Northwest Arkansas Regional Airport

Air Cargo Study
and
Freight Transportation Access Assessment

Benton and Washington Counties

May 2006

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Prepared by:
Planning and Research Division
Arkansas State Highway and Transportation Department

In Cooperation with:
Federal Highway Administration
Northwest Arkansas Regional Airport
Northwest Arkansas Chambers of Commerce

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Executive Summary

The availability of air cargo service is becoming a more significant factor in daily business shipping activities. Reasons for the escalating demand for air cargo service include: (1) the inventory practice of just-in-time delivery that requires specific time of day service, (2) the growing e-commerce marketplace where products are mailed directly from a warehouse, and (3) the increase in international business. Global air cargo service is expected to become the fastest growing segment of freight distribution services. With shippers requiring faster delivery time, airports are becoming centers for product distribution and manufacturing. Adequate freight transportation access to an airport is important to support air cargo operations and for industrial development.

Study Authorization/Study Method

This study was prepared under the authority of Arkansas Highway Commission Minute Order 2003-146. The Minute Order authorized the examination of air cargo operations at the Northwest Arkansas Regional Airport (Airport) and the assessment of truck and rail access to the Airport.

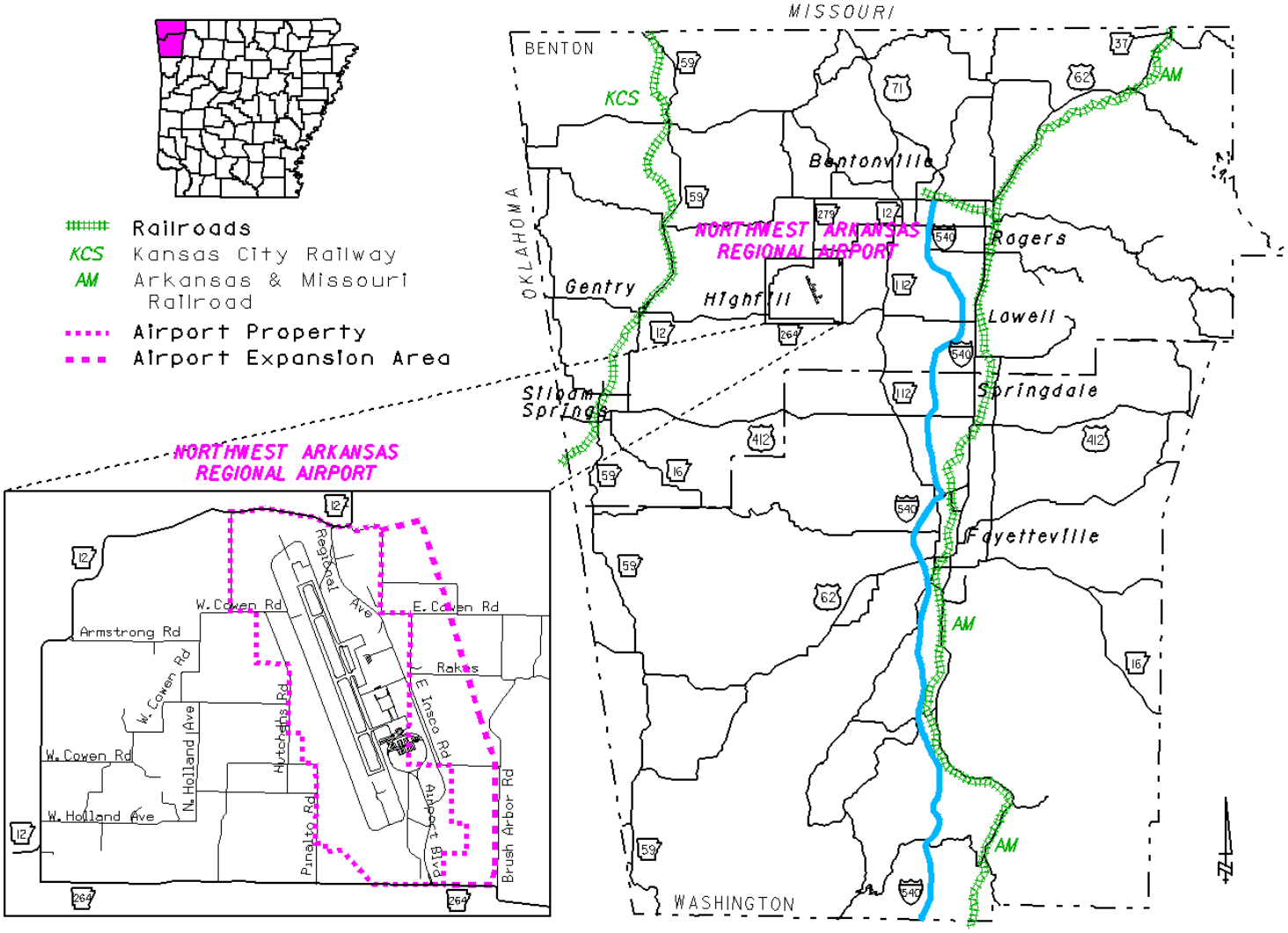
A questionnaire was used to obtain data on the local use of air cargo service, shipping patterns and service issues and needs. Businesses in Benton and Washington Counties were surveyed. The Northwest Arkansas Chambers of Commerce[1] assisted with the questionnaire by providing the contact list. Airport representatives provided information on air cargo shipments and related items. The evaluation of landside access used field research and traffic data to analyze truck access to the Airport. Data on active and abandoned railroad lines in the study area was researched and utilized in the examination of possible rail service to the Airport.

[1]Northwest Arkansas Chambers of Commerce:
Siloam Springs
Bentonville/Rogers
Springdale/Lowell
Fayetteville

Study Area

The study area consisted of Benton and Washington Counties. Figure 1 shows the study area and the immediate Airport area.

Figure 1
Study Area



Study Findings

Major findings are:

- *Passenger Service*
  - ✓ The service area for passenger trips is Benton and Washington Counties in Arkansas and portions of eastern Oklahoma and southern Missouri.
  - ✓ A significant segment of the passengers are business travelers who come to the region to conduct business with Wal-Mart and Tyson Foods.
  - ✓ Six passenger airlines serve the Airport providing flights between sixteen different locations. Over 1 million passengers used the Airport in 2004.

- *Air Cargo Service*
  - ✓ One on-site air cargo carrier (Federal Express) currently serves the Airport. A small amount of freight cargo is hauled in the luggage compartment of some passenger planes.
  - ✓ The Airport does not have an air cargo terminal, but plans for a terminal are being developed.
  - ✓ The amount of air cargo and airmail handled at the Airport is relatively low when compared to the Tulsa International and Little Rock National Airports.

Air Cargo and Airmail Volumes (2004)

	Total Tonnage
Northwest Arkansas Regional Airport	174
Little Rock National Airport	12,895
Tulsa International Airport	57,096

