- Sabetha.
- Oneida.
- Seneca.
- Baileyville.
- Axtell.
- Beattie.
- Home.

Mitigation for a specific community may include a combination of: (1) eliminating highway/rail at-grade crossings, (2) installing safety measures that meet future FRA requirements for no-horn quiet zones, or (3) other measures as UP and affected community may negotiate.

### Monitoring and Enforcement Condition

**Condition 4.** If there is a material change in the facts or circumstances upon which the Board relied in imposing specific environmental mitigation conditions in this Decision, and upon petition by any party who demonstrates such material changes, the Board may review the continuing applicability of its final mitigation, if warranted.

## APPENDIX A CONSULTATION WITH AGENCIES AND AGENCY RESPONSE

This section provides a list of agencies that SEA contacted throughout the data collection and analysis process. Table A-1, "Consultation with Agencies," provides the agency name, dates of contact, and major topics related to the technical analysis. Appendix A also includes copies of letters received by SEA from agency contacts.

**TABLE A-1  
CONSULTATION WITH AGENCIES**

Agency	Dates of Contact	State	Major Topic
Federal			
Association of American Railroads (AAR)	09/30/98; 10/27/98	KS	Database on reportable accidents for the NEKM rail line segments, for 1995 through 1997, 1995-1997 mainline track mileages
Federal Railroad Administration (FRA), Office of Safety	10/13/98; 10/14/98; 10/26/98	KS	Highway/rail at-grade crossing information, PC accident prediction systems database, highway pavement characteristics, accident statistics for highway/rail at-grade crossings, 1992-1996 reportable accident information
US Fish & Wildlife Service	10/14/98	KS	Inquiry regarding potential threatened and endangered species near proposed Hiawatha connection
State/Regional			
Kansas Department of Transportation	9/21/98;10/6/98; 10/8/98; 10/9/98; 11/4/98; 11.5/98	KS	Highway/rail at-grade crossing and ADT information, 1992-1996 accident statistics for highway/rail at-grade crossings.
Kansas Historic Society	10/14/98	KS	Historic and archeological resources near proposed Hiawatha connection
Kansas Department of Parks & Wildlife	10/14/98 10/26/98	KS	Threatened and endangered species near proposed Hiawatha connection
Kansas Department of Health & Environment	11/3/98	KS	Fugitive dust emissions law in Kansas
Local			
Brown County Clerk	11/3/98	KS	Fugitive dust emissions ordinance
Brown County Conservation District	10/22/98	KS	Prime farmlands in Hiawatha area

**TABLE A-1  
CONSULTATION WITH AGENCIES**

<b>Agency</b>	<b>Dates of Contact</b>	<b>State</b>	<b>Major Topic</b>
Atchison Fire Department	11/4/98 11/11/98	KS	Location of fire stations, ambulance service, and services provided to Huron, KS
Atchison Police Department	11/10/98	KS	Location of police stations, hospitals
Lancaster Fire Department	10/26/98	KS	Location of fire station, ambulance, hospital, and services provided to Huron, KS
Everest Fire Department	10/26/98	KS	Location of fire station, ambulance, hospital
Hiawatha Fire Department	10/26/98 11/10/98	KS	Location of fire station, ambulance, hospital, police, and services provided to Hamlin, Baker, and Willis, KS
Hiawatha Building Inspector	11/3/98	KS	Fugitive dust emissions ordinance
Morrill Fire Department	10/27/98	KS	Location of fire station, ambulance, and hospital
Leavenworth Fire Department	11/11/98	KS	Location of fire stations, and ambulance service
Leavenworth Police Department	11/11/98	KS	Location of police stations, and hospitals
Axtell Fire Department	10/27/98	KS	Location of fire station, ambulance, and hospital
Marysville Fire Department	10/27/98 11/11/98	KS	Verification of fire, ambulance, and hospital services provided to Beattie, Home, and Upland, KS
Sabetha Fire Department	11/4/98 11/10/98	KS	Location of fire station, ambulance, and hospital at Sabetha, and services provided to Oneida, KS
Seneca Fire Department	10/28/98 11/10/98	KS	Location of fire station, ambulance, hospital, police, and services provided to Baileyville and Oneida, KS
Kansas City Fire Department	10/26/98	KS	Location of fire stations and ambulance
Kansas City Police Department	10/26/98	KS	Location of police stations and hospitals







## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Kansas Field Office  
315 Houston Street, Suite E  
Manhattan, Kansas 66502-6172

October 22, 1998

Kimberly D. Farley  
Environmental Scientist  
Dames & Moore  
13255 West Bluemound Road  
Suite 202  
Brookfield, Wisconsin 53005

RE: Rail Line Connection, Hiawatha, KS

Dear Ms. Farley:

This is in response to your letter of October 15, 1998, describing a proposal by Union Pacific Railroad to construct a new railway line connection on the north end of Hiawatha, Brown County, Kansas. Based on our review of this activity and the land use of the affected area, there should be no adverse impacts to fish and wildlife resources, including threatened and endangered species. Therefore, the U.S. Fish and Wildlife Service has no objection to the proposal as planned.

Thank you for this opportunity to comment on the proposal.

Sincerely,

William H. Gill  
Field Supervisor

cc: KDWP, Pratt, KS (Environmental Services)

WHG/dwm



KANSAS  
STATE  
HISTORICAL  
SOCIETY



6425 S.W. 6th Avenue  
Topeka, Kansas  
66615-1099  
PHONE# (785) 272-8681  
FAX# (785) 272-8682  
TTY# (785) 272-8683



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Mine Creek Battlefield  
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Pawnee Rock  
Shawnee Mission

HISTORIC PRESERVATION OFFICE  
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785-272-8681 \* FAX 785-272-8682

October 27, 1998

Ms Kim Farley  
Environmental Scientist  
Dames & Moore  
Bishop's Woods East  
13255 West Bluemound Road Ste 202  
Brookfield WI 53005

Re: Proposed Rail Line Connection - Union Pacific Railroad  
Hiawatha, Ks. - Brown Co.

Dear Ms. Farley:

The materials received October 27, 1998, regarding the above referenced project have been reviewed in accordance with the federal regulations for the protection of historic properties, 36 CFR Part 800.

The State Historic Preservation Officer does not believe that the property located in Section 20 of Township 2 South, Range 17 East in Hiawatha, Kansas is eligible for inclusion in the National Register of Historic Places. As far as we are concerned the project may proceed.

You may contact me at (785) 272-8681 if you have any questions.

Sincerely yours,

Richard Pankratz  
Deputy State Historic Preservation Officer

RP/cmv



STATE OF KANSAS  
DEPARTMENT OF WILDLIFE & PARKS

Operations Office  
512 SE 25th Avenue  
Pratt, KS 67124-8174  
316/672-5911 FAX 316/672-6030



November 12, 1998

Dames & Moore  
Ms. Kimberly Farley, Env. Scientist  
Bishop's Woods East  
13255 W. Bluemound Rd., Suite 202  
Brookfield, WI 53005

Ref: D2.0401  
Brown  
UPRR New Track Conn.  
Trak: 980536

Dear Ms. Farley:

We have reviewed information submitted regarding proposed construction of 820 feet of new rail line connection to join the UP and NEKM lines. Work is to be done entirely within existing right-of-way in a previously disturbed area. The project was reviewed for potential impacts on crucial wildlife habitats, current state-listed threatened and endangered species and species in need of conservation, and public recreation areas for which this agency has some administrative authority.

Results of our review indicate there will be no significant impacts to crucial wildlife habitats; therefore, no special mitigation measures are recommended. The project will not impact any public recreational areas, nor could we document any potential impacts to currently listed threatened or endangered species or species in need of conservation. No Department of Wildlife and Parks permits or special authorizations will be needed if construction is started within one year, and no design changes are made in the project plans. Since the Department's recreational land obligations and the State's species listings periodically change, if construction has not started within one year of this date, or if design changes are made in the project plans, the project sponsor must contact this office to verify continued applicability of this assessment report. For our purposes, we consider construction started when advertisements for bids are distributed.

