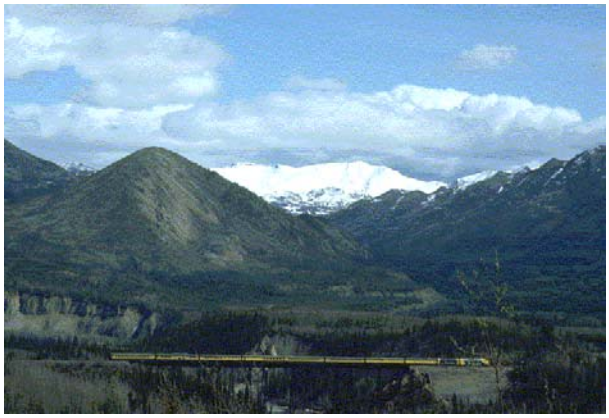
Mat-Su Borough
Long-Range Transportation Plan

Final Report



Prepared for:
Matanuska-Susitna Borough

Prepared by:
HDR Alaska, Inc.

ADOPTED:
June 2007

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TABLE OF CONTENTS

List of Figures

on or following page

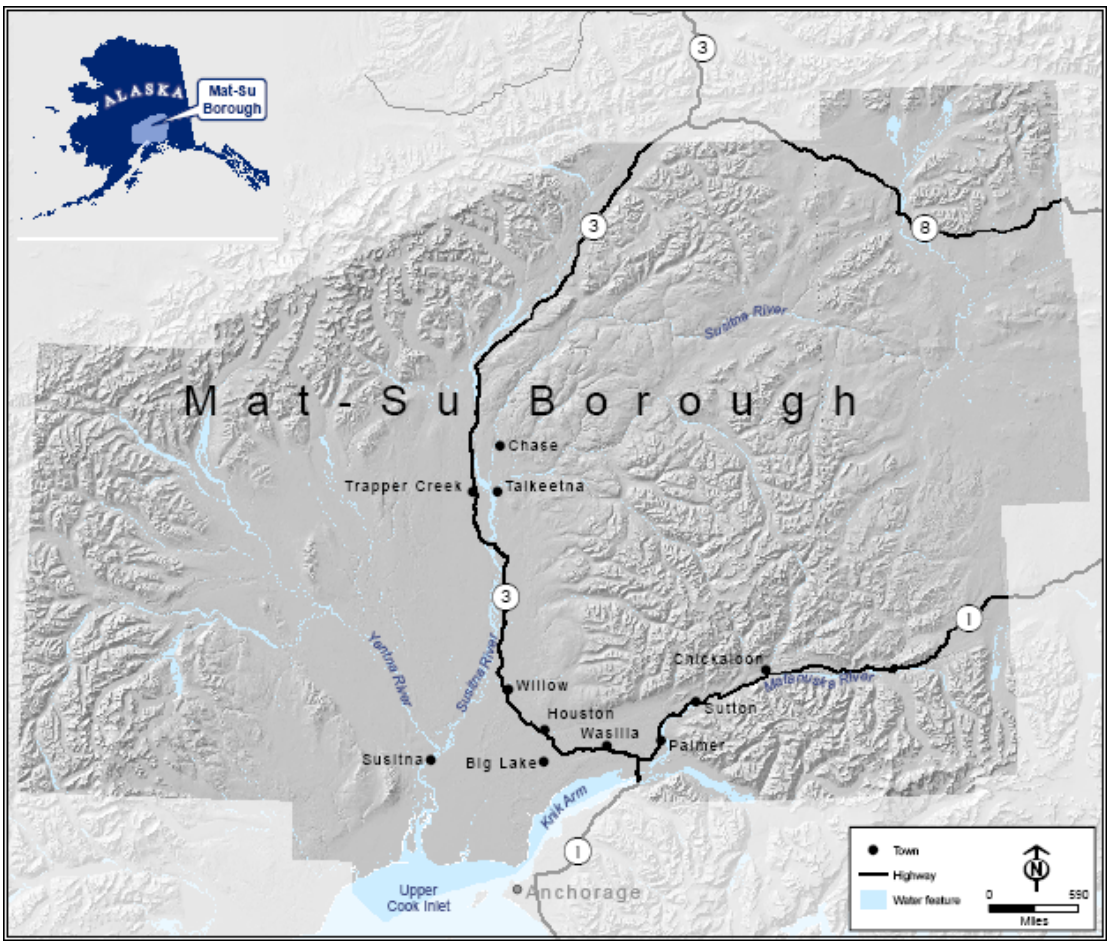
List of Tables

1 INTRODUCTION

1.1 SETTING

The Matanuska-Susitna Borough (Borough) lies in the heart of Southcentral Alaska, encompassing more than 24,000 square miles of rolling low land, mountains, lakes, rivers and streams. The Borough includes portions of the Alaska Range to the northwest; portions of the Chugach Mountains to the Southeast; and essentially the entire Talkeetna and Clearwater Ranges in its interior. The Municipality of Anchorage, Upper Cook Inlet, and Knik Arm delineate the Borough's southern boundary. Figure 1-1 provides an overview of the Borough and its principal communities.

Figure 1-1
Mat-Su Borough Overview



Home to over 70,000 residents, the Borough has for many years been the most rapidly growing area in the state. New residents are drawn by the combination of "elbow room," reasonable land prices, and nearby recreation. A few communities in the Borough were settled in the early 1900's as miners explored and worked the area. The Palmer area was initially settled during the great depression as a New Deal experiment that created farms and an agricultural community. During the pipeline boom of the 70's and early 80's the Borough's population grew rapidly, and a significant share of new residents commuted to jobs in Anchorage. Although still home to a large number of commuters, the Borough's growth has enabled a local economy to take root and grow.

A hundred years ago the Susitna River served as the Borough's primary transportation corridor, connecting Cook Inlet with mining communities such as Talkeetna. By the 1920's the Federal government had completed the Alaska Railroad that connected Seward, Anchorage and Fairbanks, supplanting parallel river, wagon and dogsled traffic. The railroad traversed the Borough from south to north, connecting and helping a number of the nascent communities grow. Initially, a spur also connected Palmer, Sutton and the nearby coalmines, which supplied the US Navy with fuel for its ships.

The first highway to connect the Borough with Canada and the contiguous 48 states was the Glenn Highway built as a connector to the Alaska Highway during the early 1940's. During the 70's the George Parks Highway was completed, providing a direct connection between Anchorage, the Mat-Su and Fairbanks. Today, these two major interstate highways traverse the Borough. Virtually all out-of-state highway traffic destined to the Borough, Anchorage, or Kenai destinations travels through the Borough via one of the two highways.

The Glenn Highway is the major east-west transportation link for Southcentral Alaska. It begins in Anchorage, intersects the end of the George Parks Highway approximately 35 miles north of Anchorage, is routed north and east through the Matanuska River Valley, and intersects with the Richardson Highway in Glennallen. The Glenn Highway was constructed between Anchorage and Palmer in 1936. Construction of the remainder took place during World War II to establish a supply route to Southcentral Alaska. Much of the Glenn Highway has since been improved by the Alaska Department of Transportation and Public Facilities (ADOT&PF), but sections of the road north and east of Palmer remain narrow with minimal or no shoulders. In 1971 the Glenn Highway was rerouted to form a by-pass around the Central Business District of Palmer.

The George Parks Highway connects Anchorage and the Borough to Interior Alaska and Fairbanks. Construction was accomplished in several segments and completed in the mid 1970's. It provided a shorter, more direct route between Anchorage and Fairbanks and quick access to the Denali National Park. The upgrading of the Parks Highway between its beginning at the junction with the Glenn Highway and Wasilla was completed in 2006. This new section of highway will feature four-lane limited access

highway from the Glenn junction to the Seward Meridian Road, and 5-lane highway from there to Wasilla.

Most development within the core area of the Matanuska-Susitna Borough is connected to the road system, although some areas have only air or water access. In the more remote areas of the Borough access is predominantly via air, water, railroad, all terrain vehicle, or snowmachine. The long-range transportation plan recognizes the various types of access to properties within the Borough and incorporates them into the overall transportation system.

1.2 PURPOSE OF PLANNING

This transportation plan assesses growth in the Mat-Su Borough over the next 20 years, and identifies the key elements of the Borough's future transportation system that will be needed to serve its growing communities. The transportation plan will help the residents develop a Borough that is a pleasure to live in, with public infrastructure that supports their daily lives.

In a general sense, transportation planning is no different than any other type of planning, in that it lays out a desired future and the steps that will be needed to produce the desired outcomes. A failure to plan leaves one more vulnerable to the whims of fortune and external forces. This plan seeks to ensure that the transportation system will be capable of handling the Borough's expected growth. In addition, it seeks to enhance safety, reduce congestion, lower transportation costs, improve environmental conditions, and reduce negative impacts on residential neighborhoods. The completed plan allows planning, platting, and transportation decisions to be based on a comprehensive, careful study of needed road, trail, and rail connections as well as marine and aviation facilities. It's important that decision-makers not have to address important issues and make critical choices by the seat of their pants, but be able to rely on a well-conceived plan developed with substantial community involvement.

The Borough has experienced significant population increases over the past 20 years and is projected to nearly double in size within the next 20 years to over 160,000 residents. As Alaska's most rapidly growing borough, this rate of growth can challenge the community's ability to provide the roads, trails and other transportation elements needed to efficiently and effectively serve its residents and businesses. Transportation projects usually require years to develop and construct. A community can find itself virtually gridlocked if transportation planning and improvements are not accomplished in a timely manner. Therefore, transportation improvements must be agreed upon early on and programmed for construction as early as possible in order to prevent congestion and unsafe conditions. This plan seeks to fulfill these needs.

1.3 PLANNING PROCESS

The Matanuska-Susitna Borough adopted the *Transportation Planning and Programming Process* prepared for the Borough by Transport/Pacific Associates in February 1993. This process identifies the need for a long-range transportation plan outlining a regional, multimodal transportation system. The long-range transportation plan should span a period of 20 years with updates every three to six years. It should identify proposed transportation system changes for the plan period based on projected socioeconomic changes in the Borough. It also needs to recognize and ensure consistency with the transportation section of the various adopted comprehensive plans for communities within the Borough.

1.4 BOROUGH AND COMMUNITY COMPREHENSIVE PLANS

A comprehensive plan is required by state statute (AS 29.40.010). At a minimum a comprehensive plan must address transportation, land use and public facilities. The Borough adopted a Borough-wide comprehensive plan in 1971. The Matanuska-Susitna Borough Transportation Plan, which was drafted in 1997, is an element of that comprehensive plan. A new Borough-wide comprehensive plan was proposed in 1985 but was not adopted by the Borough Assembly. Instead, a policy was established for the development of community-based comprehensive plans. Each community plan, upon adoption by the Borough Assembly becomes a chapter of the Borough-wide comprehensive plan. To date, several community comprehensive plans have been adopted by the Borough. They include: Chickaloon Community Plan; Core Area Comprehensive Plan; Chase Comprehensive Plan; Glacier View Comprehensive Plan; Big Lake Comprehensive Plan; Talkeetna Comprehensive Plan; Sutton Comprehensive Plan; Meadow Lakes Comprehensive Plan, and Y Community Comprehensive Plan. In addition, both Palmer and Wasilla have developed comprehensive plans with transportation elements. Other community plans within the Borough are currently under development, including Trapper Creek. The transportation element of the community plans have been considered and incorporated in the development of this Borough-wide transportation plan. The Borough amended its 1971 comprehensive plan to update its goals and objectives in 2006 to address the rapid growth it is experiencing and to establish further parameters to be considered in preparing local comprehensive plans. When adopted, this LRTP will become part of the Borough wide Comprehensive Plan

2 GOALS AND OBJECTIVES

Transportation goals and objectives describe what the community desires of their future transportation system. What are the most important things to accomplish? Criteria are used to measure the progress towards the desired transportation system. The following goals, objectives and criteria reflect the Borough's future transportation system and address the principal components of that system: the economy and quality of life; air, marine, rail, and roadway improvements; public participation; the environment; safety, public transportation; and the transportation system in general. The goals and objectives are not in priority order as they are interdependent.

2.1 ECONOMY AND QUALITY OF LIFE

This set of goals addresses the impacts of transportation facilities upon Borough residents at work and home. This plan seeks to direct the development of the Borough's transportation system that respects our neighborhoods, is visually attractive and is efficient.

Goal: **Provide a transportation system that enhances the local economy and quality of life.**

Objective: Minimize through-traffic movements on local streets.
Criterion: Percent vehicle miles traveled (VMT) on collector or higher designated roadways.

Objective: Promote positive and attractive design of transportation facilities.
Criterion: Amount budgeted for design and landscaping.

Objective: Develop a multi-modal transportation network.
Criterion: Amount of total annual transportation funding invested in non-auto transportation projects.

Objective: Improve marine, aviation and rail facilities in the Borough.
Criterion: Economic value of employment and investment in marine, aviation and rail modes.

Objective: Promote greenbelt and buffer development along arterial and collector-level roadways.
Criterion: Amount of land dedicated to greenbelts and buffers (with higher amounts dedicated on public lands).

Objective: Identify lower classification roads operating at collector or higher designation.
Criterion: Number of roads identified and recommended alternatives.

Objective: Encourage the paving of roads and the increased use of dust control materials.
Criterion: Formation of Limited Improvement Districts for paving and increased funding for paving and dust control.

Goal: Develop an integrated roadway network that facilitates the efficient movement of people and goods.

Objective: Develop an interconnected network of collector roads.
Criterion: Miles of collector roads in relationship to the miles of arterial and local roads.

Objective: Maintain an acceptable level of service on roads which generally corresponds to Level of Service D or better.
Criterion: Percentage of miles of arterial or higher designated roadways operating at Level of Service D or lower.

Objective: Minimize travel time delays.
Criterion: Percent miles of arterial or higher designated roadways operating at Level of Service D or lower.

Goal: Protect the through traffic function of the highways and arterials.

Objective: Minimize congestion.
Criterion: Establish a congestion management program.

Objective: Maintain the traffic carrying function of highways and arterial roads.
Criterion: Support ADOT&PF access control efforts and actively control access to borough-owned arterial roads.

2.2 SAFETY

Safety is a fundamental goal of any transportation planning effort. Auto accident related deaths in the United States exceed 40,000 per year and represent the single

largest cause of non disease-related mortality in the country. The rate of fatal accidents in the Borough is one of the highest on the road-connected portion of the state.

Goal: **Reduce the rate of transportation-related accidents and mortality**

Objective: Reduce the auto accident rate.
Criterion: Number of auto accidents per capita per year.

Objective: Reduce the number and rate of fatalities related to auto accidents.
Criterion: Number of auto accident-related fatalities per year and the number of fatalities per capita per year.

Objective: Reduce the rate of pedestrian and bicyclist injuries and deaths,
Criterion: Number of pedestrian and bicyclist injuries and fatalities per year and the number of injuries and fatalities per capita per year.

Objective: Reduce the annual number and rate of accidents in which alcohol or drugs are found to be a contributing factor
Criterion: The number of accidents in the Borough in which alcohol or drugs are a contributing factor and the number of such accidents per vehicle mile traveled.

2.3 ENVIRONMENT

This goal seeks to maintain the existing environmental quality by obtaining baseline information that may be used to monitor air quality. In addition, this goal promotes alternatives to the automobile and the more efficient use of the auto as a means of protecting the environment.

Goal: **Promote transportation projects and programs which reduce congestion, auto dependency, and air and water pollution.**

Objective: Establish baseline information on existing air quality.
Criterion: Begin air quality monitoring program within the core area of the Borough.

Objective: Improve air quality.
Criterion: Encourage the paving of roads and increased use of dust control materials.

Objective: Control and improvement of the water quality of roadway runoff into lakes and streams.
Criterion: Appropriate roadway design.

Objective: Increase commuter vehicle occupancy.
Criterion: Fraction of vehicles during peaks with two or more occupants; number of ride sharing participants.

Objective: Coordinate transportation planning with Municipality of Anchorage.
Criterion: Development of regional transportation model and planning.

Objective: Promote land use and transportation solutions that have the best chance to reduce air pollution in the long term.
Criterion: Print and distribute brochure with suggested practices.

Objective: Develop a multi-modal transportation network.
Criterion: Amount of total annual transportation funding invested in non-auto transportation projects.

2.4 PUBLIC PARTICIPATION

This set of goals seeks to develop and maintain increased public involvement in transportation planning efforts and specific projects.

Goal: Promote informed public review of all transportation projects and long term transportation issues which ensures early notice of projects and issues and adequate time for review and discussion.

Objective: Obtain public comment on Transportation Improvement Program (TIP).
Criterion: Distribute draft TIP for 45-day review.

Objective: Inform public of long- and short-term transportation planning efforts and transportation projects.
Criterion: Number of meetings and number of informational mailings.

Objective: Inform public of long- and short-term transportation planning efforts and transportation projects.
Criterion: Expand use of electronic and printed media.

Goal: Promote inter-jurisdictional cooperation for transportation planning and air quality improvement.

Objective: Establish a committee composed of Houston, Palmer and Wasilla representatives.
Criterion: Number of meetings.

Objective: Establish a South Central Clean Air working group under to regularly coordinate on air quality issues.
Criterion: Monthly meetings.

2.5 ROAD AND TRAIL SYSTEM

This set of goals seeks a well-balanced future transportation system and addresses the existing and future roadway network. It is important that the function of existing collectors and arterials is protected, as funding for new roadway projects is limited. Also, developers should be asked to fund mitigating measures so that the public at large does not have to suffer delays and the cost of improvements resulting from specific developments.

Goal: Provide a multi-modal transportation system that is safe, effective and meets the needs of all Borough residents.

Objective: Develop a regionally coordinated network of facilities for pedestrians and bicycles which connect residential areas to activity centers such as schools and commercial sites.
Criterion: Number of trail miles developed or improved.

Objective: Develop a coordinated network of multi-modal (pedestrian, bicycle, four-wheeler, snow machine) trails throughout the Borough. Some trails should have pervious surfaces.
Criterion: Number of trail miles dedicated, developed or improved.

Objective: Maintain the existing road system in a safe and usable state.
Criterion: Identify high accident locations; reduction in accidents, injuries and deaths per vehicle mile traveled.

Objective: Complete a Borough wide trails plan.
Criterion: Adopt and implement a trails plan.

Objective: Develop and integrate a Green Infrastructure Plan into existing and future transportation corridors.
Criterion: Adopt and implement a plan.

Goal: Develop an integrated roadway network that facilitates the efficient movement of people and goods.

Objective: Maintain an acceptable level of service on roads.
Criterion: Percentage of miles of arterial or higher designated roadways operating at below Level of Service D.

Objective: Minimize the number of access points on collector and arterial roads to maximize safety and road capacity.

Criterion: Develop access control program with ADOT&PF; coordinate the review of access requests on state, Borough and city collector and arterial roads.

Objective: Require developers to mitigate negative impacts on intersections and roadways if new development contributes to level of service falling below Level of Service D.

Criterion: Amount invested to mitigate negative transportation impacts.

Objective: Identify and conserve rights-of-way needed for future collector and arterial routes.

Criterion: The percentage of right-of-way for future collector and arterial routes identified in the Official Streets and Highways Plan that is acquired or otherwise reserved.

Objective: Base the dedication of right-of-way on the road functional classification as specified in the Long Range Transportation Plan.

Criterion: Review new road construction in accordance with the Long Range Transportation Plan.

Objective: Establish sufficient right-of-way for pedestrian/bike paths, utilities and the future widening of collector and higher designated roads.

Criterion: Appropriate road design.

Objective: Encourage the private/public sector partnerships to reduce the amount of employee-related peak hour traffic.

Criterion: Develop, print and distribute brochures to private sector regarding transportation management.

Objective: Program road upgrades and improvements according to the functional classification as specified in the Long Range Transportation Plan.

Criterion: Review proposed road improvements in accordance with the Long Range Transportation Plan.

Objective: Optimize the location of utilities along road rights-of-way.

Criterion: Utility location alongside, rather than under paved roadway sections.

Objective: Require developers to mitigate negative impacts on the transportation system.
Criterion: Projects that increase traffic generation by 100 vehicles, 15% or more during the peak hour on the principal road of access during the peak hour shall complete a Traffic Impact Analysis.

Objective: Monitor the existing transportation plan.
Criterion: Begin coordinated data collection system.

Objective: Protect the integrity and level of service on arterial and higher designated roads.
Criterion: Require coordinated state, Borough and city review of all access requests onto arterial and higher designated roads.

2.6 PUBLIC TRANSPORTATION

This goal seeks to provide transportation alternatives for Borough residents beyond the automobile.

Goal: Provide for the travel needs of mobility limited residents (young, old, low income, disabled).