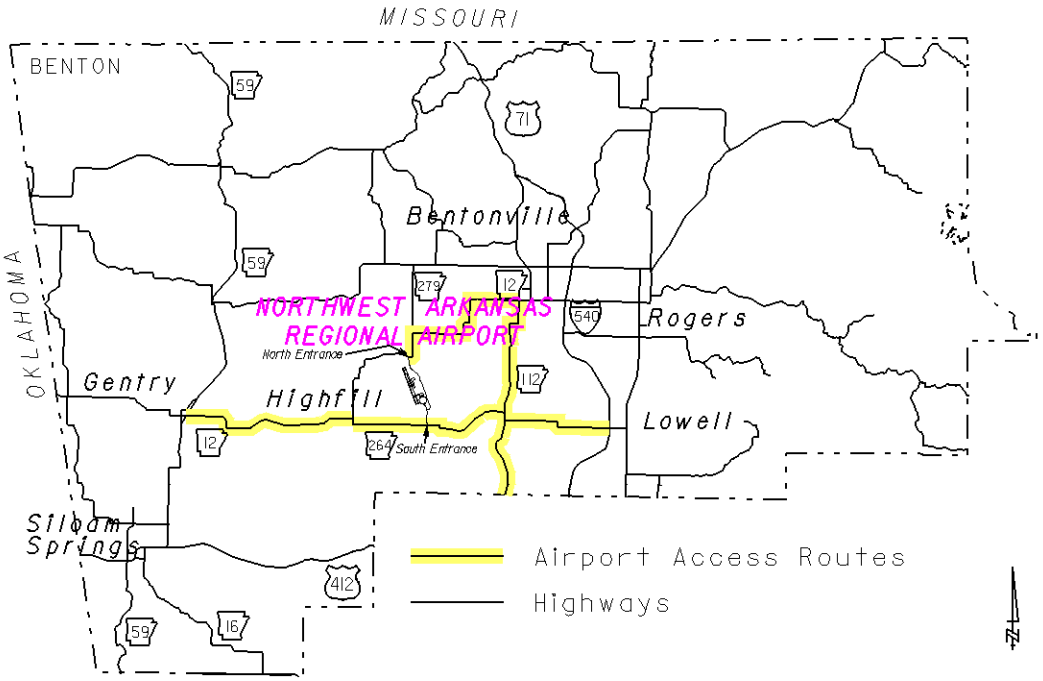
  - ✓ Airmail volumes at the Airport, along with airports nationwide, have experienced a decline since September 11, 2001. Security measures prevent passenger airlines from handling any United States Postal Service (USPS) package over 13 ounces. USPS airmail from northwest Arkansas is now trucked to an air cargo terminal at the Tulsa International Airport for sorting and distribution.

- *Air Cargo Questionnaire*
  - ✓ 170 questionnaires were sent out, with over a third returned.
  - ✓ Most survey respondents use air cargo service either on a regular or occasional basis. Cost of the service was given as the major reason for not using air transportation.
  - ✓ The top two inbound air cargo shipments are documents and repair parts. The chief outbound shipments are documents and machine parts.
  - ✓ Flexible pick-up delivery time, air cargo tracking service and Customs clearance are considered the most important air cargo services for the region.
  - ✓ An on-site air cargo terminal at the Airport was cited as a facility that could enhance air transportation service in northwest Arkansas.

- *Landside Access*

  Roadway Access
  - ✓ Good truck access to the Airport is important in developing its air cargo operations. Poor roadway access can cause indirection of travel, delays and higher transit cost.
  - ✓ A major portion of air cargo is transported by expedited truck service to package sorting centers.
  - ✓ The primary highway access routes to the Airport are Highways 264, 12 and 112. Traffic data and current roadway features for the Airport access routes are provided in the following list.

Figure 2
Existing Airport Highway Access Routes



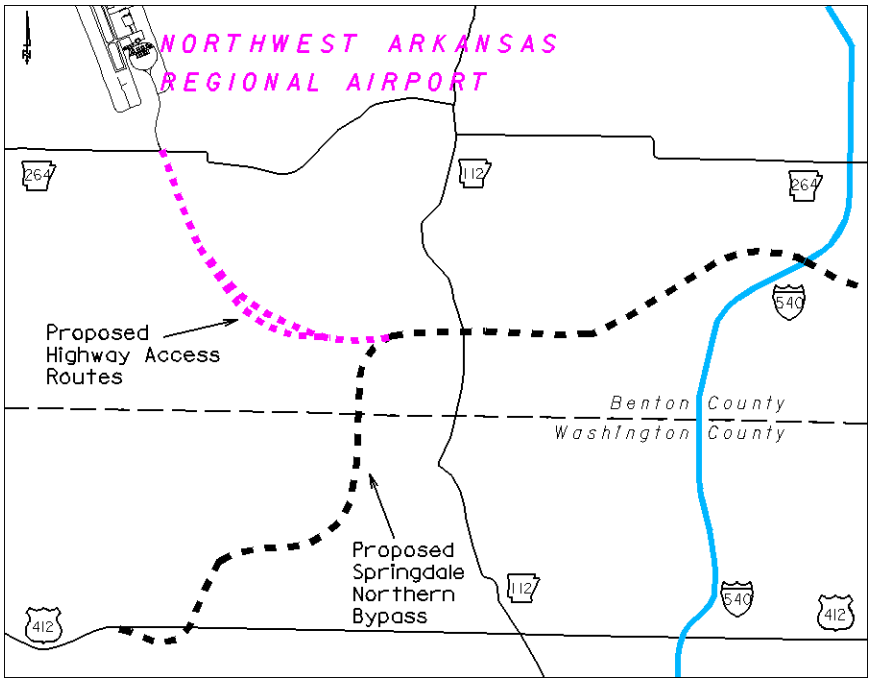
Roadway Features for Access Routes

Highway	Cross Section	2005 ADT	Truck Percent
Highway 264			
From: I-540	Two 12-foot lanes	4,300	5%
To: Highway 12	With 2-foot shoulders		
Highway 12			
From: Highway 264	Two 11-foot lanes	4,000	14%
To: Highway 59 (Gentry)	With no shoulders		
or			
From: Highway 279	Two 11-foot lanes	2,500	12%
To: Highway 112 (Bentonville)	With 2-foot shoulders		
Highway 112			
From: Highway 12 (Bentonville)	Two 11-foot lanes	2,500	8%
To: Highway 264	With 2-foot shoulders		
or			
From: Highway 264	Two 11-foot lanes	5,900	6%
To: Washington County Line	With 2-foot shoulders		

- ✓ Impediments to truck movement are the steep grades and sharp curves that restrict sight distance, affect travel speeds, and reduce the opportunity to pass.

- ✓ Travel delays sometimes occur at entrances to built-up commercial and residential areas in the communities located along the Airport access routes.
- ✓ A possible safety issue is the shoulder width on some roadway segments. At various locations the shoulder will not accommodate a large truck that has a mechanical or emergency problem and must exit the traffic lane.
- ✓ Plans to improve highway access to the Airport from I-540 are being developed. Proposed improvements should greatly enhance safety and highway access to the Airport for both passenger and truck traffic. The highway access plan is being prepared for the Airport by a consultant firm. The Airport will be responsible for the construction of the proposed new access route that is anticipated to tie into the proposed Springdale Northern Bypass route. The Department is working with the Airport on the project.