Sincerely,

  
Jim Hays, Terrestrial Ecologist  
Environmental Services Section

JFH:jg

xc: Region 2, Wolfe

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## APPENDIX B PUBLIC PARTICIPATION MATERIALS

The Section of Environmental Analysis (SEA) conducted public involvement activities to inform the public and interested agencies of the Draft Environmental Assessment (Draft EA). SEA developed its public involvement activities to provide the public and interested agencies with the opportunity to comment on the Draft EA that analyzes the potential environmental effects of the proposed Acquisition, and presents SEA's preliminary environmental mitigation recommendations so that SEA can fully assess public concerns and address those concerns in developing the Final Environmental Assessment (Final EA).

This Appendix contains a copy of a Fact Sheet prepared by SEA to inform the public and interested agencies of the availability of the Draft EA and the public comment period. Also included is a list of Federal, state, county and city officials and other interested parties that received the Fact Sheet.

Surface Transportation Board  
Section of Environmental Analysis

## Union Pacific Proposed Acquisition of Northeast Kansas & Missouri Railroad

### OVERVIEW OF THE PROPOSED ACQUISITION

**O**n August 25, 1998, Union Pacific Railroad (UP), referred to as the Applicant, filed a petition with the Surface Transportation Board (Board). The petition, filed as Finance Docket No. 33652, *Union Pacific Railroad Company—Acquisition and Operation Exemption—Mid Michigan Railroad, Inc. (Rail Line between Saint Joseph, MO and Upland, KS)*, seeks authority for UP to acquire and operate the Northeast Kansas & Missouri Railroad (NEKM), a subsidiary of Mid Michigan Railroad. (This proposed transaction is subsequently referred to as the proposed Acquisition.) The proposed Acquisition would provide UP with an alternative route to move westbound empty coal trains from Kansas City to the Powder River Basin in Wyoming over the Hiawatha-Upland, Kansas portion of the NEKM line.

UP currently operates over 36,026 miles of rail lines in 23 U.S. states, including 2,618 miles in Kansas. UP rail lines link every major West Coast and Gulf Coast port and also serve four major gateways to the east:

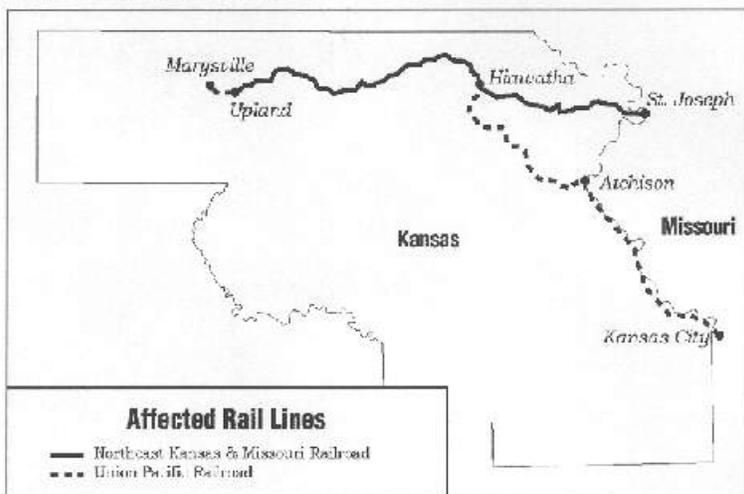
Chicago, St. Louis, Memphis, and New Orleans. NEKM is a short-line railroad that runs approximately 107 miles from St. Joseph, Missouri to Upland, Kansas. NEKM has trackage rights on an existing UP line between Upland and Marysville, Kansas. The Hiawatha-Upland segment of the NEKM route provides a strategic east-west link between two important north-south UP routes.

UP plans to spend the next three years to upgrade the condition of portions of the NEKM line between Hiawatha and Upland to Class III Federal Railroad Administration (FRA) standards. These improvements are designed to enhance track safety and enable trains to

travel up to 40 mph. UP also plans to improve highway/rail at-grade crossings along the NEKM line to improve vehicular safety as daily train traffic increases.