Objective: Provide trails along all major collectors and higher designated roadways connecting activity centers with high pedestrian trip generators.
Criterion: Number of trail miles developed.

Objective: Coordinate transportation planning with health and human services planning and providers to promote the provision of service delivery and efficient use of transportation funds.
Criterion: Written report that analyzes how better coordination of services may occur.

Objective: Support the continued operation and expansion of local public transportation.
Criterion: Inclusion of transit in community and Borough-wide plans; appropriation of funding to help defray operating and maintenance costs.

Objective: Encourage the private/public sector partnerships to reduce the amount of employee related peak hour traffic.
Criterion: Print and distribute brochures to private sector regarding transportation management.

2.7 AIR TRANSPORTATION

This goal seeks to provide the residents of the Borough with the benefits resulting from an improved and safe air transportation system, and to build upon the Borough's present airport infrastructure to expand economic opportunities.

Goal: **Provide an air transportation system that is safe and adequate to serve the needs of the residents of the Matanuska-Susitna Borough.**

Objective: Provide a system of improved airports and float plane bases for private and commercial airline companies including air taxi operators.
Criterion: Number of certified airports and float plane bases within the Borough.
Criterion: Completion of a Mat-Su Borough aviation systems study.

Objective: Promote the establishment of improved facilities to encourage air freight and commuter airline service.
Criterion: Number of air freight and commuter airline firms located in Borough.

Objective: Promote safe airspace for private airfields located within residential subdivisions.
Criterion: Formal review of proposed private airfields.

2.8 RAIL TRANSPORTATION

Recognizing the existing and potential role that rail transportation plays in the development of the Borough, this goal seeks a cooperative and mutually beneficial relationship with the Alaska Railroad.

Goal: **Develop and operate a rail system to benefit Mat-Su's population and economy.**

Objective: Extend a rail connection from the Alaska Railroad main line to Port MacKenzie.
Criterion: Completed rail connection.

Objective: Work with the Alaska Railroad, the Municipality of Anchorage and the State to implement rail commuter service between the Borough and Anchorage.
Criterion: Completion of a memorandum of understanding between the parties covering the financing and operation of rail commuter service; operation of rail service; operation of commuter service long term in economically satisfactory manner.

Objective: Continue to support economic development of communities along existing and future Alaska Railroad lines.
Criterion: Increasing economic activity tied to rail service.

Objective: Work in partnership with the Alaska Railroad and the ADOT&PF to continually improve safety at road and rail crossings, on rail bridges and at other rail facilities. Reevaluate Rail Diagnostic Team findings based on additional criteria relative to emergency and secondary access to subdivisions.
Criterion: Reduction in frequency and severity of rail crossing and structure-related accidents. Oppose additional at grade rail crossings in high density, high traffic area to reduce traffic accidents and to improve emergency response for emergency vehicles.
Criterion: Oppose additional at grade rail crossings in high density, high traffic area to reduce traffic accidents and to improve emergency response for emergency vehicles.

2.9 WATERBORNE TRANSPORTATION

This goal seeks to provide for an integrated river and marine transportation system that improves transportation on the waters within the Borough and to allow the Borough to participate in ocean-based commerce.

Goal: Provide the Borough with a developed waterborne transportation system.

Objective: Promote the further development of Port MacKenzie.
Criterion: Expansion of public and private investment at Port MacKenzie; growth in tonnage handled.
Criterion: Accelerate and promote rail extension between Willow and Point MacKenzie.

Objective: Develop a year-round ferry service that connects Point MacKenzie with Anchorage.
Criterion: Ferry service operating between Mat-Su and Anchorage supporting the development of Port MacKenzie and improving alternative transportation for local residents and visitors.

Objective: Coordinate transportation with the Municipality of Anchorage and MASCOT at Point MacKenzie ferry terminal and Municipality of Anchorage ferry terminal for public transportation for ferry riders.
Criterion: Expands ridership.

Objective: Promote tourist facilities such as a small boat ramp on harbor at Point MacKenzie for the purpose of expanding the visitor industry.

Criterion: Inventory and coordinate tourism's businesses in the area, such as the Little Susitna fishing guides, bird dog hunting, bird watching, off road touring, and equestrian riding.

Objective: Study benefits of expanding Point MacKenzie's dock for large and small cruise ship facilities.

Criterion: Provide rail cost savings for passenger trains once the Willow to Point MacKenzie rail is complete.

Objective: Promote the proper development of river and lake recreational facilities; inventory current developed facilities and other possible sites on Borough lands.

Criterion: Creates recreational opportunities that create a better place to live.

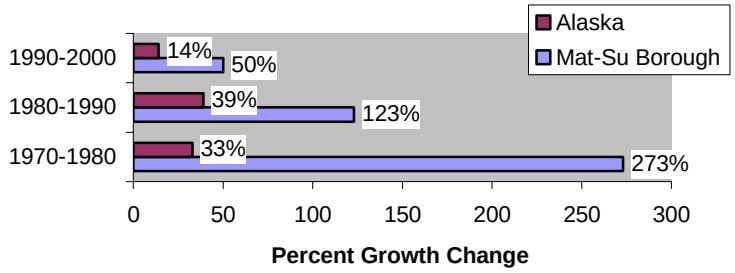
3 POPULATION AND ECONOMICS

It is important to understand the composition of an area's population and the structure of its economy when looking at transportation patterns and trends. The population and economy of a region have an immense impact on transportation, creating traffic, which in aggregate is called transportation demand. Since many of the data used for this chapter are developed by the US Census as a product of the decennial census and are otherwise unavailable or are available only as estimates, the chapter uses the 2000 census data as the basis for some comparisons.

3.1 POPULATION

The Matanuska-Susitna Borough has been Alaska's fastest growing region for the last two decades. The 2000 U.S. Census population[1] estimate for the Borough was 59,322, an increase of 19,639 over the 1990 Census estimate of 39,683, and an increase of 41,506 over the 1980 estimate of 17,816. Between 1970 and 1980 the Borough's population nearly tripled, growing from 6,509 to 17,816 persons. Figure 3-1 depicts the population growth trend over the past three decades. The U.S. Census estimate for 2005 was 76,001, an increase of nearly 17,000 residents since 2000. If the same growth rate is continued for the remainder of the current decade, the Borough will have experienced a greater than 50% growth rate over the first decade of the 21st century.

Figure 3-1
Population Growth, 1970-2000,
Alaska & Matanuska-Susitna Borough



Source: Alaska Department of Labor & Workforce Development

According to the Alaska Department of Labor[2] (2003), 90 percent of the Borough's residents live in the southern portion of the Borough in a corridor between the communities of Willow and Sutton. Three communities are incorporated or have political boundaries – Wasilla, Palmer, and Houston. The majority of the Borough's population is concentrated in the cities of Palmer and Wasilla and the "core area," the predominately residential area between the cities of Palmer and Wasilla. The

incorporated communities have represented a slowly declining fraction of Borough population over the past 20 years. Tables 3-1 and 3-2 depict detailed demographic and economic data in the Borough in 1990, 2000, and 2005, and between the State and the Borough in 2005, respectively.

Table 3-1
Demographic and Economic Data, 1990 and 2000,
Matanuska-Susitna Borough

	1990	2000	2005
Population			
Mat-Su Borough	39,683	59,322	75,001
Palmer	2,866	5,469	NA
Wasilla	4,028	4,533	NA
Houston	697	1,202	NA
Borough Statistics			
Total households	13,394	20,556	22,625
Average number of persons per household	2.92	2.84	3.31
Average number of persons per family	3.37	3.29	3.71
Male residents	20,605 (51.9%)	30,831 (51.9%)	38,575 (51.4%)
Female residents	19,078 (48.1%)	28,491 (48.1%)	36,426 (48.6%)
Enrolled students in MSB	8,851 [1]	12,513 [1]	15,825 [1]
Race – White alone	36,905 (93%)	51,938 (87.6%)	65,707 (87.6%)
Race – Percentage Non-White	7%	12.4%	12.4%
Race – American Indian and Alaska Native Alone	1,808 (4.9%)	3,264 (5.5%)	2,312 (3.1%)
Race – Black or African American Alone	295 (0.8%)	411 (0.7%)	579 (0.8%)
Race – Asian Alone		414 (0.7%)	567 (0.8%)
Race – Native Hawaiian and Other Pacific Islander Alone	258 (0.7%)	74 (0.1%)	43 (0.1%)
Race – Combination of two or more races or some other race alone	191 (0.5%)	3,221 (5.4%)	5,793 (7.7%)
Total number of housing units	20,953	27,329	28,153

[1] Source: Mat-Su Borough School District, 2005

Gender

In 2005, of the Borough's population, 36,426 (48.6%) were female, and 38,575 (51.4%) were male. Like much of Alaska, the fraction of female residents has been increasing. The median age in 2005 was 35.0, up from 34.1 in 2000, and up significantly from 30.8 in 1990. In 2005, there were 22,625 households, with an average of 3.31 persons per household. This compares with 20,556 total households, with 2.84 persons per household in 2000.

Table 3-2
Demographic and Economic Data, 2005,
Alaska and the Matanuska-Susitna Borough

	State of Alaska	Mat-Su Borough
Population and Race		
Total Population	641,724	75,001
Population of One Race	597,298	69,827
White Alone	443,874	65,707
Percentage White Alone	69.2%	87.6%
Percentage Non-White	30.8%	12.4%
Black or African American Alone	22,103	579
American Indian and Alaska Native Alone	91,013	2,312
Asian Alone	28,838	567
Native Hawaiian and Other Pacific Islander Alone	3,282	43
Some Other Race Alone	8,188	619
Two or More Races	44,426	5,174
Income		
Per Capita Income in 2005 [a]	$26,310	$23,999
Median Household Income [b]	$56,234	$56,857
Poverty Status		
Below Poverty Level [c]	71,873	8,775
Percentage Below Poverty Level	11.2%	11.7%

Source: U.S. Census Bureau, 2003

[a] Per capita income is an average obtained by dividing total income by total population of an area.

[b] The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median. A household includes all the people who occupy a housing unit as their usual place of residence.

[c] The Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level."

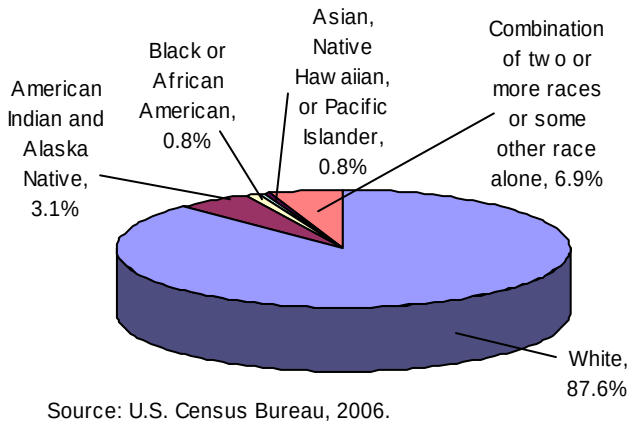
School Enrollment

In 2006, 15,825 students were enrolled in the Matanuska-Susitna Borough school district. In 1995, 11,895 students were enrolled. In 1990, the Borough school district reported 8,851 students enrolled, and in 1980, 4,407 students (MSB 2007).[3] Students enrolled per capita in the Borough increased significantly between 1980 and 1995, declined slightly between 1995 and 2003, and then grew again between 2003 and 2006.

Race

In 2005, the majority of the Borough's population was white (87.6%) alone; 3.1% was American Indian or Alaska Native alone; 0.8% was black alone; 0.8% was Asian or Pacific Island alone; and 0.8% was some other race alone. 6.9% were a combination of two or more races or some other race alone. Figure 3-2 depicts the Borough's population broken down by race. In general, the Borough is less racially diverse than the State as a whole.

Figure 3-2
2005 Matanuska Susitna Borough
Population Percentage by Race



Source: U.S. Census Bureau, 2006.

3.2 HOUSING

The housing unit is an important factor in transportation planning as it is the place where the majority of trips begin and end. The 2005 American Community Survey (US Census) estimates a total of 28,153 *housing units* in the Borough, an increase of 7,200 from 1990. The 2005 ACS estimates the total number of *households* is 22,625. (A *housing unit* is a house, an apartment, a mobile home or trailer, a group of rooms, or a single room occupied as separate living quarters and can be occupied or empty; a *household* includes all the people who occupy a housing unit as their usual place of residence).

The percentage of Borough owner occupied housing units is 78.8%, which is higher than the state's owner occupancy percentage (63.0%). In 2005 the homeowner vacancy rate was 0.9%, and the rental vacancy rate was 4.4%. Vacancy rates have decreased from 1990 to 2005. In 1990, the homeowner vacancy rate was 9.1%, and was 1.9% in 2000. The rental vacancy rate was 11.5% in 1990 and 7.0% in 2000. Single unit dwellings predominated with 24,279 units. There were 1,034 mobile homes, 627 2-unit complexes, and 1,140 3-or 4-unit complexes. A large fraction of structures were built during the boom years of the 1980s (see Table 3-3).

Household income is an important variable in transportation planning because it provides information about the mobility of residents and access to transportation and the automobile. In 2005 the median household income was $56,857; the median family income was slightly higher, $61,965. The per capita income was $23,999, up from $21,105 in 1999 and $15,898 in 1990.

Table 3-3
Residential Construction by Year,
Matanuska-Susitna Borough

Year Structure Built	Number	Percent
2000 to 2005	3,602	12.8
1990 to 1999	5,453	19.4
1980 to 1989	9,576	34.0
1970 to 1979	5,755	20.4
1960 to 1969	2,673	9.5
1940 to 1959	882	3.1
1939 or earlier	212	0.8
Total	**28,153**	**100%**

Source: U.S. Census Bureau, 2006.

3.3 ECONOMIC TRENDS

Economic activity, like the number of households and median income of a community, has a direct relationship to transportation demand. Generally speaking, the number of trips taken is directly related to the level of economic activity within a community. The kind of economic activity within a community also influences the type of travel taking place. As this section indicates, the Borough is a major exporter of labor; hence, commuter trips are a significant part of the Borough's travel.

The Borough is a unique Alaska economic region in several aspects. The Borough has been characterized by rapid population growth during the past three decades. The population growth rate has "slowed" to 50% in the 1990s compared to the 1970s in which the population nearly tripled. Population growth is a good economic indicator. No other area of the state has come close to the Borough's record of population and employment growth (ADOL 2003).[4]

An underlying key element of the strong employment growth in the Borough is the economic interrelationship between Anchorage and the Borough. A substantial portion of the economic activity in the Mat-Su Borough is the product of residents who work in Anchorage spending their income in the local economy.

One of the key sources of economic stimulus in the Borough is its role of residence of choice for many people who work somewhere else. According to the Alaska Department of Labor, of the total 28,787 Mat-Su workers in 2001, 13,510 (47%) workers commuted outside the Borough. Of these 13,510 residents working outside the Borough, nearly 76% commuted to Anchorage. (Please refer to Section 3.6, Labor Force, for more detail on travel to work).

In economic terms, the Borough is transitioning from being a satellite of Anchorage to establishing a more diverse and independent economy. According to the 2000 U.S. census, nearly 35% of residents' earned income came from out of region employment,

mostly in Anchorage. Further, a major share of governmental employment in the Borough is funded by intergovernmental transfers. These are monies that cities and the Borough use that come from state and federal sources. In other words, significant funding that supports the local economy comes from outside the Borough. In 2000, 22% of all resident personal income stemmed from transfer payments from federal and state governments; dividends, interest and rent represented 18%; and labor income accounted for 60% of the total (Sonoran Institute 2002).[5] Overall, it is estimated that approximately 40% to 45% of all personal income accrues from out-of-region employment or governmental transfers. Although a substantial percentage of the Borough's population either commutes to work outside the Borough or is employed by a governmental entity, the number of locally-based jobs per capita is increasing as the Mat-Su economy matures.

In contrast, basic goods-producing industries, usually the main source of basic employment, generate very little earned income for Mat-Su Borough residents. In 2000, the Mat-Su Borough's economy generated $860 per capita from production of goods, about one-fourth the statewide average of $3,120 (US BEA 2005).[6] Construction, agriculture and retail-based employment, plus tourism-related trade and services, account for most private basic employment.

In short, the Borough's economy is still significantly based on export of its labor rather than export of its goods or services. The personal income earned out-of-region, together with public transfer payments to governments and persons, supplies substantial purchasing power that sustains most local private employment in trade and services.

3.4 EMPLOYMENT AND EARNINGS

The Alaska Department of Labor compiles wage employment and payrolls for the Mat-Su Borough and for the Palmer and Wasilla subareas, which together comprise the Palmer-Wasilla subregional economy. The Palmer subarea generally covers the City of Palmer, plus the rural area north and east of Palmer as far east as Chickaloon. The Wasilla subarea includes the City of Wasilla and its vicinity south along Knik-Goose Bay Road and west along the Parks Highway to Kashwitna.

Local wage employment in the Palmer-Wasilla subregion skyrocketed during the first half of the 1980s, slumped along with the state's economy after mid-decade, and then rebounded to a new peak at the end of the decade. Between 1980 and 1991, employment grew by 79% in the Palmer labor area and by 418% in the Wasilla labor area. The decade of the 1990s continued a shift in the center of the employment (and population) toward the Wasilla subarea.

The composition of job growth in Palmer and Wasilla reflected and reinforced the area's distinctive economic function. Most of the job growth in and around Palmer was

concentrated in the government, services, and transportation/ communications/ utilities sectors. This was consistent with Palmer's long-standing role as a center for government, health care, and other service functions. The bulk of new jobs in the Wasilla labor area were in the trade and services sectors, reflecting Wasilla's emergence as the dominant trade area for the subregion.

For many of the outlying communities, tourism, recreation and agriculture provide some economic base. However, this income is generally seasonal. Additionally there is some mining and fur trapping.

Total Personal Income

In 2002, the Borough had a total personal income (TPI) of $1,830,767,000. This TPI ranked third in the state, accounting for 8.7 percent of the state total personal income. In 1992, the TPI of the Mat-Su Borough was $899,918,000 and ranked fourth in the state (US BEA 2004).[7] (Total personal income includes net earnings by place of residents; dividends, interest, and rent; and personal current transfer receipts by the residents of Mat-Su Borough).

Earnings by Place of Work

Earnings of persons employed in the Mat-Su Borough increased from $632,983,000 in 2001 to $699,395,000 in 2002, an increase of 10.5 percent. The 2001-2002 state change was 5.5 percent and the national change was 1.5 percent. The estimate for 1992 was $353,050,000 (US BEA 2004).[8]

One of the reasons many Borough residents choose to work outside the Borough is because better wages can often be obtained elsewhere. The average annual wage in the Mat-Su Borough in 2001 was $28,248 compared to $37,752 in Anchorage. Even higher wages can be earned on the North Slope and elsewhere (ADOL 2003).[9]

Earnings and Influence by Industry

A significant portion of the Borough's employment growth came from the service and retail sectors. Among the service industries growth, health care has been especially strong, evidenced by the new Mat-Su Regional Medical Center. Retail employment has grown in the area from new stores such as Fred Meyer, Wal-Mart, Home Depot and Lowe's. Table 3-4 shows the ten largest private employers in the Mat-Su Borough in 1999. Figures 3-3 and 3-4 depict the percent distribution by industry in 1990 and 2000, respectively.

Mat-Su Borough wages tend to be lower because retail and services are key elements in the area's economy. (See Table 3-5 for employment distribution by industry). More of the higher paying jobs in oil, transportation, government, health care, and company headquarters are found in Anchorage (ADOL 2003).[10]

Table 3-4
Ten Largest Private Employers, 1999
Matanuska-Susitna Borough

Company	Employees
Valley Hospital	418
Safeway/Carrs	416
Wal-Mart	353
Matanuska Telephone Association	275
Mat-Su Community Counseling Center	121
Wolverine Supply	120
Mat-Su Services for Children and Adults	118
Nye Frontier Ford	117
Fred Meyer	125
Fishers Fuel	95

Source: Alaska Department of Labor and Workforce Development, 2003.