Figure 3
Proposed Airport Highway Access Plan



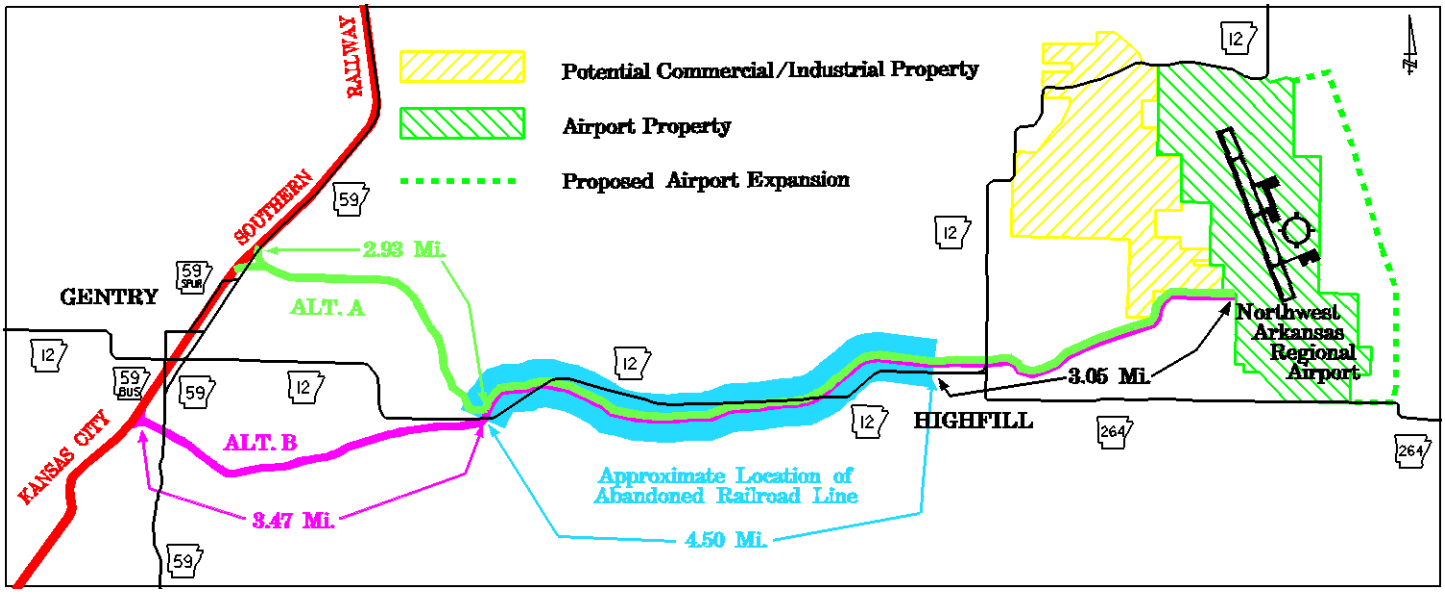
Rail Access

- ✓ There is no direct rail service to the Airport.
- ✓ Rail transportation is available in the region through the Class I[2] railroad, Kansas City Southern Railway, and the Class III[2] railroad, Arkansas and Missouri Railroad.

[2] Railroads are classified based on annual operation revenue:
Class I – Carriers generating $261.9 million or more
Class II – Carriers generating at least $21.0 million but less than $261.9 million (None in Arkansas.)
Class III – Carriers generating less than $21.0 million

- ✓ A possible benefit of a railroad line to the Airport is enhanced industrial recruitment opportunities, especially for aircraft manufacturing industries and related aerospace activities.
- ✓ Two possible railroad line routes to the Airport were identified as shown in the following illustration. Either route could provide adequate access to the Airport and to a possible nearby commercial/industrial site.
- ✓ A rail line could potentially provide a dual-purpose function by also serving as a commuter (passenger) line.

Figure 4
Rail Line Route Alternatives



Estimated Costs
The Airport would be responsible for construction of the railroad line. Estimated costs for the alternative rail line routes are:

Alternative	Cost Range (in $ millions)
A	$8.6 - $10.5
B	$8.9 - $11.1

Estimates include the cost of material (e.g., ballast, crossties and rail) to construct a typical mile of track at $368,000 per mile and a single turnout package at $8,000. Site preparation is estimated at $275,000 per mile. Estimated cost for three bridges and flashing lights and gates for five at-grade crossings was included. The cost for building one mile of new rail line could be as high as $1 million, depending on the number of at-grade crossings, bridges, culverts and other costs such as right of way acquisition and labor.

Section I
Air Cargo Assessment

In this section, air cargo shipping activities in northwest Arkansas and air cargo operations at the Airport are examined. The presentation includes data on the types and volumes of air shipments at the Airport and a discussion of local use of air cargo service including issues and needs.

Northwest Arkansas Regional Airport – An Overview

The Airport is located in Benton County, approximately nine miles west of Interstate 540, near the Highfill community. The Airport serves the communities and counties in northwest Arkansas and also attracts passengers from eastern Oklahoma and southern Missouri. Many of the Airport's passengers are business travelers who come to the region for business with Wal-Mart and Tyson Foods. Table 1 lists passenger data for the Airport with comparison data for the Little Rock National and Tulsa International Airports.

Table 1
Passenger Data

Northwest Arkansas Regional Airport			
Year	Enplanements	Deplanements	Total
2001	374,722	361,100	735,822
2002	400,063	386,885	786,948
2003	448,228	444,261	892,489
2004	511,714	508,432	1,020,146
Little Rock National Airport			
Year	Enplanements	Deplanements	Total
2001	1,191,234	1,182,900	2,374,134
2002	1,095,973	1,095,080	2,191,053
2003	1,063,023	1,066,276	2,129,299
2004	1,147,617	1,139,299	2,286,916
Tulsa International Airport			
Year	Enplanements	Deplanements	Total
2001	1,622,670	1,621,295	3,243,965
2002	1,457,952	1,449,356	2,907,308
2003	1,372,070	1,371,777	2,743,847
2004	1,475,076	1,468,843	2,943,919

Airport property consists of approximately 2,185 acres. Adjacent to the Airport is a large tract of land with the potential for commercial and industrial development. The Airport has one runway that is 8,800 feet long by 150 feet wide and a taxiway,

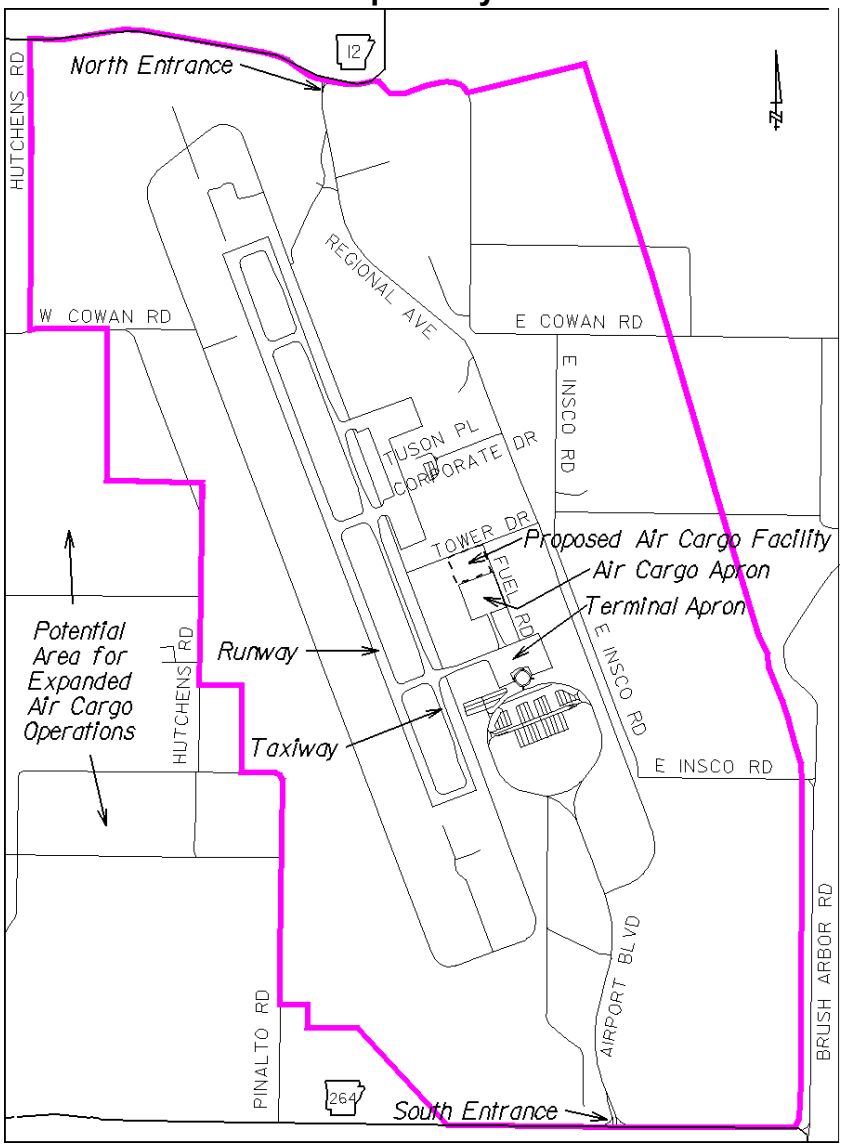
8,800 feet long by 75 feet wide. Future plans include extending the existing runway to 12,500 feet long and building a second (150 foot x 9,000 foot) runway.