### Board's Role

The Board is an independent Federal regulatory agency with jurisdiction over transactions such as freight railroad acquisitions and mergers. The Board considers the public's interest and other economic and environmental issues when deciding whether to approve a proposed transaction. The Board's decision is governed in part by the National Environmental Policy Act of 1969 (NEPA), which requires the Board to consider the environmental effects of the proposed transaction in making its decision.



## Environmental Review Process

The Board's Section of Environmental Analysis (SEA) conducts the Board's environmental review process and recommends environmental mitigation conditions to the Board. In imposing environmental mitigation conditions, the Board has consistently focused on potential environmental impacts that would result directly from changes in rail activity levels. The Board generally does not require mitigation for pre-existing conditions, such as environmental impacts associated with current railroad operations.

As part of its environmental review of the proposed Acquisition, SEA will prepare a Draft Environmental Assessment (EA) and a Final EA, describing the potential environmental impacts of proposed Acquisition-related activities. SEA will make the Draft EA available for public review and comment.

After fully considering all public comments received on the Draft EA, conducting any additional environmental analysis, reviewing all environmental information available to date, and consulting with appropriate government agencies, SEA will then prepare and issue a Final EA. The Board will consider the entire environmental record, the Draft and the Final EA, all public comments, and SEA's final environmental mitigation recommendations in making its final decision on the proposed Acquisition.

### Scope of the Environmental Analysis

UP indicates that some operational changes would result from

the proposed Acquisition. These changes include increased train traffic on two rail line segments: 1) Hiawatha to Upland, Kansas (65 miles), which UP would acquire in the proposed Acquisition of NEKM; and 2) Kansas City, Missouri to Hiawatha, Kansas (83 miles), over an existing UP rail line. Planned operational changes also include the construction of a new rail line connection near Hiawatha. The proposed connection would be approximately 820 feet long and would be constructed entirely on existing railroad right-of-way.

SEA's review of the proposed Acquisition will evaluate the potential environmental impacts that could result from these changes. The Applicant states in the environmental data submitted with the application that the train traffic on the NEKM line between Hiawatha and Upland would increase by approximately 15 trains per day, to a total of 16 trains per day. There will be no change in train traffic over the segment of NEKM line extending from Hiawatha to St. Joseph, Missouri. Train traffic on the UP line from Kansas City to Hiawatha would increase by approximately 13 trains per day, to a total of 23 trains per day.

In conducting this environmental review, SEA plans to analyze the following environmental issues:

- Safety (operations and safety at highway/rail at-grade crossings)
- Effects on transportation systems;
- Effects on air quality;
- Noise effects; and
- Environmental justice.

SEA also plans to examine the potential environmental effects of the construction of the proposed connection near Hiawatha, Kansas.

### Public Comment Period

During the public review and comment period, the public and all interested parties are encouraged to submit written comments to SEA regarding any aspect of the Draft EA, including the environmental analysis and recommended mitigation measures. The public will have 30 days to comment on the Draft EA. SEA will consider all public comments in preparing the Final EA and in making final environmental mitigation recommendations to the Board. The public can submit comments by sending an original written comment, plus 10 copies, to the Board at:

Office of the Secretary  
Case Control Unit  
Finance Docket No. 33652  
Surface Transportation Board  
1925 K Street NW  
Washington, D.C. 20423-0001  
Attn: Elaine K. Kaiser  
Environmental Project Director  
Section of Environmental Analysis  
Environmental Filing

### How to Comment on Environmental Issues Prior to Publication of the Draft Environmental Assessment

The public and all interested parties may contact SEA with questions or comments concerning the proposed Acquisition or the EA process.

David McNulty, Project Manager  
Section of Environmental Analysis  
Surface Transportation Board  
1925 K Street NW  
Washington, D.C. 20423-0001  
Telephone: (202) 565-1539  
Fax: (202) 565-9000

### Fact Sheet Distribution List

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Recreation Resources Assistance Division  
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