Table 3-5
Percent Distribution of Employment by Industry, 1990 and 2000
Matanuska-Susitna Borough

Industry	1990 Percent of Work Force	2000 Percent of Work Force	Percent Change 1990 to 2000
Agricultural, forestry, and fisheries	3.1	5.7	- 3.0
Mining	5.6		
Construction	9.2	11.4	+ 2.2
Manufacturing, nondurable and durable goods	4.4	2.4	- 2.0
Transportation	7.0	8.2 *[a]	+ 1.2 *
Communications and other public utilities	4.3	3.9 [b]	- 0.4 *
Wholesale trade	2.5	2.4	- 0.1
Retail trade	16.1	12.9	- 3.2
Finance, insurance, and real estate	4.9	3.7	- 1.2
Business and repair services	4.5	--	--
Personal services	2.5	--	--
Professional, scientific, management, administrative, and waste management services	--	6.6	--
Entertainment and recreation services	1.3	8.2	+ 6.9
Health services	5.2	21.3 *[c]	+ 4.4
Educational services	11.7		
Other professional and related services	7.0	5.4	- 1.6
Public administration	11.0	7.9	- 3.1
Total	100.3	100.0	--

Notes:
* In 2003, the basis for industry classification changed from the 1987 Standard Industrial Classification System (SIC) to the 2002 North American Industry Classification System (NAICS). Therefore, industry categories being compared between 1990 and 2000 may not

uniformly match up and reflect total percentages within the industry because some of the categories overlap or slightly differ between the 1990 and 2000 census.

[a] For the 2000 Census, this industry category includes warehousing and utilities.

[b] For the 2000 Census, this industry is classified as “Information.”

[c] For the 2000 Census, this industry is called “Educational, health and social services.”

Source: U.S. Census Bureau, 1990 and 2000.

Figure 3-3
1990 Percent Distribution of Employment by Industry
Matanuska-Susitna Borough

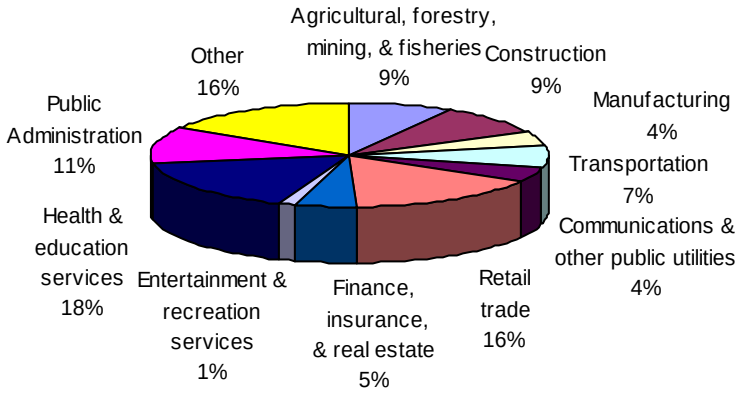
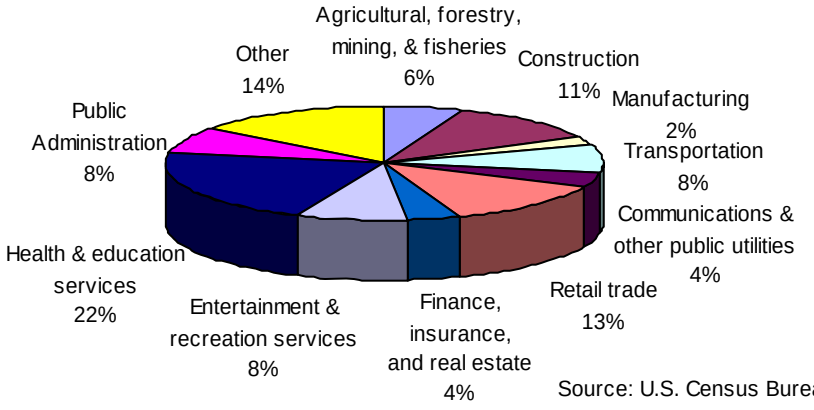


Figure 3-4
2000 Percent Distribution of Employment by Industry
Matanuska Susitna Borough



Source: U.S. Census Bureau, 1990 and 200(

3.5 LABOR FORCE

According to the 2000 U.S. Census, the Mat-Su Borough's labor force consisted of 24,981 persons, up 7,010 from 17,971 in 1990. This is 58.5% of working age persons living in the Borough. In 2000, 6.7% were unemployed, compared to 1990, when 11.6% were unemployed. The types of jobs held by Mat-Su Borough workers by general type of employer are shown in Table 3-6.

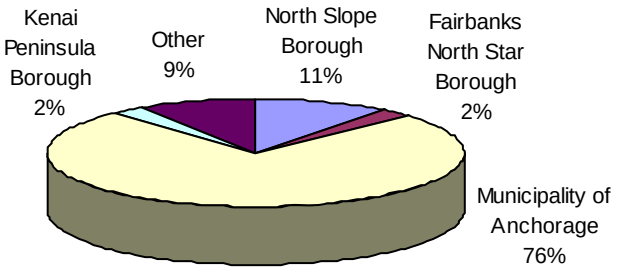
Table 3-6
Employer Type, Matanuska-Susitna Borough, 1990 and 2000

Type of Employer	1990	2000
Private company	48.6%	67.7%
Military	9.1%	n/a
Federal government	16.3%	5.5%
State government	4.3%	7.0%
Local government	8.1%	8.2%
Self employed	8.1%	10.9%

Source: 1997 Mat-Su Borough Long Range Transportation Plan; U.S. Census Bureau, 2000.

Many people who live in the Mat-Su Borough commute to work outside the Borough each day. According to the Alaska Department of Labor and Workforce Development, in 2001 47% of Mat-Su workers worked outside the Borough, with a large majority of these workers commuting to Anchorage. According to ADOL, 35.4% of Mat-Su Valley workers, or 76% of those working outside the Borough were employed in Anchorage. Another 5 percent were working on the North Slope, with the remaining 6.5% working in places around the state. Figure 3-5 depicts the work locations for Matanuska-Susitna out-of-Borough commuters in 2001. According to the 2000 U.S. Census, the average commute time to work for Mat-Su Borough residents was 40.7 minutes, up from 32 minutes in 1990.

Figure 3-5
Work Locations for Matanuska-Susitna Out-of-Borough Commuters, 2001



Source: Matanuska-Susitna Borough Fact Book (Alaska Department of Labor, Research & Analysis), 2003.

Table 3-7 shows the travel mode of employed residents of the Borough in 1990, 2000 and 2005. According to the 2005 American Community Survey, of the 33,395 employed persons 16 and over working in 2005, 1,058 (3.2%) worked at home, 23,451 (70.2%) drove alone to work, 6,753 (20.2%) carpooled, and 692 (2.1%) walked.

Table 3-8 illustrates one-third of commuters traveled at least 45 minutes or more to get to work in 2000. While the average commute time was 40.7 minutes, 26.5% of people traveled for more than one hour to get to work. The mean travel time to work in 1990 was 31.9 minutes, which means average commute times increased nearly 9 minutes, or 28% between 1990 and 2000.

Table 3-7
Home-to-Work Travel Patterns, 1990, 2000, and 2005
Matanuska-Susitna Borough

Travel Mode	1990	2000	2005
Worked at Home	812	1,547	1,058
Drove Alone to Work	10,380	16,988	23,451
Car Pooled	2,559	4,021	6,753
Used Public Transportation	33	160	96
Other	1,786	1,933	2,037
Total	15,570	24,649	33,395

Source: American Community Survey, U.S. Census Bureau 2000 and 2005.
Note: Numbers are for workers 16 years and older.
Other commute methods include bus, railroad, motorcycle, bicycle, walking, or other means.

Table 3-8
Travel Time to Work, 1990 and 2000,
Matanuska-Susitna Borough

Time in Minutes	1990		2000	
	# Persons	Percent	# Persons	Percent
< 10	3,064	20.7%	3,416	14.8
10 to 14	2,075	14%	2,995	13.0
15 to 19	1,859	12.6%	2,841	12.3
20 to 24	1,242	8.4%	2,072	9.0
25 to 29	301	2.1%	777	3.4
30 to 34	753	5.1%	1,580	6.8
35 to 44	368	2.5%	895	3.9
45 to 59	1,199	8.1%	2,406	10.4
60 to 89	2,817	19.1%	3,784	16.4
90 >	1,080	7.3%	2,336	10.1
Total	**14,758**	**99.9%**	**23,102**	**100.1%**

Source: U.S. Census Bureau, 1990 and 2000.

3.6 POPULATION AND VEHICLES

As the Borough's population has grown, so has the number of vehicles registered. (See Figure 3-6 and Table 3-9). The substantial growth in the number of vehicles is an indicator of the high dependency Borough residents have on the automobile. The number of registered vehicles, as shown in Table 3-9, includes the following types of vehicles: passenger, motorcycle, commercial trailer, trailer, commercial truck, pickup, bus, and snowmobile.

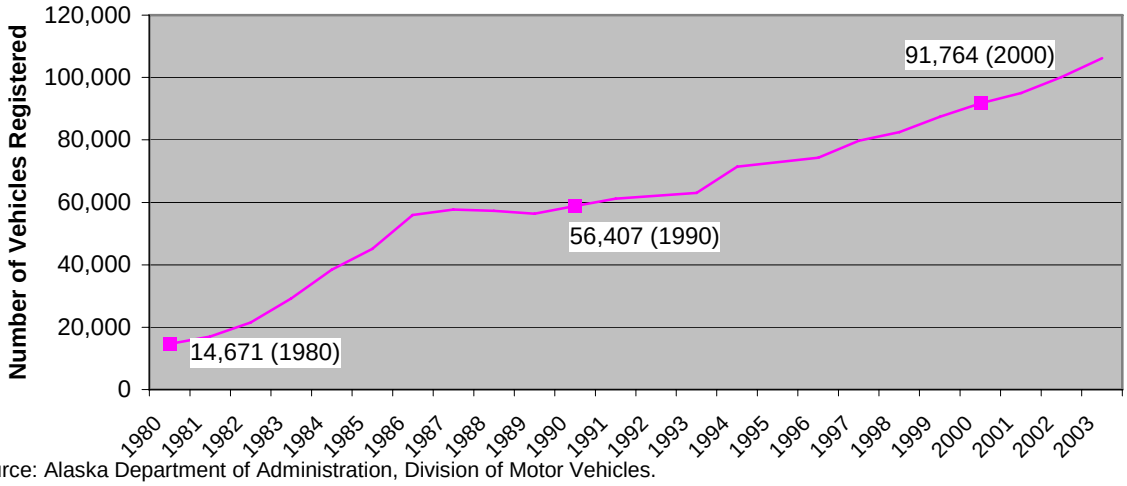
Table 3-9
Number of vehicles registered, 1980 - 2005
Matanuska-Susitna Borough

Year	Number of Registered Vehicles	Year	Number of Registered Vehicles
1980	14,671	1993	63,073
1981	17,014	1994	71,391
1982	21,515	1995	---
1983	29,163	1996	74,263
1984	38,425	1997	79,706
1985	45,066	1998	82,499
1986	55,985	1999	87,386
1987	57,740	2000	91,764
1988	57,295	2001	95,008
1989	56,407	2002	100,134
1990	---	2003	106,144
1991	61,194	2004	115,131
1992	---	2005	120,260

Source: Alaska Department of Administration, Division of Motor Vehicles

Figure 3-7 and Table 3-10 depict the number of passenger and commercial vehicles registered in the Borough over the past three decades. As the data suggests, the Borough's economy has grown as indicated by the growth of commercial vehicles since 1980, and as a percentage of the overall vehicle fleet.

Figure 3-6
Number of Vehicles Registered, 1980-2003,
Matanuska Susitna Borough



Source: Alaska Department of Administration, Division of Motor Vehicles.
Note: No numbers are available for 1990, 1992, and 1995.

Figure 3-7

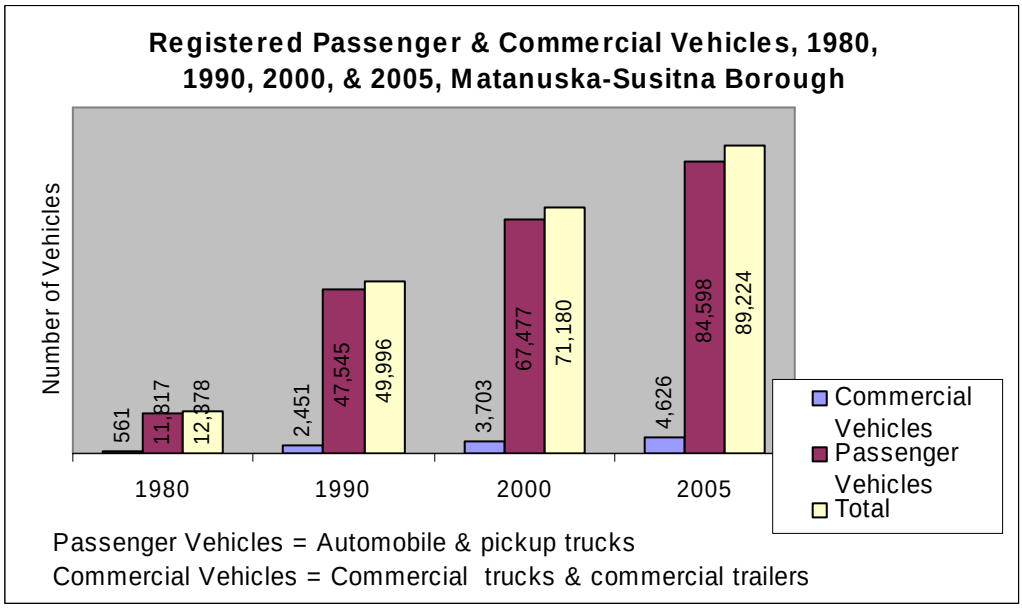


Table 3-10
Registered Passenger and Commercial Vehicles, 1980, 1990, 2000, and 2005
Matanuska-Susitna Borough

Type of Vehicle	1980	1990[3]	2000	2005	% Change 1980-1990	% Change 1990-2000
Passenger Vehicles[1]	11,817	47,545	67,477	84,598	400%	42%
Commercial Vehicles[2]	561	2,451	3,703	4,625	440%	51%
Total	12,378	49,996	71,180	89,223	400%	42%

Notes:
1. Passenger Vehicles = Automobiles and pickup trucks
2. Commercial Vehicles = Commercial trucks and commercial trailers
3. 1990 data is the average of 1989 and 1991 data supplied by DMV.

Source: Alaska Department of Administration, Division of Motor Vehicles

Table 3-11 depicts the driving population (population 16 years and older) and the number of registered passenger vehicles between 1980 and 2005. In 1980, the driving population was 12,155 and the number of registered passenger vehicles was 11,817, which meant there were 0.97 registered passenger vehicles per person within the driving-age population. This ratio increased by about 80% in 1990 to 1.76 registered passenger vehicles per person within the driving population. The ratio decreased somewhat in 2000 to 1.58, and further in 2005 to 1.49. The dramatic jump in the ratio between 1980 and 1990 could have been due in some part to the advent of the vehicle inspection and testing program in Anchorage in the mid-80's.

Table 3-11
Driving Population, 1980, 1990, 2000, and 2005
Matanuska-Susitna Borough

Type	1980	1990	2000	2005	% Change 1980-1990	% Change 1990-2000	% Change 2000-2005
Driving Population	12,155	27,015	42,705	56,681	222%	58%	32.7%
Registered Passenger Vehicles	11,817	47,545	67,477	84,598	402%	42%	25%
Vehicles/Population Ratio	.97	1.76	1.58	1.49	81%	- 10%	- 6%

Notes:
1. Number of registered vehicles for 1990 is the average of data supplied by DMV for the years 1989 and 1991.
2. Driving population consists of residents 16 years and older.

Source: Population - U.S. Census Bureau; Registered Vehicles - Alaska Department of Administration, Division of Motor Vehicles

School bus traffic has remained relatively steady over the past 20 years despite the increases in the overall Borough population and enrollment in the Borough school district. While the number of enrolled students has more than tripled from 1980 to 2003, the number of school buses has increased only by approximately 50% between 1985 and 2003, (See Table 3-12). The number of school buses peaked at 162 in 2002-2003. Likewise, the average daily mileage traveled by school buses in the Borough peaked in 2002-2003, at 7,716. Generally, average daily mileage has increased slightly over the past 10 years as well. Because many Borough roads are two lane facilities, school bus activity can have a negative effect on the morning peak hour traffic flows due to their frequent stop and go movements. Another related factor is the growth in the number of private schools and their buses.

Table 3-12
School Bus Traffic, 1985-2004,
Matanuska-Susitna Borough

YEAR	NUMBER OF BUSES	AVERAGE DAILY MILEAGE
1985-86	103	4,649
1986-87	110	4,242
1987-88	106	4,962
1988-89	110	5,149
1989-90	113	5,507
1990-91	145	6,851
1992-93	150	---
1993-94	151	---
1994-95	153	7,709
1995-96	149	7,112
1996-97	148	6,990
1997-98	143	6,980
1998-99	142	6,855
1999-00	142	7,030
2000-01	153	7,270
2001-02	158	7,524
2002-03	162	7,716
2003-04	151	7,601

Source: Matanuska-Susitna School District, 2004.[11]

3.7 FUTURE POPULATION AND EMPLOYMENT PROJECTIONS

The need for projections of future population and employment growth stems from the fact that the number of people living and working in the Borough bears a direct relationship to travel. Future population and employment estimates form the foundation of travel and traffic volume predictions. In modeling the travel characteristics of Borough residents the location of population and employment are translated into vehicle trips which in turn are distributed throughout the road network.

Development of Population and Employment Projections

The Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage developed population estimates for the Mat-Su Borough (as a whole) with and without a Knik Arm Crossing for the years 2025 and 2030.[1] The estimates were developed for Knik Arm Bridge and Tunnel Authority (KABATA), the Federal Highway Administration, and Alaska Department of Transportation & Public Facilities (ADOT&PF) and are summarized in Table 3-13. The expense of developing a new set of independent projections is beyond the scope of the present transportation planning effort, and it is important that the planning efforts for Mat-Su, the Anchorage Long Range Transportation Plan and KABATA all have the same basic foundation of population and employment estimates.

Table 3-13
ISER Population and Employment Projections for 2025, Anchorage and Matanuska-Susitna

	2025 Without Knik Arm Bridge	2025 With Knik Arm Bridge	Difference
POPULATION			
Anchorage and Mat-Su	507,900	507,900	-
Anchorage	346,030	334,395	-11,635
Mat-Su	161,870	173,505	11,635
WAGE & SALARY JOBS			
Anchorage and Mat-Su	215,090	215,090	-
Anchorage	172,920	168,190	-4,730
Mat-Su	42,170	46,900	4,730

Source: Institute of Social and Economic Research, University of Alaska Anchorage, 2005.

This plan uses a forecast of future population and employment based on projections made by ISER. One should also bear in mind that the projections made by ISER are based on a number of assumptions about economic growth. The methods used to develop the projections, therefore, contain an element of uncertainty about the future. If the Borough's future population and employment in a given year differ by a great amount (10%-20%) from the forecast used for this plan, then the Mat-Su Borough Transportation Advisory Board and Planning Department should consider updating the long-range transportation plan. Generally, in order to make sure that the plan is

[1] The Mat-Su Borough's current update of their Long Range Transportation Plan uses a target year 20 years in the future, or 2025. The Knik Arm Crossing project uses a target year that is 20 years beyond the estimated completion year of the crossing, or 2030.

tracking with actual growth and development in the Borough, the Long Range Transportation Plan should be updated every five to seven years.

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[1] U.S. Census Bureau, 1990 and 2000. http://factfinder.census.gov/home/saff/main.html?_lang=en

[2] Alaska Department of Labor and Workforce Development (ADOL). January 2003. Alaska Economic Trends. The Matanuska-Susitna Borough.

[3] Matanuska Susitna Borough School District. February 16, 2007. Telephone communication between Mat-Su Borough School District Budget and HDR Alaska, Inc. planner Tom Brigham.

[4] ADOL. January 2003. Alaska Economic Trends. The Matanuska-Susitna Borough.

[5] Sonoran Institute. December 30, 2002. Population, Employment, Earnings and Personal Income Trends: Matanuska-Susitna Borough, AK.

[6] U.S. Department of Commerce, Bureau of Economic Analysis (US BEA). Regional Economic Accounts website. http://www.bea.doc.gov/bea/regional/data.htm, as accessed 7/14/04.

[7] US BEA. Regional Economic Accounts website. http://www.bea.doc.gov/bea/regional/data.htm, as accessed 7/14/04.

[8] US BEA. Regional Economic Accounts website. http://www.bea.doc.gov/bea/regional/data.htm, as accessed 7/14/04.

[9] ADOL. January 2003. Alaska Economic Trends. The Matanuska-Susitna Borough.

[10] ADOL. January 2003. Alaska Economic Trends. The Matanuska-Susitna Borough.

[11] Matanuska Susitna Borough School District. July 19, 2004. Email communication between Mat-Su Borough School District Transportation Division Bill Cheeseman and HDR Alaska, Inc. planner Leslie Robbins.