There are approximately 57 commercial flights each day, with service provided to sixteen different destinations. Passenger airlines that serve the Airport are:

- American Eagle
- Continental Express
- Delta Airlines/Delta Connector
- Mesaba Airlines/Northwest Airlink
- US Airways Express
- United Airlines

The Northwest Arkansas Regional Airport Authority operates the Airport and represents five cities, Bentonville, Fayetteville, Rogers, Siloam Springs and Springdale, and two counties, Benton and Washington. Each city and each county appoint two members to the Board of Directors. Figure 5 shows a layout of the Airport.

Figure 5
Airport Layout



Air Cargo Shipments

The Airport does not have an air cargo terminal, although plans for a terminal are being developed. A cargo facility is currently being built north of the terminal and additional space for full air cargo operations that include sorting and packaging can be obtained through construction of an air cargo terminal on five to ten acres located on the west side of the Airport.

The Airport currently has one on-site air cargo service provider, Federal Express (FedEx). Other air cargo service providers in the region are DHL/Airborne Express and United Parcel Service (UPS). A small amount of air cargo is carried in the luggage compartment of some passenger planes. FedEx has an airplane that is domiciled at the Airport and is flown to the Memphis International Airport each night. This airplane carries only small documents such as business contracts.

Table 2 shows annual air cargo and airmail shipment volumes at the Airport. Data for the Little Rock National Airport and the Tulsa International Airport are provided for informational purposes.

Table 2
Air Cargo and Airmail Annual Volumes

Northwest Arkansas Regional Airport			
Year	Air Cargo* (in Pounds)	Airmail** (in Pounds)	Total (in Pounds)
2001	344,899	11,287	356,186
2002	367,753	4,234	371,987
2003	327,133	2,171	329,304
2004	346,810	1,361	348,171
Little Rock National Airport			
Year	Air Cargo* (in Pounds)	Airmail** (in Pounds)	Total (in Pounds)
2001	19,063,000	14,368,000	33,431,000
2002	19,147,000	6,137,000	25,284,000
2003	19,492,000	4,878,000	24,370,000
2004	22,068,000	3,722,000	25,790,000
Tulsa International Airport			
Year	Air Cargo* (in Pounds)	Airmail** (in Pounds)	Total (in Pounds)
2001	96,586,000	10,218,000	106,804,000
2002	96,376,000	4,096,000	100,472,000
2003	102,120,000	4,484,000	106,604,000
2004	109,652,000	4,540,000	114,192,000

*All cargo transported by dedicated cargo providers and by passenger airlines.
**Airmail tendered by USPS to passenger airlines.

The Tulsa International Airport is the Airport's chief competitor for air cargo and airmail shipments. Airmail volumes at the Airport, along with airports nationwide, have declined since September 11, 2001 due to security restrictions that preclude passenger airlines from handling any United States Postal Service (USPS) packages over 13 ounces. As a result, USPS has a multi-year contract with FedEx to handle their airmail shipments. USPS airmail from northwest Arkansas is trucked to the FedEx facility at the Tulsa International Airport.

Air Cargo Questionnaire

Shippers in Benton and Washington Counties were surveyed to determine air cargo usage, articles shipped and received by air transportation and the importance of selected air cargo facilities and support services. Of the 170 questionnaires sent out, over a third were returned. The following is a summary of the findings. A copy of the questionnaire is included as Appendix A.

Air Cargo Usage

Most survey respondents use air cargo service either on a regular or occasional basis. The remainder revealed that air cargo service was not used. Reasons given were the size and weight of products manufactured and the short distance products are shipped.

- *Percent using air cargo service*
  - ✓ 34% - regular users
  - ✓ 20% - occasional users
  - ✓ 46% - non-users
- *Anticipated future use of air cargo service*
  - ✓ 47% - increase
  - ✓ 10% - decrease
  - ✓ 33% - same
  - ✓ 10% - unknown

The major reason given for not using air cargo transportation for products that could be shipped by air was the cost of the service. Air transportation is usually the most expensive of all the freight modes. It is, however, ideal for shipping high-value, time-sensitive products long distances. The main air cargo service problem is delivery time. Shippers stated that more flexibility in air cargo delivery time is needed to satisfy production schedules and business meeting times.

- *Top reasons for not using air cargo service*
  - ✓ Cost of service
  - ✓ Not enough volume
  - ✓ Unreliable service
- *Top air cargo service problems*
  - ✓ Delivery time (need flexible hours)
  - ✓ Damaged or lost shipments
  - ✓ Poor pick-up service

Air Cargo Shipments

The top two inbound air cargo shipments are documents and repair parts. Shipments into the Airport arrive primarily from all areas of the United States, with most shipments coming from Eastern, Midwestern and Northeastern States. Southern California is also a leading source for items shipped by air to northwest Arkansas. Countries in the

Far East, such as China and Taiwan, are the major international locations for inbound air cargo shipments.

- *Top inbound shipments*
  - ✓ Documents
  - ✓ Repair parts
  - ✓ Electronic components
  - ✓ Product samples
  - ✓ Office supplies
- *Top shipment origins*
  - ✓ USA (Eastern, Midwestern and Northeastern States)
  - ✓ Far East (China and Taiwan)
  - ✓ Southern California
  - ✓ Europe (France)
  - ✓ Brazil

The principal outbound air cargo shipments are documents and machine parts. The major domestic destination for air shipments is throughout the United States, with Midwestern States being the chief area. Mexico is the main international destination.

- *Top outbound shipments*
  - ✓ Documents
  - ✓ Machine parts
  - ✓ Electronic components
  - ✓ Printed material
  - ✓ Gift items
- *Top shipment destinations*
  - ✓ USA (Midwestern States)
  - ✓ Mexico
  - ✓ Far East (Japan)
  - ✓ Europe (Hungary)
  - ✓ South America

Air Cargo Facilities and Services

Respondents to the questionnaire rated the importance of selected air cargo facilities and services for northwest Arkansas. They were asked to rate each item as: 1 (very important), 2 (moderately important) or 3 (limited importance). Flexible pick-up and delivery times, air cargo tracking service, and assistance with Customs clearance were considered the most important air cargo services for the area. An on-site cargo terminal could be beneficial to filling these needs and enhancing air cargo service in the area.

Facility/Service	Very Important	Moderately Important	Limited Importance
• Flexible pick-up and delivery times	69%	28%	3%
• Air cargo tracking service	68%	29%	3%
• Customs clearance assistance	57%	20%	23%
• On-site airport cargo terminal	48%	23%	29%
• Scheduled departure times	47%	33%	20%
• International service	47%	23%	30%
• Frequency of flights	38%	47%	15%
• Dedicated cargo space in plane	24%	21%	55%
• Parcel sorting and packaging service	16%	29%	55%
• Warehousing	6%	11%	83%

Section II
Truck and Rail Access Assessment

A general assessment of truck and rail access to the Airport is provided in this section. The analysis includes a review of current highway access routes to the Airport and proposed roadway access improvements. An examination of possible rail service at the Airport is also included.

Truck Transportation

Good truck access to the Airport is important in developing air cargo operations. A major portion of air cargo is transported by expedited truck service.[3] Highways are the critical component that ties freight modes together and facilitates the distribution of products. Poor roadway access can cause indirection of travel, delays and higher transit cost.