4 ROAD SYSTEM

Rapid growth has been the norm in the Mat-Su Borough for as long as most residents can remember. The consistently high growth rates combined with the favored low-density pattern of development mean that expansion of the Borough's road system has been extensive as well. Low density development requires more road miles per home than would more compact growth. When oil income was plentiful, the State built many roads intended to serve as arterials and collectors to support community development, but for the past twenty years ADOT&PF has not only been reluctant to build these roads, but has actively worked to encourage local government to take over roads that are not part of the Alaska Highway System or the National Highway System. As a result of these factors, the Borough's role and importance in roadway development and maintenance has expanded substantially. If the Borough's predicted growth over the next 20 years is realized, expanding existing key roads and building new connections at the level required will pose a significant challenge.

4.1 FUNCTIONAL CLASSIFICATION SYSTEM

Roads provide two functions, traffic movement and access to adjacent property. Generally, the greater the amount of access provided to adjacent property, the less capable a road is for moving traffic. The opposite is also true. Classification of roads within a system identifies those roads which are intended primarily for moving traffic and those intended primarily for access to adjacent properties. It allows the management of highways and arterials, intended principally for mobility, to be differentiated from local roads intended for access. Figure 4-1 illustrates the relationship between roadway access and capacity functions.

Functional Classification

The Borough's 1997 Long Range Transportation Plan established a new set of functional classifications to be applied to the Borough's roads and streets. The classifications are defined by the role each was expected to play in the movement of traffic as well as the traffic volume range appropriate for each classification. The passage of the Intermodal Surface Transportation Enhancement Act (ISTEA) and its successors has made it possible for federal funds to be used for Borough road projects. It is important that Borough road classifications and standards be similar to state and federal classifications and standards. Similar classifications and standards improve the level of understanding between agencies when discussing road projects. This results in better communication and cooperation. The following definitions are recommended for roads within the Matanuska-Susitna Borough.

Interstate

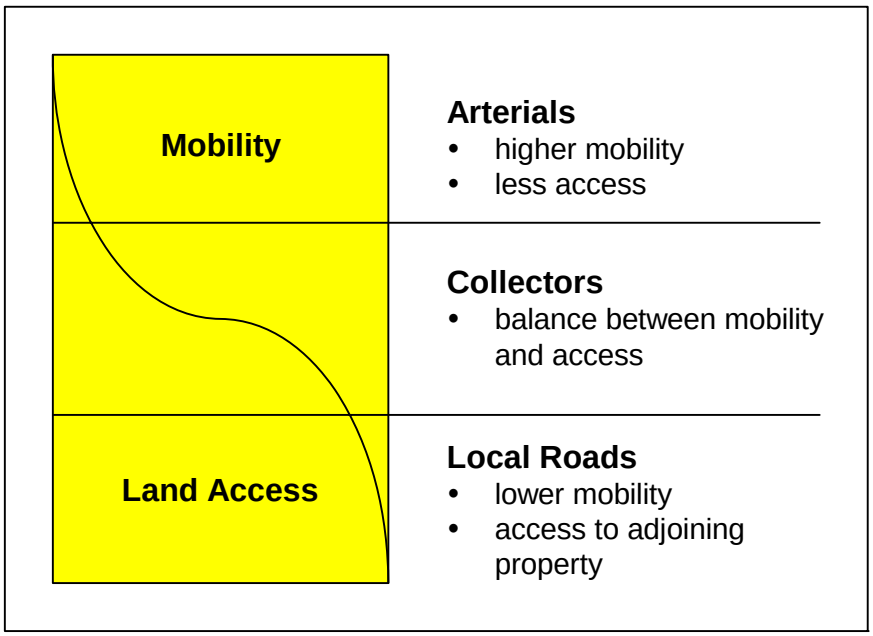
Primary purpose is to provide corridor movement with trip length and density suitable for substantial statewide or interstate travel. Access is controlled.

Major Arterial

Primary purpose is to provide through traffic movement within and across the Borough with few restrictions which would interrupt traffic momentum. These roads carry most of the traffic entering and leaving the Borough or moving between communities. Movement of traffic is more important than access to abutting land.

Figure 4-1

The Mobility-Land Access Relationship



Source: Safety Effectiveness of Highway Design Features, Vol. 1 FHWA, 1992

Minor Arterial

Primary purpose is to provide movement and linkage between principal arterials and collector roads. Minor arterials provide for relatively high travel speeds and minimum interference to through movement. These roads can interconnect with and augment the highway system. They can also link major traffic generators within the Borough. Generally, arterials do not penetrate neighborhoods.

Major Collector

Primary purpose is to move traffic from one neighborhood to another, from neighborhoods to arterials, or from one neighborhood to other areas of the community.

Predominant travel distances are shorter than on arterial routes and consequently, more moderate speeds may be typical. Residential frontage is limited and/or restricted to encourage mobility and enhance safety.

Minor Collector

Primary purpose is to collect traffic from local roads and bring all developed areas within reasonable distances of collector roads. Through traffic movement is discouraged, though may occur, until a full collector network is in place.

Local Roads

Primary purpose is to provide access to adjacent land. Local roads provide the lowest level of traffic mobility and serve relatively short distances. Local roads provide individual residences access to the community street network via providing a connection to collector-level roads. Through traffic movement is discouraged, though may occur, until a full collector network is in place.

Appendix A includes a list of roads within the Borough classified according to the recommended definitions, with changes since the 1997 plan shown. The list does not include local roads.

4.2 CONSTRUCTION STANDARDS

Currently design and construction standards for roads within the Borough are specified in the "Subdivision Construction Manual" written by the Borough Public Works Department. An update of this manual is in process which will separate subdivision roads from roads which are designed and constructed outside the boundaries of subdivisions. As a consequence a "Roads and Highways Design and Construction Manual will need to be produced. Both manuals should be updated as needed to ensure that classification, design and construction standards for Borough roads remain consistent with standards recommended by the American Association of State Highway and Transportation Officials (AASHTO).

4.3 CENTRAL AREA ROAD SYSTEM

Overview: Determining Future Road Needs

One of the key purposes of an LRTP is to anticipate the growth of the area and the need for transportation facilities and services. The process begins with a forecast of population and employment. Anticipated growth in population and employment in the Borough is described in Chapter 3, Population and Economics. The estimates were developed for futures with and without a completed bridge across Knik Arm connecting Anchorage and Point MacKenzie.

Next, a base-level road system is defined. This system includes both roads in existence in 2005 and roads that are virtually certain to be built by the plan's target year of 2025. A traffic model is used to generate expected volumes of traffic in the target year and to distribute the traffic over the *base level* network. The distribution step assigns traffic to individual roads using a process similar to the decision process an individual driver would use. For example, if a particular road is crowded and traffic is slow, the driver might choose to use a parallel road that is a little more out of the way but could be faster. Volumes of traffic on all principal highways and roads are projected by the model and compared to the base-level system road capacities. Sections of road in which the forecasted traffic exceeds capacity are then highlighted and targeted for improvement. These improvement projects become the list of *needed projects* that should be built in order to keep the populated part of the Borough from experiencing excessive traffic congestion and unacceptable levels of service. Beyond these traffic-generated improvements, there will also be improvements at the collector level that will need to be made in order to simply connect new subdivisions to the Borough's main traffic arteries.

Hence, the planning process, aided by the traffic model, results in three groups of road project needs:

- ***Base Level Projects*** that the Borough, ADOT&PF, the City of Wasilla, the City of Palmer, and City of Houston all agree either exist or are needed and should be built well within the 20-year scope of the plan. Many of these projects are in preliminary stages of development, or are in the state or Borough's programs.
- ***Needed Projects*** that should be constructed in order to accommodate growth anticipated to occur before 2025. This list of projects has been developed using the traffic model to predict roads that will need to be expanded or built in order to adequately accommodate projected traffic levels.
- ***Neighborhood Connector Projects*** that will be needed as new homes and neighborhoods are developed. These projects are primarily collector-level streets that will be needed to connect new subdivisions to main arterial roads. The key task with this group of projects is to identify where the future collectors should be located and to construct them as the neighborhoods are built.

Land Use and Traffic Forecasting

A land use estimation process was developed in order to forecast land use in the 2025 plan year both with and without a Knik Arm Crossing in place. The process involved several steps to convert the growth estimates for the entire Borough into estimates of population and employment growth for specific areas. Working groups involving knowledgeable local citizens, application of the working group results, and use of team research were all utilized to forecast population and land use for the relevant parts of the Borough with and without a Knik Arm Crossing.

Land Use Research

The areas of the Mat-Su Borough most likely to be affected by population growth over the next 20 years, with the exception of a few relatively small areas, are not subject to zoning or other land use controls that would influence patterns of development. In lieu of local land use controls, a process of future land use prediction was used to estimate growth with and without a Knik Arm Crossing. The process included convening working groups called charettes. These working groups included Mat-Su residents knowledgeable in local real estate and property development. The attendees included developers, surveyors, real estate professionals, community planning staff, school district demographers and others with a knowledge of local Mat-Su development. The meetings were organized in an informal charette format in order to elicit comment from all attendees. The task was to identify the parts of the Borough that are likely to grow both with and without a Knik Arm Crossing, and to estimate the relative rates of growth among affected areas. The planning area was bounded by Point MacKenzie, Willow, Hatcher Pass, Sutton, and the Knik River.

Growth Allocation

First, the portion of the Mat-Su Borough population located inside the planning area was estimated based on 2000 census data. Approximately 94 percent of the Borough population was included in the planning area. Prior to work on the Borough's Long Range Transportation Plan (LRTP) update, the Borough traffic model was updated. The model divides the populated portions of the Borough into traffic analysis zones, or TAZs. The same analysis zones were used to develop a spreadsheet model to allocate the overall growth among each of the zones. The model projects population and employment for each zone based on the 2000 population and a growth rate developed from the results of the charettes. For zones with little or no population or jobs, but with significant anticipated growth – particularly in the case of the with-Knik Arm Crossing option, or in cases where new significant employment could be predicted with some accuracy, such as the development of the new hospital, manual estimation of the growth was made. The model also balances the growth estimates in order to ensure that the sum total of growth in all zones equaled the overall estimates of Borough population.

Following development of the draft Long Range Transportation Plan, work on the Core Area Comprehensive Plan advanced to predict future land use in the area between Palmer and Wasilla. The growth allocations to individual TAZs were reviewed and revised in order to be consistent with the assumptions made for the Core Area plan. The revised allocations were used to re-run the TransCAD traffic model, the results of which are included in this final report.

Traffic Modeling

The TransCAD model for this update of the LRTP replaces the Quick Response System II (QRSII) model the Borough used in previous plans. The TransCAD model is significantly more comprehensive and flexible than the QRSII model, and also has the

advantage of being able to display results in geographic information system (GIS) format. Since the Municipality of Anchorage has used TransCAD as its traffic model for some time, the Knik Arm Bridge and Tunnel Authority (KABATA) chose to use TransCAD for its work estimating the impacts of a Knik Arm Crossing. KABATA expanded the Anchorage model to also encompass the Palmer-Wasilla-Core Area-Point McKenzie-Willow part of the Borough in order to assess the traffic impacts of construction of the Knik Arm Crossing. This model development made it considerably less expensive for the Borough to utilize TransCAD to forecast future traffic for this plan.

Briefly, the modeling process works as follows:

- Using census data for the Borough and a charette process described above, existing population and employment were distributed into traffic analysis zones (TAZs) throughout the central part of the Borough.
- The population and employment data are translated into vehicle trips by the TransCAD computer-based model.
- The vehicle trips are loaded onto the Mat-Su road network and traffic volumes are generated for all of the Borough's primary road system.
- The model is calibrated, which means the model parameters are adjusted to first have it produce traffic volumes on Borough roads for the base year that are as close as possible to the traffic counts conducted by the ADOT&PF and the Borough for that year.
- The model generates traffic volumes for the target year (2025) and assigns the traffic to roads in the Mat-Su road and highway network.
- The traffic levels are compared to the capacity of each road, and maps are generated showing the volume of projected trips to the capacity of each road link.
- Roads for which volume exceeds capacity can be expected to be clogged with traffic by the target year and are targets for capacity improvements.
- The capacity of clogged road segments is increased by assuming a future road improvement project. For example, a 2-lane road projected to be over capacity in 2025 could be assumed to be widened to 4 lanes.
- The model assigns the traffic to the road network with the improved segments assumed to be in place. Traffic levels are again compared to capacity and a new set of maps is prepared showing the volume to capacity status of the network.
- Remaining road segments that are over capacity have improvements assumed, and the model is run again. This process continues until the road network can be shown to be operating in 2025 without segments that are over capacity.

It should be kept in mind that all models provide estimates, and the accuracy of traffic predictions are dependent on the accuracy of population and employment projections as well as anticipated trends auto ownership and travel. The projections produced by the model are likely to be more accurate in the aggregate, and less so the smaller the area or road section is that is being examined.

Base Level Projects

The traffic model was first enhanced by including roadway improvements that the Borough, ADOT&PF, the City of Wasilla, the City of Palmer, and City of Houston all agreed could be expected with reasonable certainty to be completed by the year 2025. This network became the base level road network. These improvements to the existing road network are considered the ***Base Level Projects*** shown in Figure 4-2, and listed below:

- Parks Highway is a 4-lane highway from Lucus Road to Big Lake Road;
- Glenn Highway is a 4-lane arterial/highway from Parks Highway to Palmer Fishhook Road;
- Palmer-Wasilla Highway is a 4-lane arterial from the Glenn Highway to the Parks Highway;
- Seldon Road is added as a 2-lane facility from Lucille Street to Pittman Road;
- Clapp/Mack Road is added as a 2-lane facility from Knik Goose Bay Road to the Parks Highway;
- Crusey Street is extended from Parks Highway to Palmer Wasilla Highway Extension;
- Hermon Road is added as a 2-lane facility from Parks Highway to Palmer Wasilla Highway;
- Seward Meridian Parkway from Parks Highway to Bogard Road is a 4-lane facility;
- Seward Meridian Parkway is added as a 2-lane facility from Bogard Road to Seldon Road;
- Hyer Road is realigned to collector standards;
- Trunk Road is realigned and widened to a 4-lane facility from Parks Highway to Bogard Road; and as a 2-lane facility from Bogard Road to the Palmer-Fishhook Road.
- Bogard Road is extended from 49th State Street to Glenn Highway as a 2-lane facility;
- Hemmer Road is extended from the Glenn Highway to the Palmer Wasilla Highway as a 2-lane facility;
- Felton Road is added as a 2-lane facility from Arctic/Bogard Extension to Glenn Highway;
- Dogwood Street is added as a 2-lane facility from South Alaska Street to Felton Street;
- Burma Road reconstructed between Big Lake Road and Point MacKenzie Road as a 2-lane major collector.

Capacity Analysis

The existing road network plus the Base Level Projects shown above were then analyzed to determine how well they would serve traffic anticipated in 2025. Given that the demographic forecasts anticipate a doubling of Mat-Su population and employment over the next 20 years, it is not surprising that the traffic model anticipated significant

Figure 4-2

congestion in the populated parts of the Borough. The model output displaying the effects of 2025 population and traffic on the base-level network without and with a Knik Arm bridge is shown in Figures 4-3 and 4-4, below.

Before detailing the results of the modeling, it is important to explain the basis for describing the quality of service provided by a road. The standard of system of service quality measurement involves determining a road's level-of-service (LOS). Level-of-service gauges the relative amount of delay that drivers encounter on roads carrying specified volumes of traffic. It is a qualitative measure describing operational conditions within a traffic stream and the quality of the driving experience on the road. There are six defined levels-of-service ranging from LOS A to LOS F. They are summarized below with full explanations included in Appendix B.

Level-of-service A - Free flow traffic, with low volumes and speeds controlled by speed limit.

Level-of-service B - Reasonably free flow, but speeds beginning to be restricted by traffic conditions.

Level-of-service C - Stable traffic flow, but most drivers restricted in freedom to select their own speed.

Level-of-service D - Approaching unstable traffic flow, drivers have little freedom to maneuver.

Level-of-service E - Unstable traffic flow, may be short stoppages.

Level-of-service F - Forced traffic flow, stoppages and slow speeds.

Maintaining Road Service Levels – Identified Needed Improvements

A goal of the Long Range Transportation Plan is to develop an integrated roadway network that facilitates the efficient movement of people and goods. The objective is to accomplish this by providing a road network that will maintain a level-of-service D or better for all collector and arterial roads. Forecasted 2025 traffic volumes for roads within the modeled area were reviewed with this objective in mind. Figures 4-3 and 4-4 show that a number of roads would not meet the objective in 2025 without additional improvements, whether or not the Knik Arm Crossing is constructed during the plan period. All of the road segments shown in red, with volumes greater than capacity, are expected to operate at level of service F. The modeling process then incrementally added improvements to the road network until all road links were shown to operate at level-of-service D or better. Figures 4-5 and 4-6 show the model output following addition of the capacity-related road improvements. These improvements are shown below in Table 4-1. The projects are not listed in order of priority.

Figure 4-3 – 2025 Traffic Model Results for Base Level *without Knik Arm Crossing*

Figure 4-4 – 2025 Traffic Model Results for Base Level *with Knik Arm Crossing*

Fig 4-5 - 2025 Traffic Model Results with Needed Improvements without Knik Arm Crossing

Figure 4-6 - ***2025 Traffic Model Results with Needed Improvements with Knik Arm Crossing***

Table 4-1
MSB LRTP 2025 Needed Improvements
in addition to Base Level Improvements
Based on 2025 No Knik Bridge Scenario

Location	Segment	2025 Base	Identified Improvement (in bold type)
Wasilla Bypass	'Modified' Alternative A (Seward/Meridian Termini)		**Freeway/2-lane/55 mph**
Seward Meridian	Parks Hwy – Bogard Rd	Collector/4-lane/40 mph	**Major Arterial**/4-lane/40 mph
Seward Meridian	Bogard Rd – Seldon Rd	Collector/4-lane/40 mph	**Minor Arterial**/4-lane/40 mph
Big Lake Rd	Northshore Dr – Parks Hwy	Minor Arterial/2-lane/45 mph	Minor Arterial/**4-lane**/45 mph
Knik-Goose Bay Road	North of Settler's Bay growth area – to extension of Palmer Wasilla south of Parks)	Minor Arterial/2-lane/40-55 mph	**Major Arterial/4-lane**/40-55 mph
Palmer-Wasilla Highway Extension	Knik-Goose Bay Rd to Parks Hwy	Minor Arterial/3 lane/40-55 mph	**Major Arterial/4-lane**/40-55 mph
Knik-Goose Bay Rd/Main St	Palmer-Wasilla Hwy. Extension - Bogard	Minor Arterial/2-lane/30 mph	**Major Arterial/4-lane**/30 mph
KGB/Pt MacKenzie Rd	South of Settler's Bay growth area – Ferry Terminal	Varies	**Major Arterial/2-lane/50-55 mph**
Wasilla Fishhook Rd	Bogard Rd – Seldon Rd	Minor Arterial/2-lane/30-40 mph	**Major Arterial**/2-lane/30-40 mph
Old Glenn Hwy	Glenn Hwy (Palmer) – Smith Rd	Minor Arterial/2-lane/25-45 mph	Minor Arterial/**4-lane**/24-45 mph
Bogard/Seldon	Wasilla Fishhook – Glenn Hwy	Minor Arterial/2-lane/30-45 mph	Minor Arterial/**4-lane/35-45 mph**
Bogard/Seldon	Church Rd – Wasilla Fishhook	Collector & Minor Arterial	**Minor Arterial**
Bogard Rd	Wasilla Fishhook – Seldon Rd	Minor Arterial/2-lane/25-50 mph	**Major Arterial/**2-lane/25-50 mph
Hermon Rd	Bogard Rd – Seldon Rd		**Collector/2-lane/40 mph**
Hermon Rd	Palmer Wasilla – Parks Hwy	Minor Arterial/2-lane/40 mph	**Major Arterial/2-lane/40 mph**
Hermon Rd	Parks Hwy – Fairview Loop Rd		**Minor Arterial/2-lane/40 mph**
Hemmer Rd	Palmer-Wasilla Hwy – Palmer Fishhook Rd		**Minor Arterial/2-lane/40 mph**
S Trunk Rd/ Nelson Rd	Parks Hwy – Fairview Loop		**Collector/2-lane/40 mph**
Parks Hwy	Parks Freeway (west of Seward Meridian) - Crusey	Major Arterial/4-lane/40-45 mph	**Expressway**/4-lane/40-45 mph
Parks Hwy	Lucille St – Crusey St	Major Arterial/4-lane/40-45 mph	Major Arterial/**6-lane**/40-45 mph
Lucille St	Parks Hwy – Spruce Ave	Collector /2-lane/35 mph	**Major Arterial/4-lane**/35 mph
Lucille St	Spruce Ave – Seldon Rd	Collector /2-lane/35 mph	**Minor Arterial**/2-lane/35 mph
Vine Rd	Parks Hwy - KGB	Collector/2-lane/30-35 mph	**Minor Arterial**/2-lane/**40 mph**

Bold items are identified additional improvements needed to Base level Network

Short-range Traffic Projections

Given the sizeable list included in the Base Level improvements and in Table 4-1, it will be important to know which improvements will be needed sooner, and which will be necessary only during the second half of the 20-year planning period. The projects in the Base Level set of improvements are in development or are widely agreed to be need in the short-term. In order to determine which of the projects included in Table 4-1 will be needed first, ten-year growth projections were made. The projections assumed that approximately half of the growth predicted for 2025 would occur by 2015. These projections were then used by the TransCAD traffic model to predict traffic levels on the Base Level network for the interim year of 2015. The results of this model run are presented in Figure 4-7, below. Similar to the twenty-year analysis, improvements were made in the road network beyond the Base Level until capacity was at least equal to demand and no remaining important over-capacity links remained. The results of this "get the red out" process are presented in Figure 4-8, and the list of necessary projects is shown in Table 4-2. The list is substantially shorter than that for 2025 (Table 4-1), suggesting that completing the Base Level projects and the few additional in Table 4-2 should be adequate to carry projected traffic through the next decade.

Table 4-2
MSB LRTP 2015 Needed Improvements
in addition to Base Level Improvements
Based on 2015 No Knik Bridge Scenario

Location	Segment	2025 Base	Identified Improvement (in bold type)
Knik-Goose Bay/Rd	North of Settler's Bay growth area – to extension of Palmer Wasilla south of Parks)	Minor Arterial/2-lane/40-55 mph	**Major Arterial/4-lane**/40-55 mph
Palmer-Wasilla Highway Ext	Knik-Goose Bay Rd to Parks Hwy	Minor Arterial/3 lane/40-55 mph	**Major Arterial/4-lane**/40-55 mph
Knik-Goose Bay Rd/Main St	Palmer-Wasilla Hwy. Ext. - Bogard	Minor Arterial/2-lane/30 mph	**Major Arterial/4-lane**/30 mph
Old Glenn Hwy	Glenn Hwy (Palmer) – Clark-Wolverine Rd	Minor Arterial/2-lane/25-45 mph	Minor Arterial/**4-lane**/24-45 mph
Bogard Rd	Wasilla Fishhook – Seldon Rd	Minor Arterial/2-lane/25-50 mph	**Major Arterial/**2-lane/25-50 mph
Parks Hwy	Lucille St - Seward Meridian	Major Arterial/4-lane/40-45 mph	Major Arterial/**6-lane**/40-45 mph

Bold items are identified additional improvements needed to Base level Network

Figure 4-7 - ***2015 Traffic Model Results for Base Level Without Knik Arm Crossing***

Figure 4-8 - ***2015 Traffic Model Results with Needed Improvements Without Knik Arm Crossing***

Neighborhood Connector Projects

Beyond the road improvements described above that will be needed to carry future traffic growth, there are collector level streets and roads that will need to be constructed to serve new neighborhoods. Collectors handle traffic moving between subdivisions and arterial roads, and are essential to prevent the gradual use of neighborhood streets as collectors. Without collector roads to accompany growth, new subdivisions connect to existing subdivisions at the local street level. These new road connections transform local streets into collectors, carrying significantly more traffic than originally intended. The situation is far from ideal for the residents of the quiet road that has turned into a traffic artery, and can be equally frustrating for drivers.

These collector-level roads will be in addition to the improvements contained in either the base level or the needed project list. As areas are developed with subdivisions, it will be essential to ensure that larger new subdivisions contribute to the construction of a nearby collector road that will carry the subdivision's traffic to a Valley arterial route. If new development does not contribute to the collector network, such roads will be both significantly more expensive to build due to right-of-way costs and will take public resources that would otherwise be focused on the congestion reduction improvements shown in Table 4-1 and 4-2.

Assuming residential growth that occurs outside of Palmer and Wasilla is at an average density of one dwelling unit per acre, collectors spaced approximately every mile should be sufficient to handle residential traffic without overburdening local streets. ***It is emphasized that inclusion of these collector-level roads in this portion of the plan does not constitute a recommendation that they be built as soon as possible. These collectors should be completed when the nearby areas they serve are built out.*** The list of proposed future collector-level roads is provided in Tables 4-3 through 4-11. Each table covers a portion of the developed part of the Borough, moving generally from east-to-west and north-to-south. Roads shown as "a" and "b" are alternatives intended to serve the same need. One or the other, but not both should be built. Road extensions included in the Base Level, the Needed Improvements, or the proposed Emergency Access Roads are noted in those project lists and are not repeated in these tables. These proposed collectors are shown in the Borough's Official Streets and Highways Plan (OS&HP) so that over time the Borough can assemble the rights-of-way needed to construct these roads as the land they serve is developed. The alignments favor section lines because right-of-way is often available, but the routings described in the tables and in the OS&HP have not been field checked, and so should be considered preliminary.

In addition, some projects are needed to rehabilitate or improve an existing facility rather than improve the level-of-service of the facility. Two examples are paving gravel roads to reduce maintenance costs and improving roads to meet current design standards to improve safety. Thus the list of projects in Table 4-1 does not include all projects on the Borough's current or future Transportation Improvement Programs.

Rather it focuses on projects that meet the goal of the Long Range Transportation Plan to develop an integrated roadway network that facilitates the efficient movement of people and goods within the central area.

Table 4-3
MSB LRTP Collector-level Street Improvements
Lazy Mountain – Butte Area

No.	Street	Location	Improvement
1	Koppenburg Rd.	From northern end of existing road to Helmaur Pl.	Extend north on section line.
2	Koppenburg Rd.	Between Huntley Rd. and Smith Rd.	Extend to south on section line.
3	Helmaur Pl.	From Koppenburg Rd. (extended) east	Extend to east on section line as needed.
4	Clark Rd.	Between Clark-Wolverine Rd and Koppenburg Rd.	Extend to east to Koppenburg Rd.
5	Caudill Rd.	From Plumley Rd. to Maud Rd.	Extend north on section line to meet Ingolf St.
6	Back Acres Ave.	From east end of road	Extend east to section line to connect with Caudill extended.
7	Burkholder Lake Rd. (new)	Section line midway between Maud Rd. and Back Acres Rd.	Construct on or near section line from Old Glenn Highway to Caudill extended.

Table 4-4
MSB LRTP Collector-level Street Improvements
Greater Palmer Area

No.	Street	Location	Improvement
8	Boyd Rd.	From east end of Boyd Rd. to west end of Hermann Ave.	Extend from Boyd Rd. to Hermann Ave. on section line.
9	Collier Rd.	From west end of Collier Rd.	Extend west on section line 2.5 mi. to meet north end of Tazlina Dr. and to connect with Jensen Rd.
10	Trunk Rd.	From present end of Trunk Rd. at Palmer-Fishhook Rd.	Extend Trunk Rd. generally north and east to connect with Farm Loop Rd. or with Collier Rd.
11	Tazlina Dr.	From north end of Tazlina Dr.	Extend north on section line to connect with Hermann Rd.

Table 4-5
MSB LRTP Collector-level Street Improvements
Bogard Road North to Fishhook

No.	Street	Location	Improvement
12	New Hope St.	From west end of New Hope St.	Extend .25 mi. to connect with east end of Independence Ave.
13	No name	From intersection of Engstrom Rd. and Wolf Lake Dr.	Extend east along section line to Palmer-Fishhook Rd.
14	Foxtrot Ave.	End of Foxtrot near intersection with Sierra Ln.	Extend Foxtrot west to Wasilla Fishhook Rd on section line.
15	No name	From west end of Sheldon Jackson Dr.	Extend west to connect to Spring Creek Dr. and Cedarwood Dr.
16	Raliegh Hill St.	From south end of street.	Extend south on section line to connect with Settlement Ave.
17	Engstrom Rd.	From Wolf Lake Rec. Site	Extend north to connect with Covington St., Independence and Wasilla-Fishhook Rd.
18	Bear St.	From north end of Bear St.	Extend north on section line to Hart Lp. Would intersect with 16.

Table 4-6
MSB LRTP Collector-level Street Improvements
Bogard Road south to Palmer Hay Flats, Trunk Rd. to Wasilla center

No.	Street	Location	Improvement
19	No name	From near the south end of Earl Dr.	Extend road south partially on section line to connect with Palmer-Wasilla Hwy. at intersection with Hyer Rd.
20	Ervin St.	From north end of street 0.5 mi north of Bogard Rd.	Extend north on section line or follow topography to connect with Seldon Rd.
21	Hay St.	From intersection with Dimond Way	Extend north on section line to Palmer-Wasilla Hwy.

Table 4-7
MSB LRTP Collector-level Street Improvements
Little Su River south to Parks Hwy, Wasilla-Fishhook to Pittman

No.	Street	Location	Improvement
22	Carney Rd.	From east end of Carney Rd.	Extend road east and north to connect with Tex Al extended west on section line or with Welch Rd.
23	Diamondwood Way	From east end of Diamondwood.	Extend road east on section line to N-S section line south of Le Ellen St., or connect to Pamela Dr.
24	Paradise Ln.	From west end of Paradise Ln.	Extend .25 mi to N-S section line
25	Willmington Dr.	From east end of Willmington Dr.	Extend west on section line to connect with Shampine Ln. Would need to move off section line to pass north of Chignaki Pond.
26	Pittman Rd.	From west of Pittman and Bluegrass Ln.	Extend west from Pittman on section line 2.2 mi. to N-S section line east of Island Lake. Would need to move off section line to pass south of June Lake.
27	Beverly Lake Rd.	From Beverly Lake .25 mi west of Wyoming Rd intersection	Connect Beverly Lake Rd. to Pittman Rd. on section line.
28	Stacy St.	From west end of Stacy St.	Extend on section line to Pittman Rd.
29	Hermon Rd.	From the intersection of Le Ellen and Carney Rd.	Extend south on section line to Polar Bear Dr.
30	Bull Moose Dr.	From the west end of Bull Moose Rd.	Extend north on section line to Martha's Rd.
31	Wards Rd.	From the intersection of Wards Rd and Spruce.	Extend north on section line to Salvage Way.
32	Stanley Rd.	From the north end of Stanley Rd.	Extend north on section line to Barnacle Dr. and beyond to Pittman Rd.
33	Suzanna St.	From the north end of Suzanna St.	Extend north on section line to Spruce Ave. extended.
34	Vine Extension	From the intersection of Parks Hwy and Vine Extension	Extend north on section line to Beverly Lake Rd. Will need grade separation at Alaska Railroad.
35	Spruce Ave.	From Church St.	Extend west to Pitman Rd.
36	Spruce Ave.	From Wasilla-Fishhook Rd.	Extend east to Seward Meridian Pkwy.

Table 4-8
MSB LRTP Collector-level Street Improvements
Parks Hwy south to Knik Arm, Wasilla center to Sylvan Rd.

No.	Street	Location	Improvement
37	Calico Dr.	From east end of Calico Dr.	Extend east on section line to meet Foothills Blvd extended. Would need to move off section line to pass south of Wallace Lk.
38	Calico Dr.	From west end of Calico Dr.	Extend west on section line 2 mi to Parks Hwy.
39	Middle Ridge Rd.	From west end of Middle Ridge Rd.	Extend west on section line 2.0 mi to Vine Rd.
40	Misty Lake Rd.	From both ends of Misty Lake Rd. on section line	Extend west on section line to Johnson Rd., and east on section line 0.5 mi to N-S section line.
41	Foothills Blvd.	From north end of Foothills Blvd.	Extend north on section line to Calico Dr. extended.
42	Foothills Blvd.	From the intersection of Foothills Blvd. and Knik-Goose Bay Rd.	Extend south on section line to Cardiff Ln.
43	No name	From the intersection of Calico Dr. extended just south of Parks Hwy.	Construct south on section line 2 miles to Misty Lake Rd extended and consider 1 mile extension to Hollywood Rd.

Table 4-9
MSB LRTP Collector-level Street Improvements
Meadow Lakes Area, Pittman Rd. to Houston

No.	Street	Location	Improvement
44	Peninsula Dr.	From west end of Peninsula Dr.	Extend west on section line 1 mi. to connect with Powder Rd and 1.25 miles further to connect with Schutt Dr.
45	Skyview Dr.	From west end of Skyview Dr.	Extend generally west and south of Cheri and Loon Lakes to the Parks Hwy. Connect also to Anthony Rd.

Table 4-10
MSB LRTP Collector-level Street Improvements
Big Lake Area, Johnson Rd. West

No.	Street	Location	Improvement
46	Sunset Ave.	From west end of Sunset Ave.	Extend west 2.5 mi. to connect to W. Hughes Homestead Rd.
47	Pond Lilly Ln.	From south end of Pond Lilly Ln.	Extend south 1.25 mi. to connect with Sunset Ave. extended and with Ogard St.

Table 4-11
MSB LRTP Collector-level Street Improvements
Knik and Goose Bay Area

No.	Street	Location	Improvement
48	Clay-Chapman Rd.	From east end of Clay-Chapman Rd.	Extend 1.0 mi. to connect to Mud Shack Rd.
49	Hazel Ave.	From west end of Hazel Ave.	Extend west and north to connect to Shady Ln. and/or Echo Lake Dr.
50	1st Ave.	From existing section of 1st Ave.	Extend west and east on or near section line so that !st Ave runs from Knik-Goose Bay Rd to just east of Cann Lake 1 mi. north of Pt. MacKenzie Rd.
51	Little Jack Ave.	From the east end of Little Jack Ave.	Extend east to on section line to connect with roads west of White Lake.
52	No name	From Hazel Ave. extended just NW of Brocker Lake.	Extend from Hazel Ave south on section line 2.9 mi to Knik-Goose Bay Rd.
53	Lewis Parkway	From north end of Lewis Parkway	Extend on section line north to Hazel Ave. extended
54	No name	From Pt. MacKenzie Rd mile 2.3	Extend north on section line 1+ miles, and south on section line to old Nike battery road.
55	No name	From Pt. MacKenzie Rd mile 4.3, 5.3, 6.3	Extend collector north to 1st Ave. extended or beyond as needed.
56	No name	From Knik Dock Road	Extend north and west to connect with Alsop Rd.
57	No name	From Port MacKenzie entrance	Extend road south to Point MacKenzie
58	This Way	From north end of This Way	Extend road north to Sunset.

4.4 RURAL AREA ROAD SYSTEM

The road system outside the central area of the Borough is not included in the transportation modeling process. Population and employment in the rural areas are widely distributed and the road system is functioning well with a few exceptions. Rural road needs tend to be based on providing access to new neighborhoods and a second connection to larger developed areas for the sake of emergency access and convenience. During the development of comprehensive plans for Mat-Su communities, local transportation needs are examined and projects and other improvements are recommended. The approved comprehensive plans plus those in the final stages of development and approval were reviewed for transportation-related recommendations.

The following policies and projects are contained in comprehensive plans for the noted areas of the Borough. Projects that have been completed have been excluded from these lists.

Big Lake (1996)

- The following connecting roads should be constructed:
  1. Big Lake Road south to Hollywood Road in the vicinity of South Park Road
  2. North Big Lake Boulevard around the north and west end of Big Lake to the existing road between Mirror Lake and Flat Lake
  3. Echo Lake west to Marion Drive
  4. End of Gonder Road north to Topaz Way
  5. Road running more or less parallel to North Big Lake Road closer to the north shore of Big Lake
  6. North/South connector from North Big Lake Boulevard to the parallel road along the north shore of Big Lake
  7. Buoyant Drive to North Big Lake Boulevard
- Road system expansion recommendations:
  1. South Big Lake Road should be extended to the Little Susitna River.
  2. Public investment in roadway expansion should be concentrated on arterial roads and those collector roads which provide better traffic circulation within the planning area.
  3. Expansion of the residential road system should be accomplished primarily by the private sector as a cost of development.

Chickaloon (1995)

- Develop scenic pull-offs at the following Glenn Highway locations: Milepost 67, Milepost 74.7, and Milepost 85.
- Upgrade the access road to Bonnie Lake.
- Construct a slow moving vehicle passing lane on the Glenn Highway at Milepost 85.3.
- Provide rock slide protection on the Glenn Highway at Milepost 85.3.
- Provide two slower speed zones on the Glenn Highway at Milepost 76.1 and Milepost 85.3.

Chickaloon Traditional Village (2005)

A prioritized list of short term high priority transportation projects include:

- A. Planning
- B. Wishbone Road Route 4600 (aka All Elks Road-Annie Street), approximately 2.1 miles, is a Class 4 road that provides access to Chickaloon Village's Housing Community and is in dire need of an upgrade from a gravel road to pavement. Chickaloon Village is planning to build more housing at this location creating more need for this upgrade.
- C. Wolverine Access Route 1800, approximately 0.7 miles, is a trail needing upgrade to a Class 4 due to future traffic anticipated to connect roads. This road will allow expansion access to future projects, including: alternative energy, agriculture, tourism, traditional uses, and recreation.

Glacier View (1994)

- Encourage affected landowners to work with the borough to provide adequate legal and physical access to all parcels.
- Encourage the continuing improvement by the State of the Glenn Highway to create a more safe and efficient route for local and through traffic addressing at least the following concerns:
  1. The design of the highway should be consistent with the rural/rustic character of the area
  2. Include more scenic pull-outs and enhance the view, visibility, and safety along the highway.
  3. Resurface and realign as needed.
  4. Maintenance and upgrades of the highway should ensure that it will support the size and weight of trucks carrying hazardous materials.
- Minimize road construction and direct access to the Glenn Highway by utilizing common access corridors.

City of Houston (1999)

- Roads and Highway Concerns
  1. Without adequate turnabouts and soft shoulders on dead end streets emergency vehicles experience compound delays
  2. Creation of combination fire breaks and emergency access routes. These alternate routes include: Houston High School east to eventually connect with the Beaver Lakes area and the area near Frog Lake to eventually connect with Meadow Lake area

Knik-Fairview (1997)

- Street Classification System: widen and realign Fairview Loop and Knik-Goose Bay Road to increase the radius of the curves.

Lake Louise (1998)

- Roads : Review possible methods for upgrading the Lake Louise access road and/or investigate a higher level of year round maintenance

Meadow Lakes (2005)

- Guide planned expansion of the Parks Highway to create an attractive, efficient 'parkway' that benefits Meadow Lakes
  1. Create a controlled access, 4 lane highway, to reduce congestion, provide for efficient flow of through traffic and maximize safety. Minimize driveways and intersections.
  2. Encourage the majority of commercial and industrial uses in the Meadow Lakes area to concentrate in several discrete districts, rather the spread along the length of the Highway.

3. Retain existing vegetation or provide landscaping so the large majority of the Highway is lined by trees. Retain several substantial areas adjoining the Parks Highway in a largely natural state, to create a clearer sense of identity for the Meadow Lakes.

- Retain Church, Schrock, and Pittman as collector roads with minimal driveways and a largely rural, undeveloped feel.
- Plan for future expansion of the residential road system.
- Identify roads to serve as collectors - As the number of homes steadily increases, many smaller residential roads begin functioning as collector roads (that is, roads that carry traffic from multiple subdivisions). To avoid inappropriate levels of use on residential roads, the Comprehensive Plan identifies a hierarchy of roads – a road system with higher capacity collectors that are buffered from residential development. Roads identified for collector status include Beverley Lakes and Meadow Lakes Loop Road; routes identified for future collectors include a new east-west route crossing through the center of the community.
- Other Goals include:
  1. Set appropriate standards for road development and surfacing.
  2. Plan for good town center access.
  3. Plan for continuing railroad use; maintain opportunities for transit, including rail and carpools.
  4. Improve road maintenance.

Sutton (2000)

- State Roads and Highway
  1. The access to Eska Creek Road access onto the Glenn Highway should be relocated away from Eska Creek Bridge to increase safety.
  2. Encourage future coal mining activity to re-establish the rail-line to the coal fields rather than rely on truck hauled coal.
  3. The borough, state, and private developers should work together to develop alternative road access to coal mines and other heavy industrial sites if truck access is required and if it appears significant impacts to residential areas cannot be mitigated.
  4. Re-establishing the rail-line or establishing a new road for heavy truck traffic should be required to undergo a public review.
  5. Proposed suggestions for mitigating the impact of this heavy truck impact on Jonesville Road include:
     a. A flashing light at appropriate intersections
     b. An acceleration lane at entrances to Glenn Highway
     c. Upgrading roads to withstand heavy truck traffic

d. Audible buffer between heavy industrial uses and residential areas

e. Limiting heavy industrial uses to certain hours of operation

- Borough Roads
  1. New roads should be constructed as through streets and loops rather than dead ends.
  2. Adequately sized turnabouts should be constructed on dead end streets, long driveways, and other areas that would otherwise trap a large emergency vehicle.