Current Roadway Access Routes

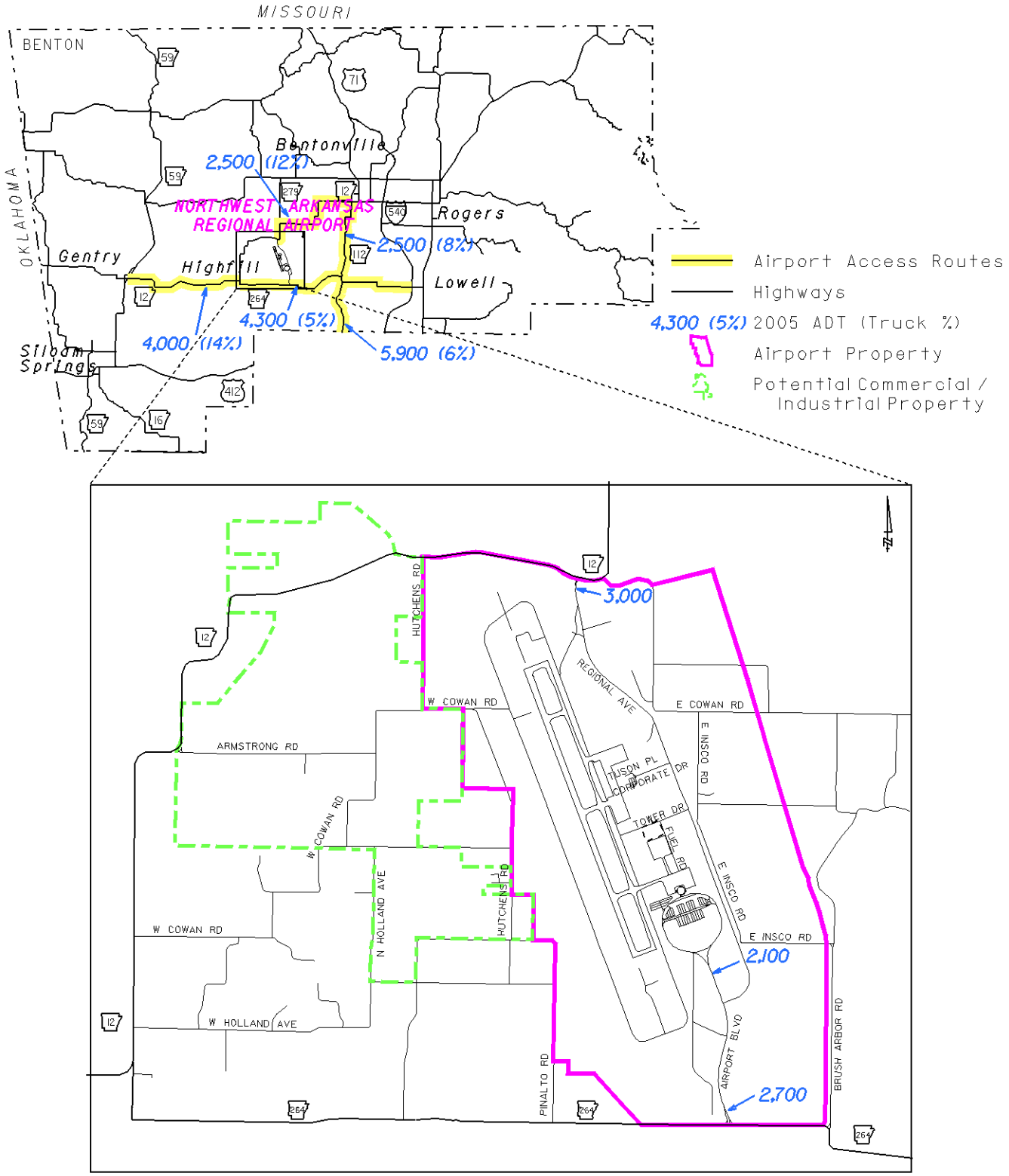
The Airport has two entrances. The primary highway access routes to the Airport are Highways 264, 12 and 112. The south entrance is Airport Boulevard from Highway 264. Access from the north is possible by Regional Avenue from Highway 12, connecting to Airport Boulevard. Highway 264 links the Airport to Interstate 540 and the Springdale/Lowell area. Highway 12 is used to access the Airport from the west (Gentry/Siloam Springs area) and from northern Benton County. Highway 112 connects the Bentonville/Rogers area and southern Benton County with the Airport.

Trucks use either entrance, as there is no designated truck route. Figure 6 shows 2005 traffic volumes with truck percentages for highways in the vicinity of the Airport. Traffic recorded on Airport property roads is also shown. Average Daily Traffic (ADT) of 4,300 vehicles with 5% truck traffic is noted on Highway 264. On Highway 12, the highest traffic volume occurs toward Gentry with 4,000 ADT and 14% truck traffic. On Highway 12 toward Bentonville, there are 2,500 vehicles with 12% trucks. The traffic count on Highway 112 south of Bentonville is 2,500 ADT with 8% truck traffic. On Highway 112 near the Washington County line, there are 5,900 vehicles per day with 6% truck traffic.

On Airport roads, the highest volume occurs on Regional Avenue near its junction with Highway 12 (the north entrance) with 3,000 vehicles per day (vpd). On Airport Boulevard, 2,700 vpd are recorded close to Highway 264 (the south entrance) and 2,100 vehicles are present near the Airport passenger terminal.

[3] A trucking service designed for quick and efficient cargo delivery.

Figure 6
Area Traffic Volumes



Roadway Features

The American Association of State Highway and Transportation Officials (AASHTO) has developed guidelines for the width of traffic lanes and shoulders. AASHTO suggests that the primary highway access routes (Highway 264, 12 and 112) to the Airport have a lane width of 11 or 12 feet with various shoulder widths depending on the average daily traffic. Current roadway features for the Airport access routes are listed in Table 3.

Table 3
Roadway Features
Airport Highway Access Routes

Highway	Cross Section	2005 ADT	Truck Percent
Highway 264			
From: I-540	Two 12-foot lanes	4,300	5%
To: Highway 12	With 2-foot shoulders		
Highway 12			
From: Highway 264	Two 11-foot lanes	4,000	14%
To: Highway 59 (Gentry)	With no shoulders		
or			
From: Highway 279	Two 11-foot lanes	2,500	12%
To: Highway 112 (Bentonville)	With 2-foot shoulders		
Highway 112			
From: Highway 12 (Bentonville)	Two 11-foot lanes	2,500	8%
To: Highway 264	With 2-foot shoulders		
or			
From: Highway 264	Two 11-foot lanes	5,900	6%
To: Washington County Line	With 2-foot shoulders		

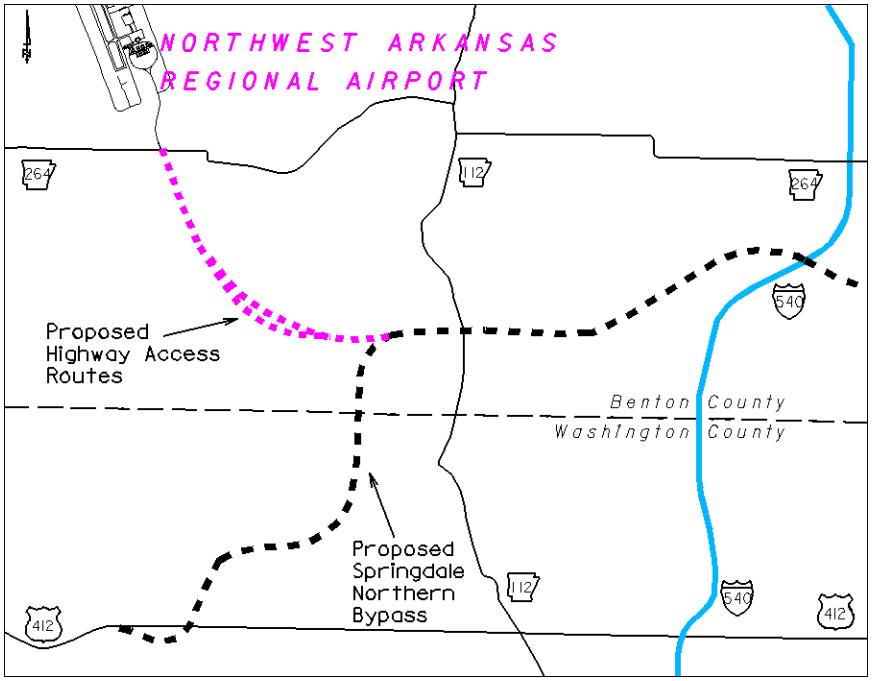
Truck Traffic Impediments

Impediments to truck movement are steep grades and sharp curves. The numerous hills and curves in the area affect the flow of traffic by restricting sight distance, travel speeds, and the opportunity to pass. Field observations revealed that trucks sometimes experience travel delays at the built-up commercial and residential areas located in the communities along the Airport access routes. An example is at Cave Springs where delays can occur from vehicles parking on both sides of Highway 264 in the downtown area. A potential safety issue is the shoulder width on some roadway segments. At various locations the shoulder width is not adequate for a large truck with a mechanical or emergency problem to fully clear the traffic lane.

Proposed Highway Access Improvement

A study, *Northwest Arkansas Regional Airport Intermodal Access Road Draft Environmental Impact Statement*, is underway to identify a possible new highway access route to the Airport. The new route is being planned in conjunction with the proposed Springdale Northern Bypass. Figure 7 shows possible highway access route alternatives. The highway access improvement plan is being prepared for the Airport by a consultant firm.

Figure 7
Proposed Highway Access Route Alternatives



Improvements to general area access may be afforded through a possible Western Beltway route that is being considered. Although in a very long-range planning stage, it would be generally located to the west of the airport, running north and south and paralleling existing I-540.

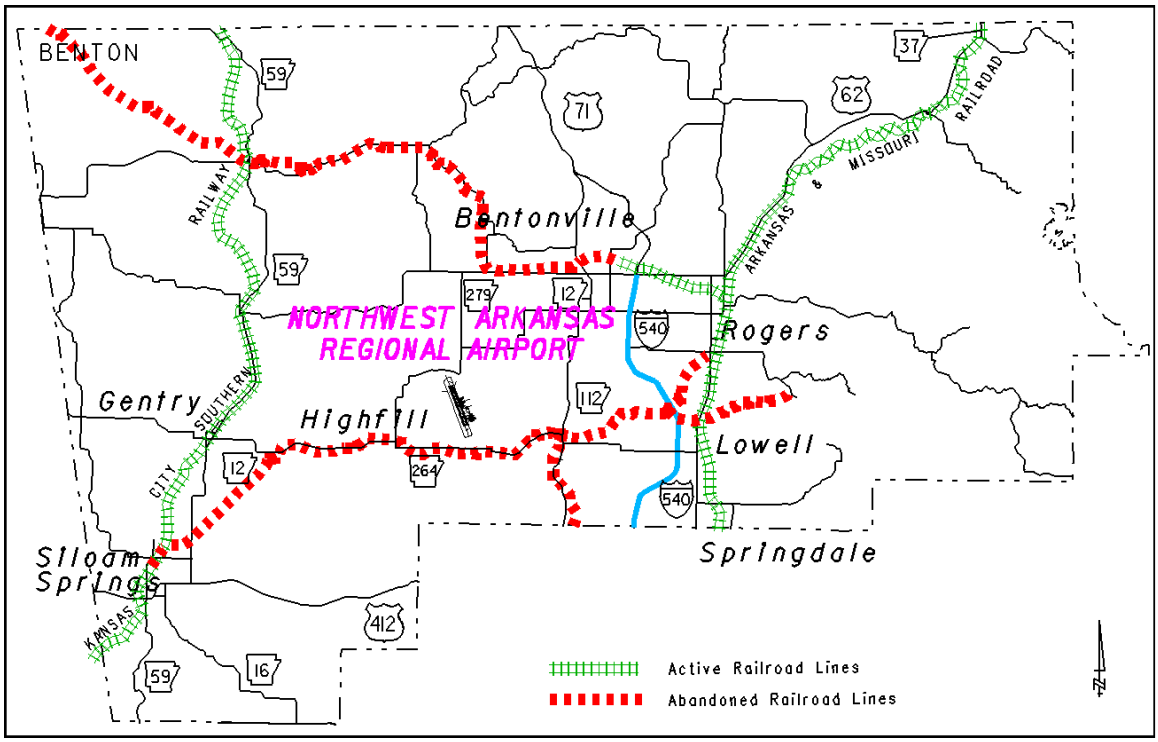
Rail Transportation

Presently, the Airport is not served by rail transportation. Potential economic benefits for the Airport, with rail service available, include enhanced industrial recruitment opportunities and surrounding land development. The presence of rail transportation could strengthen any plan the Airport has for developing an industrial park. Industries like to locate along or near a rail line to take advantage of the possibility for transportation cost savings for long haul shipments and for the economies of scale in moving large volumes of freight in a single move. Rail transportation also serves as an important recruiting tool for attracting large-scale development by offering logistic support service and specialized cargo handling options.

Current Rail Service

Although there is no direct rail service to the Airport, rail transportation is available within the region through the Class I[4] railroad, Kansas City Southern Railway, and the Class III[4] railroad, Arkansas and Missouri Railroad. Class I railroads provide long-haul service to national market areas like Chicago, Illinois and Dallas, Texas. They also offer shipment of goods to Canada and Mexico and freight exchanges at coastal ports of entry for international trade. Class III railroads provide services like switching of railcars for customers and feeder railcar service to Class I railroads. In some cases, Class III railroads offer value-added services such as warehousing, transloading and drayage service. Figure 8 shows the railroads that operate in Benton County and abandoned rail lines in the area.

Figure 8
Active and Abandoned Railroad Lines



Active Area Railroads

Class I

Kansas City Southern Railway (KCS)

Class III

Arkansas and Missouri Railroad (AM)

[4]Railroads are classified based on annual operation revenue:
Class I – Carriers generating $261.9 million or more
Class II – Carriers generating at least $21.0 million but less than $261.9 million (None in Arkansas.)
Class III – Carriers generating less than $21.0 million

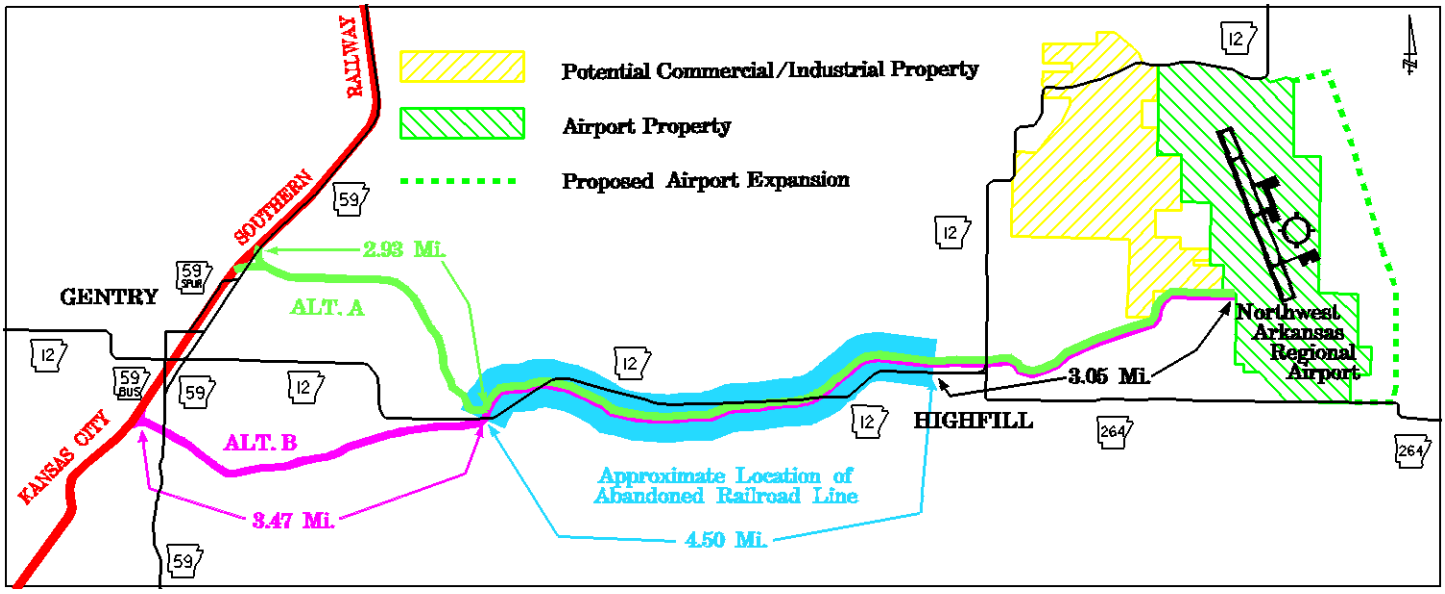
The abandoned rail lines have had the tracks removed and adjacent landowners may have encroached upon the right of way. Ownership status will need to be researched further.