Talkeetna (1999)

- Add pedestrian crossings where needed.
- Upgrade and Pave Roads
  3. Upgrade streets and roads that receive heavy traffic.
  4. Re-construct or create dedicated public rights-of-way where there is current common usage on platted roads and trails, including D Street, North F Street, First Street by the post office to the Spur Road from D Street with parking in that area, and others.
- Talkeetna Spur Road
  5. During the next 20 years the Spur Road is expected to be able to handle additional traffic destined for the community without a need for significant changes to the route or width.
  6. Developments along state and borough highways and roads should have access that does not create hazards.
  7. Outside of the west and east townsite areas, no multi-parcel subdivisions should be approved which have lots with individual access to the Talkeetna Spur Road.
- Talkeetna as "End of Road" - no extension of the Talkeetna Spur Road, Comsat Road, or other feeder roads north across the Talkeetna River is desired.
- Access to East Talkeetna - another route to east Talkeetna may be needed since the railroad blocks Second Street for extended periods of time.

Trapper Creek (2005 draft)

- Circulation Goals
  1. Define and improve a range of trails and roads, from footpaths to paved roads.
  2. Develop the Petersville Road within TCCC boundaries to improve safety and its ability to serve the community.

3. As the need arises, design and build an interconnected system of secondary roads.
4. Maintain and develop the system of public trails.
5. Guide growing use of the Parks Highway and adjoining property to benefit Trapper Creek
6. Structure the circulation system to support the Town Center.
7. Support appropriate access to remote property.

- Define and Improve a range of trails and roads
  1. Collector & Local Roads - Support improvement of roads to subdivisions and other developments intended to have consistent public motorized access. Use the road improvement and maintenance district process to assist the Borough and groups of residents design and build appropriate road improvements.
  2. Major Collector & Arterial Roads - Support improvement of the Petersville, Oilwell, East Petersville Road (Susitna River Road) and roads of similar function to an appropriate arterial/collector standard.
  3. Parking - Create both resident and non-resident parking areas adjacent to trailheads along the Petersville Road and the Parks Highway. Strategically locate parking lots that will intercept recreational users and direct them to appropriate public trails.
- Petersville Road: The ADOT&PF is planning improvements on the Petersville Road, primarily extending the paved section of the road from the current pavement end (mile 10) to the Forks Roadhouse. Beyond those scheduled improvements, the Petersville Road Corridor Plan recommends:
  1. Establish designated left-hand and right-hand turning lanes on the Petersville Road at the intersection of the Parks Highway and Petersville Road.
  2. Establish a 35 miles-per-hour speed zone from milepost 0 of Petersville Road to approximately milepost 4.
  3. Establish a 30 mile-per-hour speed zone on Petersville Road approximately one-quarter of a mile east and west to Moose Creek Bridge of the intersection with Oilwell Road.
  4. Place warning signs with flashing yellow lights at the beginning of the 30 miles-per-hour speed zone on Petersville Road to alert motorists to the speed limit change.
  5. Replace Moose Creek bridges and install a pair of protected pedestrian walkways and a pedestrian underpass.

6. Implement a dust reduction program by hard surfacing the Petersville Road within the TCCC.

- Recreation and Tourism – Facilities, Information

1. Provide interpretive information, near Scotty Lake, at river crossings, view sites, and other points of interest.
2. Improve roadside parking and facilities, including turnouts at mileposts 9.8 or 10.2 with interpretive information re wetlands.
3. Redesign and upgrade of the Kroto Creek parking lot to include more efficient parking, trash receptacles and sanitary facilities to better serve snowmachiners.
4. Construct appropriately designed turnouts at Mileposts 12.8 and 13.1, with guardrails and interpretive signage related to views of Mount McKinley and the Alaska Range.
5. Develop an operations and maintenance plan to address, trash removal, sanitary facilities, upkeep etc. prior to constructing pull-outs and parking lots.
6. Land Use Policies
7. Retain visual quality along the highway.
8. Obtain special designation of Petersville Road as a scenic corridor.
9. Encourage development toward existing settlement and development areas to maintain the "intactness" of natural areas along the roadway.
10. Governance Policies
11. All future infrastructure is planned carefully so that community rural character and quality of life is retained,
12. Road corridors (including the Parks Highway) have naturally vegetated buffers set aside,
13. Plan, design and construct parking lots along the Petersville Road at significant trail heads, and
14. Widen and stabilize road shoulders.

- Secondary Roads – Additional road links should be added as the need arises. These collector-level roads would serve a number of related purposes:

15. Improve access to existing neighborhoods.
16. Provide a second means of access for emergencies and significant natural events that may block or sever the existing single access route.
17. Plan collector-level roads in areas that are likely sites for future growth.

18. Establish these future roads in the borough's Official Streets and Highways Plan in order to ensure that appropriate easements are reserved.

- Guiding growing use of the Parks Highway to benefit Trappers Creek

19. Improve the safety of the Parks Highway – Petersville Road intersection. Establish a 45 miles-per-hour speed zone on the Parks Highway about 2,000 feet north and south of the intersection with Petersville Road, and place flashing yellow balls at the beginning of the 45 miles-per-hour speed zones on the Parks Highway to alert motorists to the speed limit change.

20. Scenic Byway - Explore the possibility of designation of the Parks Highway as a state and federal Scenic Byway from the Susitna River Bridge to the Chulitna River Bridge. A scenic byway designation does not trigger any state or federal land use controls, but does make the community eligible for scenic highway grant funding (e.g., for trailheads, waysides and related roadside facilities) and increases recognition of the community.

Y Area (2007)

- Plan for future expansion of the residential road system – develop a road system that distinguishes higher volume collectors from residential roads.
- Define standards for road development and surfacing. Ensure that as part of future subdivisions, the developer is required to build or upgrade any affected roads to meet Borough standards.
- Find solutions to growing safety and congestion problems at key intersections along the Parks Hwy such as at Montana Creek.
- Plan for expansion of the Parks Highway, including restricting roadside commercial development. Reserve a route for a bypass in the vicinity of the planned town center rather than widening the existing highway. Working with the community, pick a specific route that minimized impacts on the natural environment, existing businesses and landowners.
- Plan for good town center access – roads, parking, trails, transit, and signage.
- Maintain opportunities for transit, including rail and carpools – incorporate options for transit in the future, primarily linked to intensification of development in the Sunshine and Sheep Creek/Caswell Lakes commercial areas, including carpooling lots, and links to future commuter rail.
- Improve road maintenance.
- Priority areas for improvements – preferably to arterial standards (paved surfacing), but at minimum to collector standards include:
  1. Montana Creek Road (west of Monsitna, in the area where the road is being moved)

2. Lower Montana Creek Road
3. Lower Hidden Hills Road

- Second priority areas for improvements – upgraded to collector standards (gravel surfacing) include:
  1. South Birch Creek
  2. Noel Wien
  3. Yoder Road
  4. Helena
  5. Upper Montana Creek
  6. Lower Amundsen
  7. Upper Hidden Hills
  8. Broken Line, Bendapole, Dolly Varden
- Priority connecting routes:
  1. Montana Creek-Malispina Connector – Would provide a link between Bartlett Hills Subdivision and upper Montana Creek areas. Although the connection needed is short, it crosses through challenging terrain, including the area locally known as "blue goo hill."
  2. Anaconda Bridge – Would provide a direct link from the Sunshine area into residential areas in upper Montana Creek (and eventually Bartlett Hills).
  3. Montana Creek-Amundsen/Caswell Connector – This route connects these two major residential areas.
  4. Shaman-Amundsen Connector – Provides an additional route out of the densely subdivided Caswell Lakes area.
  5. Shade Tree – Extends west to the Parks Highway.

Other recommended rural improvements in the Mat-Su Borough not included in a community comprehensive plan include:

- Willow Fishhook Road (AKA Hatcher Pass Road) improvements from Willow to the Independence Mine to accommodate industrial and recreational traffic on the Willow side.
- Continued upgrade of the Glenn Highway to include passing lanes and pullouts where feasible to accommodate the slower moving recreational and tourism traffic.
- Continued upgrade of the Parks Highway north of Willow to include passing lanes and pullouts where possible to accommodate the slower moving recreational and tourism traffic.
- Construction of a bridge across the Little Susitna River and a road to the Fish Creek Management area west of the river. On the east side of the river, the road would connect to South Big Lake Road, Ayrshire Road, North Big Lake Road or possibly an upgraded Burma Road.
- Road and rail corridor development connecting Willow to Point MacKenzie

along an alignment which also provides access to Borough lands in the Fish Creek area .
- Collector-level road corridor between Willow and Talkeetna east of the Alaska Railroad for resource development and secondary/emergency access.

4.5 EMERGENCY ACCESS ROADS

Lack of alternate access within the more populated areas of the Borough hampered fire evacuation and suppression efforts in the Millers Reach and Hunter Creek fires. In other emergencies within the Borough, such as during times of flooding, lack of alternate access routes have also increased emergency response time. More than one access is needed to populated areas to provide evacuation routes in time of emergencies. The most effective approach would be to establish an ordinance requiring two points of access for subdivisions larger than a minimum number of lots. The minimum should be established at the low range of subdivision size, on the order of six or eight lots. In some cases, alternate access routes may not be feasible due to cost or location, and in such instances staging areas could provide an alternative for emergency evacuation of residents.

The projects recommended below provide alternate access routes and staging areas for evacuating residents. Alternate access projects that have also been identified as necessary components of a well functioning road system (base level or needed improvements) or necessary for economic development projects are included with those project lists. The proposed emergency access routes and staging areas are:

- Build new Burma Road to provide access between South Big Lake Road and Point MacKenzie Road.
- Provide connection between North Big Lake Road and South Big Lake Road in vicinity of Flat Lake/Mirror Lake.
- Provide connection between Millers Reach Road and the Beaver Lake area.
- Extend Hawk Lane to the Beaver Lake area.
- Extend Johnson Road south to Knik-Goose Bay Road.
- Extend Spruce Street from Church Road to Skyview to King Arthur Road.
- Extend Helen Drive north to either France or Terrilou Street.
- Connect Koenen Road with Palmer-Fishhook Road.
- Extend Tex Al to Palmer-Fishhook Road.
- Extend Welch to Coles Road and connect roads north of the Little Susitna River from Armstrong to Edgerton Park Road.
- Extend Wolverine Lake Road to Glenn Highway in vicinity of 58 Mile Road or provide staging area in Wolverine Lake area.
- Extend Seward Meridian from Wasilla-Fishhook Road north to Coles Road/Welch Road connection.
- Connect Lupine Lane and South Settlers Bay Drive.

- Connect Hayfield with Settlers Bay Drive.
- Provide staging area at end of Knik River Road.

Staging areas should also be coordinated with local communities and must be accessible in both summer and winter.

4.6 CORRIDOR PRESERVATION

Why Corridor Preservation?

As the Borough grows, subdivisions and individual houses are added to existing residential areas. As most residents can appreciate, inadequate arterial roads result in traffic congestion. A more subtle problem though, and one that is only fully obvious once a neighborhood is more fully developed, is that of an inadequate collector network. Without collector roads to accompany growth, new subdivisions connect to existing subdivisions at the local street level. These new road connections transform local streets into collectors, carrying significantly more traffic than originally intended. The situation is understandably far from ideal for the residents of the quiet road that has turned into a traffic artery, and can be equally frustrating for drivers. Portions of collectors sufficient to serve the new subdivisions should be required as part of the subdivision approval. Over time, then, the collectors lengthen to serve the new neighborhoods, and each new development contributes its share to the eventual road network. Alternatively, constructing collectors after the subdivisions are built can be very expensive, as the land needed has increased significantly in value. A network of collectors and arterials will be needed as the Borough, and particularly the central Borough grows. Section 4.3 creates the rationale for the future collector network, which is added to the Official Streets and Highways Plan (OS&HP).

Early location of collector and arterial roads reduces the chance that too much traffic will use low volume residential streets. If subdivisions are developed with little or no land-use management, as is the case in the Borough, one of the negative results can be "creeping collectors". For example, an early subdivision is located close to the highway. The roads built for the subdivision are all local roads, appropriate for serving a single subdivision. Later, a second subdivision is built behind the first. The roads built for the second subdivision are connected to the first subdivision's roads. As houses are built in the second subdivision, traffic slowly increases on the first subdivision's roads, particularly on the routes providing the most direct link to the highway. If the process is allowed to continue without the location and construction of collector roads, traffic volumes, fair distribution of road maintenance costs, safety and other issues arise. It is also much more expensive to establish a collector road in a developed area with higher land costs and limited location choices.

Early location of collector and arterial roads minimizes the cost of right-of-way. Establishment of a future collector route to serve rural development allows the Borough and if applicable, the road service district, to plan for, reserve, and over time acquire

right-of-way for the road, so that by the time it is needed, it can be designed and built cost-effectively.

Early road location minimizes hard feelings. Without location and designation of future collector roads, subdivisions are built and lots occupied before residents know where the future main roads will be located. It is far preferable for those who buy land in a subdivision to know, for example, that the western boundary of the subdivision will at some time in the future, have a collector route built along it, than for the property buyers to expect (unrealistically, but we've all seen it) that the area "behind the house" will stay the way it is indefinitely.

In order to avoid these problems and to gradually build a well-functioning road system over time, advance planning for the location of collector-level roads is important. Development in the Borough is at the point in some areas that needed rights-of-way for collector-level roads should be designated and reserved. In other areas the time is likely to fall within the scope of this plan. An area-wide immediate need, however, is to identify the location of future roads and to develop a corridor preservation program. With such a program in place, residents and developers will know where to anticipate future collectors and can include them in their housing and subdivision designs, and when a collector-level road is needed to connect subdivisions with highways or other arterials, the right-of-way is in hand or readily available. Without such a program, the cost of acquiring rights-of-way can be high for not only the Borough, but for the residents whose homes and businesses must be relocated or impinged upon. In a developed community, the cost of right-of-way for a new road can equal or exceed construction costs. Locating future collector roads and establishing a corridor preservation program should be a key current objective of the Borough's road program.

Corridor preservation is a *pro-active* strategy that will help the community address its future transportation needs. A successful program typically includes a variety of tools that can be mixed and matched to fit the circumstances. The most common methods are fee simple purchase of land for right-of-way, and requiring building setbacks from road rights-of-way. Many road-building agencies also attempt to obtain voluntary dedications or donations of right-of-way on a case-by case basis during the land development process. Other available tools include options to purchase, interim use agreements, land banking, purchase of access rights and density credits. The key is to have a number of methods available so that the most appropriate approaches can be used for a specific section of needed roadway.

It is important to ensure that the corridor management program has a solid foundation in the Borough Long Range Transportation Plan. This roads chapter specifies collector road connections that will be needed as parcels of private property develop. It will be important to take a number of steps in the near future to identify and preserve corridors for these connections. These steps include:

- Identify section line and other existing (but unconstructed) roadway easements;
- Finalize the "preliminary" future corridor needs identified in this plan, including the need for frontage roads along the railroad to reach protected crossings;
- Field verify the recommended corridors to make sure the routes are constructible; and
- In cases in which recommended or existing (section line) rights-of-way are not feasible due to topography or other reasons, select alternative alignments.

Although not important (or possible, in most cases), to have a precise alignment identified before the road is designed, the corridors designated in Tables 4-2 through 4-10 and shown in the OS&HP indicate corridor needs and identify likely routes such as section line easements. Precise road locations will be determined by engineering design studies.

This plan focuses on parts of the Borough that have experienced residential development and have a combination of generally decent soils, private or Borough land ownership and enough area to make development of collector roads important to efficient handling of traffic as these areas develop. Where possible in these and other areas identified in the future, the Borough should reserve 80 to 100 feet of right-of-way to accommodate collector or minor arterial level streets. Once a set of needed future corridors are finalized, the Borough will need to reserve as much of the land in the corridors as possible. In order to implement the corridor program, the following measures should be considered as a basket of tools to be developed and in some cases codified as Borough ordinances[1]:

- Restrictions on building in the right-of-way of a mapped but un-built road;
- Requiring subdividers to contribute funds toward upgrades on roads that will be more heavily used as a result of their subdivisions, and denying requests for waivers by subdividers who prefer to not improve roads to Borough standards;
- Allowances for some interim use of transportation right-of-way for uses having low structural impact through an agreement that requires the property owner to relocate or discontinue the use at their expense when the land is ultimately needed for the transportation facility;
- Criteria for right-of-way exactions and a process for determining the amount of right-of-way dedication that is roughly proportionate to the impact of the proposed development;
- A reduction or reprieve from property taxes on property subject to corridor preservation restrictions. Examples are removing property from the tax roll, lowering the tax rate for preserved land, or providing a tax credit;

[1] Adapted from *Managing Corridor Development: A Municipal Handbook,* Center for Urban Transportation Research, 1996.

- An option for clustering developments by reducing setbacks or other site design requirements to avoid encroachment into the right-of-way;
- Procedures for intergovernmental coordination between the Borough and the DOT&PF.

4.7 CONGESTION MANAGEMENT

Introduction

The Mat-Su Borough contains about one-third of the road mileage of the entire state of Alaska. Mat-Su has for some time been the fastest growing area in the state. Even with extensive road mileage, as the Borough's population grows the ability of the road network to accommodate the growing traffic is being diminished as more automobiles are added to the system. A congestion management program seeks to identify congested locations and implement measures to reduce congestion while improving mobility and access, thereby protecting the large public investment made in the road system. This section describes the recommended congestion management program for Mat-Su.

Congestion Management Defined

Congestion management is a process by which the existing and future transportation network is studied, problems identified and proposals developed to maintain a cost-effective transportation system. The congestion management program is multi-modal in orientation and is intended to develop reasonable alternatives to the expansion of single occupant vehicle highway capacity.

Congestion Management and the Federal Transportation Law

The Inter-modal Surface Transportation Efficiency Act (ISTEA) of 1991 and its successors requires more effective management of the current and future transportation network. The intent of the Federal law is to seek better management of the transportation system through a requirement that each state design and institute management and monitoring systems. The management systems are intended to provide information to allow more detailed analysis of transportation related problems and the development of cost-effective solutions to these problems. Federal regulations require that the congestion management program be multi-modal in orientation and focus on a transportation network that improves mobility, access and the quality of the entire travel experience. While the State of Alaska, ADOT&PF is the primary agency responsible for developing a congestion management system, the state would benefit from a Mat-Su congestion management program by understanding the local goals, policies, resources and conditions that exist within the Borough. A congestion management program uses a set of performance measures to evaluate all modes of transportation and to develop proposals for improving the transportation system. Guidelines for developing these performance measures are:

- Congestion measures that identify the degree to which travel time and/or delays are within locally agreed upon ranges or norms;
- Mobility measures that include options that are available as well as their relative travel time and costs; and

- Access measures that incorporate the characteristics of the land use and development patterns as well as transportation system operating characteristics.

Effects of Congestion on the Transportation Network and Community

The effects of a congested transportation network are numerous. The effects range from the obvious delays in travel time and reduced travel speeds, for the commuter, to the less obvious such as increases in the cost of doing business and reductions in air quality. For example, a congested transportation network will increase the cost of doing business since distribution and production suffer from increases in travel times as more resources are paid for wages and additional fuel. Additionally, as more vehicles idle through traffic bottlenecks, additional pollutants are put into the atmosphere; Alaska's winter conditions exacerbate the air pollution problem with inversions. Other less apparent consequences of a congested transportation network include delays to emergency vehicle responses, higher school transportation costs, lower property values and a decline in the quality of life in the community.

The typical answers to congestion have been to add additional lanes to existing facilities. This standard solution, however, is often not practical anymore due to the lack of funds, long lead times for highway improvements, and increased costs of constructing highways. In Mat-Su, which has historically received less than its fair share of road funds, the standard solution is even less practical. The standard solution also ignores other, less expensive alternatives for improving the transportation network. Some alternatives improve the function of the highway system through better use or management of the existing system; other alternatives use non-auto modes of travel such as bus, rail or bicycle, or increase vehicle occupancy through carpooling or vanpooling.

Land Use, Transportation and Air Quality

Land use, transportation and air quality are intimately linked. A newly constructed major arterial or one that has had a major upgrade changes the accessibility of the area which typically leads to new land development along the new or rehabilitated corridor. The new land development increases the amount of traffic entering the area and the number of driveways entering onto the roadway. The additional traffic and new driveways ultimately lead to reduced capacity, traffic delays, accidents and congestion. The additional traffic, reduction in capacity and delays combine to increase the amount of pollutants entering the area's air containment zone sometimes resulting in smog, especially during the winter inversions in Mat-Su.

Many Mat-Su roads have relatively low levels of congestion, although an increasing number of routes in the developed parts of the Borough are experiencing congestion. Peak periods of congestion include weekday rush hours and peak recreational traffic times. Mat-Su's air quality also has a good rating, not counting the spring/summer days when high winds scour the glacial flats and inject high levels of particulate matter into the atmosphere. Congestion management in Mat-Su, therefore, seeks to reduce congestion in the few places it exists and to maintain the relatively high level of congestion free roads.

Measuring Congestion - Performance Measures and Standards

In order to manage congestion one must first know where it exists. To identify congested areas beyond the anecdotal stage measuring tools are needed. There are a wide variety of measures and standards available to analyze the performance of the transportation system. Some of the typical measures include; monitoring vehicle miles traveled (VMT), travel speed, and a road's level of service (LOS). Other techniques include developing an index of congestion, identifying delay measures, average travel times, origin-destination travel times, and volume measures such as vehicle-mile per lane mile. The measures and standards that are utilized are tailored to each community based upon the cost of collecting and monitoring the information as well as the appropriateness of the measure/standard to the community.

Measuring Congestion - Growth Monitoring

Another, perhaps indirect method of measuring congestion is by monitoring the growth of the community since new people and additional land development translate into additional trips being made on the transportation system. Growth monitoring is a systematic monitoring of population and demographic trends, new building starts and their location, and economic activities. By monitoring growth, forecasts may be made regarding the ability of the transportation system to handle additional users and alternatives reviewed for those cases where the existing transportation system is unable to meet the new demand. In Mat-Su, growth monitoring is conducted by the Borough's Department of Planning and Land Use. The monitoring includes the areas of population estimates, employment trends, building starts and location analyses. The Department also employs the Borough's Demographic Trends Committee, which meets on a quarterly basis, to discuss demographic trends and the likely consequences of these trends on the Borough's economy and infrastructure.

Ma-Su Congestion Management Indicators

As stated earlier, there is a wide range of standards available for measuring a transportation systems performance. The standards and measures used varies by community based on the financial ability of the community to collect and monitor the relevant information, the community's level of sophistication to analyze the information and the level of the community's development, i.e., rural, suburban, and urban.

Level of service measures the amount and severity of congestion in roadway segments and intersections. For pre-identified roadway segments and intersections, the level of service indicator will be used to monitor congestion. The roadway segments and intersections will be selected based upon their peak hour traffic rates and use by commuters. Other roadway segments and intersections which may become important links within the system will also be monitored.

Two other indicators of congestion will monitor the use and growth of the automobile as the automobile is and will likely remain the chief means of transportation within the Borough, for both residents and non-residents alike. The first indicator, vehicle miles traveled, measures the total amount of miles traveled on specified roadways and provides information about the overall rate of use of the automobile and air emissions. The second indicator, vehicle miles traveled per capita, measures the rate of individual use of the automobile.

Measurements of travel time will also be used as indicators of delay and the effectiveness of improvements. Travel times will be collected for selected corridors, those selected for level of service measurements will also be measured for travel times. The ratio of free flow travel to peak travel will be one of the travel time indicators used.

The two remaining indicators will measure the effectiveness of non auto modes of transportation within the Borough. These indicators are the auto occupancy index and bicycle path miles. The auto occupancy index will help determine the effectiveness of the Share-a-Ride and Vanpool programs, both of which are programs the Borough coordinates with the Municipality of Anchorage. Bicycle path miles will provide information on the ability of using the bicycle as a means of travel in the Borough, especially the central area.

Recommendations

It is recommended that Mat-Su implement a congestion management program. The program should include monitoring the existing transportation network with a set of performance measures to identify congested locations and select mitigation actions. Other components of the congestion management program should include transportation demand measures, an access management program, community comprehensive planning and requirements for traffic impact analyses for developments increasing traffic by 100 vehicles or more during the peak hour periods or 15 percent of annual average daily travel on adjacent roads.

The specific components are:

- A chapter or section of each community comprehensive plan should address how the community wishes to balance mobility with access, identify the desired access management approach and designate corridors, if any, for special treatment.

- The Mat-Su Transportation Improvement Program priority ranking system should reward transportation demand management projects that promote non-auto modes of transportation, especially in congested areas.
- Continue the present coordination and promotion with/of the Municipality of Anchorage Rideshare/carpool and vanpool programs.
- Require Traffic Impact Analyses for land development which may increase the average daily traffic on the adjacent road system by 100 vehicles or by 15 percent in the peak period.
- Maintain a congestion management database to allow identification of congestion corridors and intersections, and to monitor the transportation network.
- Pursue Congestion Mitigation and Air Quality (CMAQ) funding to help reduce airborne particulates through paving of gravel roads, to help construct pedestrian and bicycle links, and to help further development of transit service.
- Utilize the following performance measures and standards to identify and monitor congestion:
    - Vehicle miles traveled
    - Vehicle miles traveled per capita
    - Travel time by corridor
    - Number of miles of bridges path/lanes
    - Severity of delay
    - Severity of accidents
    - Importance factors
- Encourage the coordination of transportation provided by social service agencies and their integration of travel needs with the MASCOT system.
- Encourage alternatives to single occupied automobiles for commuter travel, especially the Mat-Su to Anchorage commuter trips and offer incentives to commuters who car or vanpool, e.g., gas tax credits, carpool lane.
- Begin pilot projects of commuter train from Palmer/Wasilla to Anchorage;
- Work with Anchorage to address Commuter transport from the Ship Creek Rail Depot to places around Anchorage for work, shopping and recreation.

4.8 ACCESS MANAGEMENT

The most important function of major arterial facilities is to carry through and longer distance trips (see Figure 4-1, above). Travel mobility is emphasized over access to property[2]. To the extent that local streets and driveways connect directly to a major arterial, its ability to carry through trips will be compromised. Often in rural areas in which commercial and residential development is taking place, connections to the major arterials happen slowly and incrementally, and it is difficult to show that a single

[2] Federal Highway Administration, Functional Classification Guidelines: http://www.fhwa.dot.gov/planning/fcsec1_1.htm.

driveway will slow traffic. However, it is obvious to even the casual observer that the development in Wasilla and west on the Parks Highway is significant enough that it impacts not only the volume of traffic but the speed and flow characteristics of the highway. These developments have spawned active consideration of both additional limited-access development of the Parks Highway west of the Seward Meridian Parkway, and alternatively of a second route to the south of the highway for through traffic. It will be increasingly important to limit driveway and local street access to the Parks and Glenn Highways as the Valley continues to grow.

Access management is the management or control of vehicular access to major roads of the transportation system. The major roads typically include interstates, major and minor arterials and some rural arterials. Access management seeks to preserve the functional integrity of the road by reducing the number of new vehicles to a road that have conflicting turning patterns, are decelerating or accelerating, or are merging, weaving, etc.

Access management is the control of the design and operation of all driveways and public street connections onto the highway. The controls utilized are related to the road's classification. Greater access and lower design standards are permitted on local and residential roads, while highways and major arterials have lower frequency of direct access and higher design standards. Managing access is important to both protect the ability of the road to function properly and to reduce traffic accidents. For example, too much direct access on a major arterial will increase travel times and reduce capacity. Accidents are also related to access points due to turning movements, entering/leaving vehicle flows and changes in speed. The number of accidents occurring at access points is significant – a recent report from Colorado noted that over fifty percent of all accidents are access related. Better management of a street system's points of access can therefore improve the system's capacity, reduce travel times and reduce traffic accidents.

Recommendations

Options that will help maintain travel speeds and volumes on the highways include:

- Driveway permits - As a means of monitoring and managing congestion on highways and arterials in the Borough, driveway permits will continue to be required prior to construction. The driveway permit will consider the functional class of the road in question, safety, alternate means of access, geometrics, and the number of driveways per quarter mile.
- Additional parallel collector or arterial routes that give travelers an option to taking the highway;
- Frontage roads on one or both sides of the highway in areas with many commercial or residential connections; and
- Clustering of development in nodes or commercial "villages" in order to avoid strip development and improve both aesthetics and traffic flow.

5 TRAILS SYSTEM

Trails are an important part of the Borough's transportation system as they provide an alternate means of transportation to the automobile. They also provide access to parts of the Borough that are not accessible by road such as the Chase area. Trails serve other purposes as well. They provide healthy, reasonably priced, environmentally-sound recreational activities for residents and visitors alike. Some trails, such as the Iditarod trail, provide a link to the past. The Borough's trail system consists of two types of trails; paved trails, sometimes referred to as separated pathways, and unpaved or "primitive" trails.

5.1 SEPARATED PATHWAYS

Separated pathways are paved pathways that are physically separated from motorized vehicular traffic by a vegetated buffer or barrier. Besides recreational use, separated trails promote non-motorized transportation alternatives. Their potential to reduce automobile trips is significant. National studies suggest that more than 20% of motor vehicle trips are less than one mile long with 70% of all trips less than five miles in length. This is well within the range of an average bicyclist. Separated pathways also provide an alternate means of transportation for those individuals unable to drive. This includes schoolchildren, those unable to afford automobiles and others who, for various reasons, are physically unable to drive.

Recreational use of separated trails is also very important. According to a 1992 survey of Alaska residents, walking for fitness was the second most common favorite outdoor activity behind sport fishing. Other trail-related recreation activities, such as biking and skiing also scored high.

Reliance on separate pathways in Alaska for year round transportation and recreation is hampered somewhat by the winter climate. Even so, winter use of separated pathways is increasing in the Borough. The separated pathways in these communities are being used as cross-country ski trails and winter walking paths. Even a few hardy and well equipped cyclists rely on these pathways for winter riding.

In 1995, the Borough Planning Department mailed 600 surveys to property owners to assess public sentiment toward trail development. Approximately 100 responses to the survey were received. Fifty-four percent of the respondents stated they often use roads within the Borough for walking, skiing, biking, etc. Sixty-seven percent of the respondents stated they considered roads an unacceptable substitute for trails. These responses imply that a significant portion of the Borough population, between 13 and 54 percent, is forced to reluctantly rely on roads for trail related recreation/alternative non-motorized transportation

and would prefer to use trails. The above figure of 13 to 54 percent would not include those refusing to use roads for trail types of recreation and transportation.

Existing Separated Pathways

Most, if not all existing separated pathways are adjacent to DOT&PF roads. The trail along Parks Highway west of Wasilla, at approximately 26 miles long, is the longest contiguous stretch of separated pathway in the Borough. The trail along the Talkeetna Spur Road, at nearly 14 miles in length, is the second longest contiguous separated pathway. Figure 5.1 displays the existing and planned roadside trails in the central part of the Borough. Following is a list of existing paved separated pathways within the Borough.

- Cope Industrial Way from the Job Corps Center to Palmer Junior Middle School, 0.8 miles.
- Glenn Highway, from Arctic Avenue to Palmer-Wasilla Highway, 0.5 miles.
- Old Glenn Highway, from Robin Lane across Matanuska River, 0.8 miles.
- West Arctic Avenue from Glenn Highway north, then along Hemmer Road to the Palmer-Wasilla Highway, 1.5 miles
- Arctic Avenue, from Alaska Street to Gulkana Street, 0.3 miles of widened sidewalk/separated path.
- Glenn Highway in Sutton, from Jonesville Road to Granite Creek, 1.5 miles.
- Parks Highway, from Lucus Road to Willow, 26 miles.
- Parks Highway, Crusey Street to Lucille Street, 0.7 miles.
- Parks Highway, from N Lucille Street to N. Lucus Road, 1.0 miles.
- Crusey Street, Parks Highway to Bogard Road, 0.4 miles.
- Nelson Avenue, Lucus Road to Lucille Street, 1 mile.
- Lucille Street, Nelson Avenue to Seldon Avenue, 2 miles.
- Palmer-Wasilla Highway, from the Glenn Highway to the Parks Highway, 9.6 miles.
- Church Road, from the Parks Highway to Seldon Road, 2.4 miles.
- Wasilla-Fishhook Road from Bogard Road to Seldon road, 3 miles.
- Spruce Avenue, from Wasilla-Fishhook Road to Church Road, 3 miles.
- Bogard Road, from Wasilla-Fishhook Road to Peck Street, .6 miles.
- Knik-Goose Bay Road, from the Parks Highway to W Carmel Road, 9 miles.
- Big Lake Road, from the Parks Highway to Hollywood Road, 4 miles.
- Talkeetna Spur Road, from the Parks Highway to Downtown Talkeetna, 13.9 miles
- Mack Road, from the Parks Highway to Wasilla City Limits, 1.1 miles.
- Hallea Lane, from the Parks Highway to Lake Lucille, 0.2 miles.
- Parks Highway, from Trunk Road to the Seward Meridian Parkway, 3.2 miles.
- Hollywood Road from Vine Road to Goose Bay Elementary School, 0.4 miles.

Figure 5.1
Map of Principal Roadside Trails

5.2 FUTURE SEPARATED PATHWAY PROJECTS

The Borough's Transportation Improvement Program (TIP) is included as a part of the Matanuska-Susitna Borough Capital Improvement Program (CIP). The TIP recommends that all highway improvement projects above the collector/residential road classification include separated pathways. Separated pathways are also recommended for areas around schools and communities for all road classifications.

Most of the funding for enhancement projects including paved separated pathways is derived from Federal highway dollars and state matching funds. Since passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, 10 percent of Alaska's Surface Transportation Program (STP) federal highway funds are allocated to transportation enhancement projects. Separated pathways are considered one type of enhancement project and are therefore eligible for this funding. Currently, stand-alone enhancement projects included in the Borough's CIP compete statewide with other enhancement projects for Federal funding. Other roadside trails are included in as part of State or Borough road upgrade projects. The projects selected for funding are included in the State Transportation Improvement Program (STIP). Separated pathways currently included in the STIP as part of a road project are listed below.

The following trail projects are in the Community Transportation Program portion of the current STIP available at (http://www.dot.state.ak.us/stwdplng/cip_stip/ stip06_08.shtml)

- Trunk Road Reconstruction (6.5 miles) from Parks Highway to Palmer-Fishhook Road. (pathway along part of route)
- Wasilla Fishhook Road/Main Street Rehabilitation– improved pedestrian facilities (3.7 miles) from Glenwood St on Knik-Goose Bay Road to Schrock Rd on the Wasilla-Fishhook Road.
- Seward Meridian Road expansion to four lanes between the Parks Highway and Seldon Road.
- Begin planning for separated pathways along arterials and collectors in addition to the main highways, e.g., Parks Highway and Glenn Highway.

The National Highway System component of the current STIP, available at (http://www.dot.state.ak.us/stwdplng/cip_stip/stip06_08.shtml), contains the following trail projects:

- Construct pathway as part of Glenn Highway reconstruction between MP 34 - 50 (Parks Hwy. junction to Palmer-Fishhook Road)

5.3 PRIMITIVE TRAILS

Primitive trails are unpaved, in many cases are not limited to non-motorized use, and are primarily used for recreation. Primitive trail users include equestrians, dog mushers, snowmachines, ATV's, and many other trail uses not well suited to or in need of a paved

surface.[1] The Big Lake, Core Area, City of Houston, Talkeetna, City of Palmer, Chickaloon, Chase, and draft Trapper Creek Comprehensive Plans all recommend the development of "primitive" trails.

In some situations, primitive paths have developed within or adjacent to road rights-of-ways due to need for motorized trail users to travel through areas of predominately private land, such as the Core Area. These motorized uses should be limited to roadsides without developed paths, thereby separating them from non-motorized uses as well as automobile traffic.

Few primitive trails are eligible or likely to receive ISTEA enhancement funding, yet most are in need of funding for either trail improvements or right-of-way acquisition. Development or preservation of these primitive trails is only likely to occur as a result of extensive local community and Borough involvement and support. Yet to date, numerous complicated legal issues and little available funding have hindered trail development and preservation.

The two key issues associated with primitive trails are legal status and user conflict.

Legal Status of Trails

Many primitive trails, especially informal trails, trespass across private property. Publicly used trails need to be on publicly owned land or located within properly obtained easements. The issue of continued public use of trails across private property has been an ongoing problem in the development and retention of recreational trails, and has resulted in fragmentation of a number of trails as development in the Borough has expanded. A law was recently enacted by the State Legislature that grants full liability immunity to private landowners who grant a conservation trail easement. Private property owners who allow public use of their property may be encouraged to place part of their land holdings into conservation easements so as to obtain the fullest possible protection from liability.

User Conflict

The primitive trails are used for a variety of purposes. Sometimes, those uses are incompatible and create the need for separate pathways for different users. Some of the different uses include mining trails, and separate motorized/non motorized trails. Improved signage such as the identification of private trails, trail direction, cautions (bad curve, intersection, etc), and single/limited purpose trails, would help minimize user conflict.

Another conflict is the use of road rights-of-way by snowmachine and ATVs users. As the borough becomes more developed, this practice will need to be reconsidered in specific higher-density areas. Additional snow machine and ATV trails should be developed to compensate for future restrictions along highways.

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[1] Please see the Matanuska-Susitna Borough Trails Plan, 1997, for an in-depth discussion of primitive trails in the Borough and an exhaustive review of existing and proposed trails.

5.4 RECOMMENDATIONS

- Continue to investigate the legal status of all trails. Obtain right-of-way or relocate as needed.
- Develop an agreement with the ARRC regarding trail use of the ARRC ROW in the Chase area or develop an alternative trail.
- A comprehensive trails plan should be developed to address issues hindering trail development and prioritize the limited amount of grant funding available for trails.
- An interconnected, Borough-wide trail system should continue to be developed and include:
    - Separated paths or bicycle lanes should have a larger or wider buffer/barrier distance from roads and have some vegetative species between roads and pathway, along all collector or higher level of use roads
    - Separated paths should connect activity centers (e.g., schools, shopping malls) to residential subdivisions.
    - A pedestrian trail for access between downtown and east Talkeetna should be officially established and maintained.
    - Develop an alternative to using the Railroad bridge over the Talkeetna river
    - Standardize and improve signage
    - Provide separate trails for motorized and non-motorized uses.
- Increase connectivity with the existing separated pathway network by building the following trail connections. Existing and proposed roadside trails are shown in Figure 5.1:
    - Parks Highway, from Seward Meridian Parkway to Crusey Street, 2.4 miles.
    - E. Nelson Road, from N. Main Street to N. Lucille Street, 0.3 miles.
    - Lucille Street, from W. Nelson Avenue to the Parks Highway, 0.3 miles.
    - N. Lucus Road, from W. Nelson Avenue to the Parks Highway, 0.2 miles.
    - N Main Street, from E. Paulson Ave to Bogard Road, 0.05 miles.
    - Old Glenn Highway/Arctic Avenue, from N. Gulkana Street to existing trail, 0.6 miles.
    - W. Arctic Avenue, from N. Alaska Street to the Glenn Highway, 0.1 miles.
    - Seldon/Bogard Road from Church Road to Trunk Road, 8.9 miles.
    - E. Bogard Road, from N. Peck Street to Seldon Road, 3.7 miles.
    - Trunk Road, from Bogard Road to the Parks Highway, 4.1 miles.
    - Seward Meridian, from Parks Highway to Seldon Road, 3.0 miles.
    - Wasilla-Fishhook Road, from E. Nelson Avenue to Seldon Road, 2.7 miles.
    - S. Colony Way/S Valley Way, from the Glenn Highway to E. Arctic Avenue, 1.3 miles.
    - S. Vine Road, from Knik Goose Bay Road to the Parks Highway, 3.4 miles.
    - Palmer-Wasilla Highway, from the Parks Highway to Knik Goose Bay Road,

1.3 miles.

- Evergreen Avenue, from the Glenn Highway to S. Alaska Street, 0.3 miles.
- Fairview Loop, from the Parks Highway to Knik Goose Bay Road, 11.1 miles.
- Old Glenn Highway - Sections of this trail were paved but are currently in extremely poor condition. The trail is approximately 3 miles in length.
- North Trunk Road, from Bogard Road to Palmer-Fishhook Road, 2.3 miles.
- Palmer-Fishhook Road, from the Glenn Highway to Wasilla-Fishhook Road, 6.9 miles.
- Wasilla-Fishhook Road, from Palmer-Fishhook Road to Seldon Road, 7.7 miles.
- Hatcher Pass (Willow-Fishhook) Road, from junction of Palmer-Fishhook and Wasilla-Fishhook Roads to Little Susitna River Bridge parking area.
- Hatcher Pass Ski Area Access Road (proposed) from Hatcher Pass road to Hatcher Pass Ski Area.
- Government Peak Road, (proposed) from Edgerton Parks Road to Hatcher Pass Ski Area Road
- Mack Drive, from the Parks Highway to City Limits, 1.0 miles.
- Fern Street, from Fairview Loop Road to Knik-Goose Bay Road, 1.6 miles.
- Lucus Road, from Nelson Avenue to Spruce Avenue, 1.2 miles.
- Knik Goose Bay Road, from Carmel Road to Point Mackenzie Road, 8.6 miles.
- Hollywood Road, from Big Lake Road to Knik-Goose Bay Road, 9.0 miles.
- Johnson Road, from Hollywood Road to the Parks Highway, 1.9 miles.
- Pittman Road, from the Parks Highway to Church Road, 8.7 miles.
- Church Road, from Seldon Road to Pittman Road, 1.0 miles.
- Colony Way, from Trunk Road to the Glenn Highway, 4.4 miles.
- Werner Road, from Arctic Ave to Farm Loop, 3.0 miles.
- Blunck Street, from the Glenn Highway to the Palmer-Wasilla Highway, 1.9 miles.
- Matanuska River, from downtown Palmer to Sutton, 6.6 miles.
- Lake Lucille to Big Lake Trail, paralleling Lucille Creek west from Lake Lucille crossing Mack Drive, Vine Road, Johnson Road, and then southwest across Hollywood Road to Big Lake near the Fish Creek drainage.