Rail Line Connection
An initial appraisal was conducted concerning a possible rail line connection to the Airport. The evaluation consisted of identifying likely rail line routes, design considerations and cost estimates. The KCS has a main line track approximately 7 miles west of the Airport. The AM has a branch line in Bentonville, approximately 8 miles northeast of the Airport.

Rail Line Alternatives
Abandoned railroad lines in Benton County were identified and are shown in Figure 8. This information was used in determining possible railroad line routes to the Airport. Other factors taken into consideration were the location of the KCS and AM lines, terrain features and current land uses.

A rail line connection with the AM was eliminated because of the terrain and potential land use conflicts with established residential areas and commercial sites in the Bentonville area. The most feasible connection could be with the KCS. Two possible rail line routes were identified and are shown on Figure 9, with descriptions following. Either route would provide adequate access to Airport property and to a nearby commercial/industrial park site. Interest has also been expressed for light rail (commuter) service in the Washington/Benton Counties area. The possibility of using the rail lines evaluated in this study for dual (freight and passenger) purposes needs to be studied further.

Figure 9
Alternative Rail Line Routes



Alternative A

Alternative A begins at the KCS railroad line north of Gentry, then runs east and southeast about 2.9 miles to the abandoned railroad line. The alternative follows the abandoned railroad line eastward for 4.5 miles and then proceeds northeast for around 3.0 miles to the Airport, a distance of over 10 miles.

Alternative B

This possible route starts at the KCS railroad line south of Gentry, then travels east approximately 3.5 miles to the abandoned railroad line. From that point, Alternative B follows the same alignment as Alternative A, about 7.5 miles, to the Airport, an estimated length of 11 miles.

Rail Line Design Guidelines and Cost Estimates

Class I railroads are increasing gross railcar weights to 286,000 and 315,000 pounds. The 286,000-pound loaded railcars are becoming commonplace and the 315,000-pound loaded railcars should be typical in the near future. To adequately accommodate the larger railcars, heavy weight rail[5] and track components might be needed. Table 4 provides rail line design guidelines and Table 5 shows typical material costs for one mile of track. The design guidelines are based on Federal Railroad Administration industry standards for Class III railroads, using criteria for heavy axle loads.

Table 4
Rail Line Design Guidelines

Track	
• Weight of rail	132 pounds
• Track components (e.g., joint bars, tie plates, rail anchors)	132 pounds
• Top ballast depth	12 inches
• Subballast depth	10 inches
• Number of crossties per mile	3,168 (60 ties per 100 feet)
• Crossties	6 inches x 8 inches x 8 feet, 6 inches grade 3, end plated
• Switch tie	9 to 16 feet long - Grade 8 or 10
Bridge	
• Bridge strength rating of 315,000 pounds	

[5] Weight of rail is a per yard measurement

Table 5
Typical Cost of Materials
(for one mile of track)

Item	Unit	Quantity	Unit Cost	Total Cost
Rail (132 pounds)	Net Ton	232	$700	$162,400
#10 Turnout Package[6]	Each	One	$8,000	$8,000
Crosstie (60 ties per 100 feet)	Each	3,168	$30	$95,040
Ballast (Granite)[7]	Net Ton	3,000 (Top) 6,000 (Sub)	$6.85 $5.57	$20,550 $33,420
Bridge (Rating of 315,000-pounds)	Linear Foot	$2,800 to $3,200 per LF		
Culvert	Each	Depends on Diameter		
Track Components (132-pound material)				
Joint Bar	Pair	270	$45	$12,150
Tie Plate (Double Shoulder - 12" Relay)	Each	6,400	$5.50	$35,200
Spikes (5/8" x 6")	Keg	55	$84	$4,620
Rail Anchor	Each	3,000	$0.80	$2,400
Track Bolt	Keg	11	$150	$1,650
Lock Washers	Each	1,100	$0.30	$330
Track Nuts		Comes With Bolts		
At-Grade Crossing (Concrete 9' Ties)	Each	$155 per Track Foot		
Source: *Track Data Handbook – 1994* *Track Cyclopedia Ninth Edition – A&K Railroad Materials*				

Total cost of material for one mile of track is approximately $368,000. This excludes turnouts, bridges, culverts and at-grade crossings.

The cost for at-grade crossing protection varies, depending on the improvements that are made. Estimated costs for possible crossing improvements are:

Item	Estimated Cost
• Crossbucks	$700 per crossing
• Flashing lights (including gates)	$250,000
• Cantilevers (including gates)	$300,000
• Crossing surfacing	$1,000 per linear foot

[6] Turnout package includes switch ties (54 to 56 ties), switch stand, connecting rods, self-guarded frog and related track components.
[7] "D" Track Ballast (size 2" to 2 ½").

Table 6 provides a range of estimated costs for the rail alternatives. Estimates include:

- materials to construct a typical mile of track
- site preparation at $275,000 per mile
- signal and gates for five at-grade crossings at $250,000 per crossing
- a single turnout package
- materials for 3 bridges at $3,000 per linear foot.

The final amount will depend on the number of at-grade crossings, bridges, culverts and other costs such as right-of-way acquisition and labor.

Table 6
Cost Estimates for Alternative Rail Line Routes

Alternative	Cost Range (in $ millions)
A	$8.6 – $10.5
B	$8.9 – $11.1

Section III
Summary

This study examined air cargo operations at the Northwest Arkansas Regional Airport and assessed truck and rail access to it. The analysis included: (1) a review of the types and volumes of air shipments at the Airport; (2) the determination of local use of air cargo service and service issues and needs; (3) a review of traffic data and roadway features of the highways that serve as access routes to the Airport with emphasis on truck movement; and (4) the evaluation of possible rail service at the Airport that involved the identification of alternative rail line routes.

The Airport is presently served by one air cargo carrier. The amount of air cargo and airmail volume handled is low when compared to other airports. Possible causes are the absence of an on-site air cargo terminal where parcels can be sorted and distributed locally, the national declining trend for packages being carried by passenger airlines due to security measures and the situation where most United States Postal Service packages from northwest Arkansas are now trucked to the Tulsa International Airport air cargo terminal for handling. To better compete for air shipments, plans are being developed for an air cargo terminal at the Airport. A questionnaire was used to determine present air cargo shipping usage, articles shipped and received by air and the importance of selected air cargo facilities and services. Most of the survey respondents use air cargo service either on a regular or occasional basis. The chief reason given for not using air cargo service was the high cost. The top inbound and outbound air shipment is documents. Flexible pick-up and delivery times, air cargo tracking service and assistance with Customs clearance are considered the most important air cargo services for the region.

Since a significant portion of air cargo is transported by expedited truck service, good roadway access to an airport is important. Possible truck access impediments to the Airport were identified and include the steep grades and sharp curves that affect sight distance, travel speeds and the ability to pass. Travel delays also may occur in the built-up commercial and residential areas along the highways used to access the Airport. A possible safety issue is the shoulder width on some roadway segments. At various locations, the shoulder is not adequate for a large truck that is experiencing a mechanical or emergency problem to fully clear the traffic lane. Planned highway improvements to the Airport should improve safety and enhance truck access. Presently there is no direct rail service to the Airport. Two possible rail line routes were identified. Either route should provide adequate access to the Airport.

Appendix A
Air Cargo Questionnaire

Planning and Research Division

Northwest Arkansas
Air Cargo Questionnaire

Name of Company _____ Contact Person _____

Email Address _____Phone_____

Air Transportation

1. Are you currently using air cargo service on a regular basis? _____ Yes ____No

If yes:

What type(s) of air cargo do you ship or receive? (e.g., documents, medical supplies)

Inbound	Outbound
_____	_____
_____	_____

Primary origin(s) _____

Primary destination(s) _____

Transit time requirement(s) _____

2. Major air cargo service problem(s): _____

Do you expect to increase or decrease your use of air cargo service in the near future?

Increase_____ Decrease _____

What is the main reason(s) for not using air cargo service more? _____

_____

3. Please rate the importance of the following air cargo services for this area.

1 (very important) 2 (moderately important) 3 (limited importance)

Service	Importance
• On-site airport cargo terminal	_____
• Scheduled time of departure	_____
• Frequency of flights	_____
• Dedicated cargo space in plane	_____
• Flexible pick-up and delivery time	_____
• Parcel sorting and packaging service	_____
• Warehousing	_____
• International service	_____
• Air cargo tracking service	_____
• Custom clearance	_____

4. Would assistance on international shipments, such as information on foreign markets (e.g., tax rate, point of entry) be useful to you? _____Yes _____No

Appendix B
Freight Transportation Glossary

Freight Transportation Glossary

AAR – Association of American Railroads

AASHTO – American Association of State Highway and Transportation Officials

abandonment – decision of a carrier to discontinue service over a route (Surface Transportation Board permission is required)

accessorial service – service rendered by a carrier, other than a transportation service, such as warehousing service

ad valorem tax – a charge collected by a government that is calculated on the value of goods

ADT – Average Daily Traffic

air cargo – freight, mail, and express packages transported by air

AMTRAK – the nations' rail passenger service

back haul – the return movement of a vehicle from the shipment's destination to its origin

bill of lading – a contract document between a carrier and a shipper

blocking – the grouping of railcars for movement to another location

broker – an intermediary between the shipper and the carrier

breakbulk – the separation of a bulk load into smaller shipments

cargo – four types:

- bulk cargo – basic commodities in an unpacked condition (grains, coals, or other materials that are voluminous and loose)
- general cargo – large units of semi-manufactured commodities that are packaged (boxes, drums) or self packaged
- neo-bulk cargo – a limited number of commodities such as scrap metal, lumber, automobiles, or paper
- outside cargo – general cargo that is so heavy or large it cannot be accommodated or handled by normal means, and requires use of special loading and/or transportation equipment

cargo movements – three types

- online movements – cargo is transported by a single carrier
- single mode movements – cargo is transported by one or more carriers of a single mode
- intermodal movements – cargo is transported by two or more modes, involving the transfer of cargo between modes

circuitous route – indirect freight route

CL – carload or container load

Class I Railroad – railroad that provides national rail service

Class II Railroad – railroad that provides regional rail service (none in Arkansas)

Class III Railroad – railroad that provides local rail service

COFC – container on (rail) flatcar

consignee – party to whom articles are shipped

common carrier – for-hire carrier that serves the general public

consignor – party by whom articles are shipped

container terminal – area designated for the storage of containerized freight

contract carrier – for-hire carrier that serves shippers through contract arrangements

Customs duty (or tariff) – amount payable to the government on goods imported or exported

dead head – one leg of a freight movement on which the trailer or container is empty

demurrage – a fee levied by a shipping company when shipping equipment (railcar, container, etc.) in which goods were shipped is detained and not returned by a specified date agreed upon by contract

distribution warehouse – a warehouse used to store finished goods and to assemble customer orders

double stack – stacking containers, frequently with different lengths, on a rail car

drawback – a refund of duty taxes, which may be obtained when goods are exported or destroyed under certain conditions

drayage – freight hauled by a motor carrier

duty – see Customs duty

exclusive use – carrier vehicles assigned to a specific shipper for its sole use

FAA – Federal Aviation Administration

FHWA – Federal Highway Administration

Foreign Trade Zone – designated area where imported goods or products for export can be stored, displayed, sold, and/or manufactured without being subject to certain quota restrictions and some Customs formalities

FRA – Federal Railroad Administration

freight forwarder – a person engaged in consolidating small shipments of goods for transport as a single shipment

gateway – point where freight moving between territories is interchanged

interchange – transfer of cargo between carriers

intermodal transfer – transfer of commodities between two modes

intermodal transportation facility – freight exchange terminal that also provides warehousing and transfer loading

JIT (just-in-time) – inventory system used by manufacturers and distributors to minimize levels of inventories, for which reliable transportation is essential

LCL – shipments of less than rail carload volume

lead time – total time that elapses from placement of an order until the goods are received

line haul – movement of freight from one point to another

lock – a structure built in a river to allow movement between two pools of water with different elevation heights

logistics channel – network of intermediaries engaged in transfer, storage, handling and communication functions that contribute to the efficient flow of goods

LTL – less than truckload (shipment)

marshalling yard – a series of parallel rail tracks where railcars are stored and grouped for distribution

multimodal – moving cargo from origin to destination by more than one freight transportation mode

outsourcing – contracting with an outside firm for services (e.g., shipping, packaging, storage, billing and/or inventory control)

piggyback – shipment of truck trailers and containers on railroad flatcars; also called TOFC (trailer on flat car)

railcars – seven types:

- box car – closed car used for hauling freight
- compartmentizer car – box car equipped with movable bulkheads which can be used to divide the car into separate compartments
- compartment tank car – tank car which has compartments or separate tanks in which different kinds or grades of liquids may be transported
- flatcar – car without sides, top or ends, used for machinery, stone, etc.
- gondola – open top car having sides and ends
- hopper car – car with floor sloping to one or more hoppers through which contents may be unloaded by gravity
- tank car – car used for transporting bulk liquids

rail weight – the weight of rail measured in pounds per yard

relay terminal – motor carrier terminal where a fresh driver is substituted for a driver who has driven the maximum hours permitted

seamless service – level of cooperation among intermodal carriers that makes the modal transfer smooth and effortless with no shipment delay

shippers – individuals or business that purchase transportation services for their goods or commodities

shippers' association – a non-profit entity that represents the interests of a number of shippers

side tracks – rail tracks used for storage, loading or unloading which connect with other railroad tracks

spur tracks – rail tracks extending from and connected at only one end with another track

tariff – also called a Customs duty

team track – rail tracks on which rail cars are placed for the use of the public in loading and unloading freight

TEU – Twenty-Foot Equivalent Unit. A TEU is equivalent to a 20-foot container.

through movement – shipment of a container inspected and sealed by Customs at the factory site and then transported without the need of further inspection until arrival at the destination

TL – truck load (shipment)

TOFC – trailer on flatcar (also called piggyback service)

tramp loading site – loading site that allows for transfers of bulk commodities and containers between trucks and trains

transit shed – a building designed to provide temporary accommodations and sorting space for cargo being transferred to or from a freight mode

transit time – total time that elapses from pickup to delivery of a shipment

transload site – a location where products are temporarily stored and then loaded into a railcar, truck or container

truck cross-dock terminal – a location where cargo is transferred between long haul trucks and small delivery trucks, as part of a freight consolidation service

unit trains – large shipments treated as a singe unit (e.g., a multi-car train where all cars carry wood chips to a paper mill)

warehouse – a building in which goods may be stored over a period of time as necessary to make further distribution

Northwest Arkansas Regional Airport

Air Cargo Study and Freight Transportation Access Assessment

Arkansas State Highway and Transportation Department