6 PUBLIC TRANSPORTATION

The first Borough transit planning effort, the *Matanuska-Susitna Borough Public Transit Plan* was originally prepared by Leonard Lane Associates and PRC Voorhees in September 1981. This original plan was updated and included in the 1984 Transportation Comprehensive Development Plan. The section on Public Transportation in the 1997 Long Range Transportation Plan was based on the City of Wasilla and Palmer Comprehensive Plans, and the 1993 Core Area Comprehensive Plan. This 2007 plan updates material from the 1977 plan and includes the introduction of the MASCOT system and the most recent study of rail commuter service between Mat-Su and Anchorage.

6.1 LOCAL TRANSIT SERVICE

Background

Transit services are operated by local government in virtually all urbanized and developing regions for a number of purposes. The most common include:

- Providing affordable mobility for the poor, disabled, young, and elderly;
- Enticing would-be drivers to leave their cars at home, reducing congestion and pollution; and
- Using transit to handle in-city trips more efficiently than can be done with automobiles, reducing the need to use valuable (and taxable) real estate for roadways and parking lots.

Prices are normally kept below costs to attract as many trips to transit as possible, and in some cases to indirectly support specific user groups such as the elderly and disabled. Of these purposes, the one most applicable to the Borough in general and the populated areas specifically is providing mobility, with congestion relief becoming more important in the later years of this planning period. Realistically, however, in a low-density area such as the Borough, it will be some time before the number of trips handled by a local transit system will have an impact on the amount of land devoted to roads and auto-related uses.

To operate regular fixed-route local transit service productively, residential densities must at a minimum be four to seven dwelling units per acre. Although the central parts of Palmer and Wasilla approach this threshold level, nearly all parts of the core area are lower in density, typically one to two dwelling units per acre. Transit service in the central Mat-Su should therefore feature either demand responsive or fixed/flexible route

service[1]. Rather than operating over a fixed route on a fixed schedule, demand responsive transit operates similarly to taxi service; with a key difference being that more than one trip can be handled at a time. Fixed-flexible service operates between established "checkpoints" or waypoint bus stops, with time in the schedule to deviate from the direct route between two waypoints to pickup or drop off passengers who cannot or choose not to walk to the stop.

Coordinated Transit in Mat-Su

The 1997 LRTP recommended that an analysis of the potential for coordination of transportation service among social service agencies be completed, its efficiencies identified, and that a coordinated service be implemented. The MASCOT coordinated transportation system was implemented in Mat-Su in 1999. In addition to Mat-Su, the coordinated service model has been used successfully in Alaska to develop transit service in Sitka, Kodiak, and Kenai. A transit system developed around the coordinated service model combines general public transportation with private non-profit organization client transportation needs to serve both markets at significantly less cost than providing separate services.

In most communities, private non-profit social service agencies such as the Red Cross, Boys & Girls Clubs, and outpatient medical clinics have purchased vans or small buses to transport their clients. Viewed community wide, these agency vehicles usually are not used intensively and spend a significant amount of time parked. The total number of underutilized vehicles in a community can be significant, and represent a sizeable resource. Additionally, private non-profit agencies are in the business of providing a service, and running a small bus system is something that needs to be done to deliver the service rather than something agencies would otherwise choose to do. Running buses and vans can be a significant financial and managerial drain on an agency's resources.

Coordinated transit service involves creating a private non-profit agency with the specific and focused mission of operating transportation service. Combining and coordinating the transportation needs of many agencies has several significant benefits:

- Greater efficiency is realized as the transportation needs of several agencies are coordinated;
- Social service agencies have more managerial resources to devote to their key mission as the distraction of operating transportation service is eliminated;
- Transportation is provided for private agencies at a lower cost per trip; and

[1] Demand responsive service is also known as DRT, dial-a-ride, shared-ride transit, shared-ride taxi service, or route deviation service.

- Service for the general public can be added to the coordinated agency transportation for a lower cost per trip than if the public service were set up and operated separately.

The Development of MASCOT

A study called "Project Getting There" was the first effort to address the need for transit service in the Valley and coordination of transportation among social service agencies. The study, sponsored by the United Way of Mat-Su, began in 1996 with funding from ADOT&PF, the Federal Transit Administration (FTA) and the Rural Passenger Transportation Technical Assistance Program, which is administered by the Community Transportation Association of America (CTAA).

Project Getting There began with the formation of a twelve-member steering committee. The committee consisted of business members, local and state government officials and representatives from other community organizations such as senior centers and chambers of commerce. The committee developed a project mission statement, vision statement, project values and a detailed list of "Strategies and Goals." The goals were developed to help guide the CTAA, ADOT&PF and the steering committee in the planning and development of the prospective service. The next step was to take a detailed look at the communities in the Borough, and conduct a survey of existing transportation services. The survey revealed through an inventory of all transportation programs and resources in the Borough that approximately $750,000 was being expended for transportation services, and a total fleet of 77 vehicles were being used. It was further determined that these services were not able to accommodate a latent demand for transit service of over 77,000 trips annually.

Project Getting There concluded that no one strategy could adequately address the diverse transit needs in the Borough. Two components were identified: a commuter service between the Mat-Su Valley and downtown Anchorage, and a "checkpoint" service for Palmer, Wasilla and the Core Area. The checkpoint service was intended to provide service to both the general public and agency client needs by offering scheduled rides between specific checkpoints as well as demand responsive service over a larger geographic area.

The service envisioned by Project Getting There was established on March 3, 1999 as a private, non-profit corporation called MASCOT (Matanuska-Susitna Community Transit), also known as Mat-Su Transit. MASCOT's established purpose was to operate and coordinate transportation services in the Matanuska-Susitna Borough. MASCOT both operates transit service and coordinates service with a number of non-profit,

governmental and human service agencies throughout the Borough to provide both general public and agency-related transportation service.[2]

A nine-member Board of Directors oversees the agency. The Board members are from many parts of the Mat-Su Valley, and include private business owners, local government officials, and chambers of commerce leaders. As of fall, 2005, MASCOT had 12 full-time and 6 part-time employees, including drivers.

Current MASCOT Service

MASCOT operates both local and commuter fixed route service on seven separate lines using a route deviation service model. The buses operate between checkpoints according to a schedule, and can deviate up to ¾ mile off the route to pick up riders who call for the service. Route deviation service is operated with eight 25-passenger buses. Shared-ride paratransit service is provided with two wheelchair-equipped 10-passenger vans to individuals who cannot use the fixed route service. Additional service is provided to the Boy's and Girl's Club with a used school bus. In October of 2005, MASCOT had one bus and one van on order which will be used to increase the service in operation.

MASCOT's transportation operating budget is approximately $750,000. Revenues for operations come from several different sources, of which 40% is from the federal government. Currently, the Borough provides no operating funding. Sources of revenue include passenger fares, advertising, and contributions from local non-profit agencies such as the United Way, the Boys and Girls Club, and Mat-Su Services. Resources for advertising have been limited to radio and newspaper ads and have largely relied on word-of-mouth. Fares on MASCOT are $2.00 each way and $5.00 for an all-day pass. If the bus deviates for a pickup or drop-off, the one-way fare can range from $4.00 to $5.00. A monthly pass is available for $85.00. One-way service to Anchorage costs $2.50 and a joint MASCOT/People Mover monthly pass costs $105.

In addition to the fixed route and paratransit services, MASCOT has a contract with Alaska Valley Cab to provide trips to Medicaid clients for medical appointments. Alaska Valley Cab bills MASCOT directly for these trips. MASCOT also provides a number of transportation services for non-profit agencies throughout the Borough, both on a regular and semi-regular basis. Examples of non-profit agencies that receive regular service include the United Way of Mat-Su, Mat-Su Health Services, and the Mat-Su Recovery Center. As-needed service is also provided throughout the year for programs such as for the Juvenile Detention Center and local schools. MASCOT is also able to provide free trips to seniors in the Mat-Su Valley, and to provide service for school kids to and from the Boys and Girls Club who would otherwise be "latch key kids".

[2] MASCOT data provided via personal communication with Karen Walton, MASCOT Executive Director, and additional published MASCOT information.

Total ridership on the system for recent calendar years is as follows:

- 2002: 57,000
- 2003: 59,000
- 2004: 64,000
- 2005: 67,000
- 2006: 72,000

About a quarter of the riders on MASCOT are seniors over the age of 60 and just over a third are youth under 18. Approximately 80% of total ridership was on the regular route system. Due to winter weather in Alaska, ridership on MASCOT tends to be higher in the winter months. Staff reports that 20% of the total rides on MASCOT were coordinated services (i.e. contracts with government, non-profit organizations or services provided for Medicaid clients on Alaska Valley Cab).

The Palmer Senior Citizens Center

The Palmer Center operates a fleet of 16 vans providing transportation and in-home meals services to seniors in the Palmer area. In the fiscal year ending June 30, 2005, the Center provided 22,388 passenger-trips and 29,000 home-delivered meals. Service is focused on medically-oriented trips, with recreational trips provided on a pre-scheduled or space available basis. Service mileage grew approximately 10 percent over the previous year and rides were up 12 percent. A significantly greater number of trips could be provided if funding were available.

The Wasilla Senior Citizens Center

The focus of the transportation services provided by the Wasilla Senior Center is on home-delivered meals, medically-related trips and transportation for seniors to and from the Senior Center. The Wasilla Center will deliver approximately 70,000 home-delivered meals and about 7,500 passenger-trips during 2005. The center is a stop on the MASCOT system and has begun to coordinate services with the local carrier.

6.2 EXISTING COMMUTER SERVICES

Bus Commuter Service

Privately owned and operated commuter bus service was available between Wasilla, Palmer, and Anchorage from the early 80s through the mid-90s. During the first part of the 1980s, the Burton Carver Company operated a commuter service under contract to the Borough. Two trips were operated from Matanuska-Susitna to Anchorage in the morning, and two return trips ran in the evening. Borough sponsorship expired with the state grant that funded the transit service in 1984. Burton Carver continued to operate the service for a time as a wholly private venture. From 1984 through 1989 Alaska Star Charters and Tours provided commuter service with two buses in the winter

and a single bus during the summer. Ridership varied from a low of 15 daily round trips during the summer to a peak of 50 round trips during the winter.

After the service was discontinued in 1989, The Caribou Express began operation and served the Matanuska-Susitna to Anchorage commuter market from 1989 through 1992. All of the private commuter services operated during the last decade suffered from undercapitalization and found it difficult to cover operating expenses, let alone recover their capital investment. The use of older, less reliable equipment produced less than totally reliable service, which in turn held down ridership. A general rule of thumb for commuter services is that the service must be prompt and reliable, as most of the riders have the alternative of driving, and will do so if they encounter many instances of unreliability. A limited number of trips also will tend to depress ridership as work start times in Anchorage typically vary from 7 a.m. to 9 a.m. Lastly, the Caribou Express, charged $12 per round trip, or $60 for a weekly pass. This is more than most drivers thought it cost to drive from the Valley to Anchorage and return. In reality it was not, if a full accounting including depreciation, tires, oil, maintenance and repair and other costs were included. Nevertheless, the bus services compete against perceived auto operating costs, rather than actual operating costs.

In 2000 MASCOT (Mat-Su Community Transit) began operating morning and evening commuter service from Wasilla and Palmer to the Eagle River Transit Center where riders would transfer to the Anchorage People Mover. The service was extended to the Downtown Anchorage Transit Center in 2004 and by 2005 operated three trips in each direction on weekdays. The service costs $2.50 in each direction, and a joint MASCOT/People Mover monthly pass costs $105.

Ridesharing

Of all the modes of cooperative or public transportation, ridesharing is typically the most cost-effective. Ridesharing holds the potential for having positive benefits on traffic and pollution reduction with the smallest public funding requirement. The economies are derived from using otherwise unused space in private vehicles - as with car pooling, or in the case of van pooling having one of the participants do the driving and carrying eight to twelve travelers in one vehicle. In either case the savings are derived from full use of the vehicle and not having a paid driver.

The Municipality of Anchorage and Mat-Su have entered into a cooperative agreement to implement a Share-A-Ride program in the Borough. The Share-A-Ride program is operated by the Public Transportation Department of the Municipality of Anchorage. The car pool matching, marketing and administrative costs are supported by Federal Highway Administration Congestion Mitigation and Air Quality (CMAQ) program funding. The Share-A-Ride program has been enjoying growing success since it was begun in its current form in 1988. In 2006 there were approximately 4,600 active applicants on file, of which about a quarter were residents of the Borough.

Approximately 675 persons were car pooling.[3] Although the focus of the Anchorage program is the employer, rather than the individual commuter, the Borough should nonetheless help promote awareness of the program, coordinate the distribution of car pooling information, and maintain a permanent link with the Anchorage program. Presently, some Borough residents who car pool to Anchorage meet and leave their vehicles at the park & ride lot near the Parks Highway and Trunk Road interchange.

Share-A-Ride initiated a van pooling program (Share-A-Van) during the fall of 1993. The vans were purchased by the Municipality using Federal Transit Administration funds and local municipal matching funds. A contractor administers the program, which includes driver training. Typically, each van has one designated van driver and two or three alternate backup drivers. A monthly fee is charged for the use of the van, insurance, maintenance and all other costs except fuel and parking costs. Interest in vanpooling has grown as a result of the recent increased cost of gasoline, and a Federal provision that provides up to $105 per month of reimbursement to employees for ridesharing expenses. As of the fall of 2005, there were 24 van pools active each workday, with 21 of those originating in the Mat-Su. 364 people were active in the program, and 481 people were on the waiting list, with 15 van groups ready to start vanpooling as soon as additional vehicles became available. Federal capital funds were available to expand the number of vans in the program during the first half of 2006.

Participating in the Share-A-Van program costs the average rider $95 to $105 per month. In exchange for driving, the driver pays no monthly fee and normally has a limited number of miles of personal use of the van per month. Ridesharing also provides the added benefits of time during the trip to read or work, and arriving at work or home in a less-frazzled, more productive state. The value of these benefits can only be established by the individual commuter. Tradeoffs include less flexibility in travel time, inability to work late and less privacy during the trip.

6.3 RAIL COMMUTER SERVICE

Early Studies

By the mid 1980's it became clear that the rapid growth in population in the Palmer-to-Wasilla Area was beginning to tax the capacity of the Glenn Highway. The Municipality of Anchorage, along with the Matanuska-Susitna Borough, the ADOT&PF and the Alaska Railroad (ARRC) felt that it would be worth revisiting the rail commuter service idea, and sponsored a follow-up to the original study done in 1979. Various rail service concepts--and one express bus service design--were examined, representing a range of capital investment and service levels. A total of six rail, bus, and rail/bus operating scenarios were developed and evaluated. The rail service alternatives were found to

[3] Share-A-Ride and Share-A-Van information provided by Sandra Clark, Program Manger, Municipality of Anchorage Public Transportation Department.

require subsidies per passenger ranging from $6.54 for a low investment, winter-only service, to $10.93 for a high investment, winter-only service. In comparison, similar bus services could be provided at lower subsidy levels ranging from $3.25 to $5.71 per passenger. It was concluded that at the time of the study that bus service would operate much more cheaply than rail service and would attract nearly as many passengers.

For rail service to become feasible, the study indicated that, at a minimum, three changes would have to occur:

1. Travel demand in the Palmer-Wasilla to Anchorage corridor would need to increase 25 to 30% to fill trains three cars long. Until three-car or longer trains could be run, rail operating costs would not begin to be comparable to bus service.

2. The ARRC would need to allow a three-car train to be operated by two-person crews, or facilitate other changes to the operating rules and labor agreement to reduce cost or the service by at least 30%.

3. Political decision makers in Anchorage and the Matanuska-Susitna Borough would need to support a policy of subsidizing rail service in the amount of $2 to $3 per passenger-trip.

This study found that in terms of volumes of potential riders, the commuter service appeared potentially feasible. Nevertheless, while the second study was underway, the price of oil collapsed and the economies of Anchorage and the valley suffered. The prospect of initiating new rail service was nil considering cuts being made to other long-established services. The study recommended that in the near-term a limited, winter-only express bus service be established in the corridor. It suggested that a joint powers agreement including Anchorage, Matanuska-Susitna Borough, ADOT&PF, and the ARRC would be a logical first step to addressing the institutional and funding issues involved in creation of rail or bus service. It was noted, however, that the soon to be completed 4-laning of the Glenn Highway between Eklutna and the Parks Highway junction would make the commute by auto faster and safer (although not cheaper) and would tend to increase the number of years before the combination of passenger demand and political will would make the commuter service operation feasible.

Alaska Railroad Corporation Study

In 2002, the Alaska Railroad completed a study of how rail commuter service could be implemented between the Mat-Su Borough and Anchorage.[4] The project initially developed an assessment of demand for the rail service, estimating that initial demand of between 152,000 and 190,000 passenger trips per year, growing to 231,000 passenger

[4] *Southcentral Rail Network Commuter Study and Operation Plan,* prepared for the Alaska Railroad Corporation by Wilbur Smith Associates, January 2002.

trips per year in 2015. These initial projections were tested with a telephone survey of Mat-Su residents. The survey results suggested that there was a great deal of interest in commuter rail service such that the initial ridership estimates would be considered within a reasonable range. The study also conducted focus groups with Mat-Su commuters in order to learn more about particular attributes of rail service that would be attractive to riders. Not surprisingly, the focus groups identified attributes that included schedules that would allow flexibility in departure times, short travel times and punctuality as desirable.

Institutional Assumptions

The study assumed that a multi-jurisdictional public agency would be responsible for developing and funding the service. Such an agency does not at present exist in Southcentral Alaska, but could be formed as an association of the Mat-Su Borough, the Municipality of Anchorage, the State of Alaska, and possibly the Cities of Palmer and Wasilla. Two operational alternatives were considered – the Alaska Railroad as operator for the multi-jurisdictional agency, or an independent contractor as the operator for the agency which would operate the service over the Alaska Railroad.

Accordingly, the study developed two different Mat-Su operating scenarios to test the alternatives. These were:

- ARRC train operators and maintenance of equipment (MOE) forces.
- Independent contractor train operators and MOE forces.

Assumptions as to schedules, rolling stock, and capital improvements were made for each of these scenarios, and a cost estimate for each was developed.

Schedules

Two scheduling options were considered in the study:

- A minimal service level focused on peak commute period service.
- An expanded service level, which would offer peak and off-peak service.

The study concluded that a minimal service level would be more appropriate for start-up. As ridership builds over time, the service would move toward an expanded service level.

Rolling Stock Options

Various types of rolling stock for the service were evaluated. These included conventional locomotive-hauled bi-level commuter equipment deployed on comparatively recent commuter rail start-ups throughout in the United States and Canada, self-propelled Rail Diesel Cars (RDCs), a new self-propelled railcar type known as Diesel Multiple Units (DMUs), and other options. The study concluded that RDCs were most appropriate, given their operating flexibility. The RDCs envisioned for the Anchorage commuter service would be "remanufactured" older units with new interiors and power systems so as to minimize maintenance costs.

Transit Integration

An essential part of the commuter service would be an efficient connection at the Anchorage station to local transit and/or employer shuttles to move commuters from the trains to their workplaces. The study recommended that the commuter rail service sponsoring agency initiate discussions with Anchorage and Mat-Su transit operators to see how services can be integrated. Also, the sponsor should initiate discussions with major employers or groups of employers to see if they might provide their own shuttle services to and from the trains.

Revenues and Costs:

Capital costs were based on the rolling stock and facility improvements required to operate the service. For Scenarios A and B, these improvements included five stations and a car shop in Wasilla.

Revenues resulted from multiplying projected ridership by fare levels anticipated for the service. Operating costs were a function of hours of service for crews, miles traveled for train sets, passengers handled, and anticipated fixed costs. The comparison of revenues to operating costs produces a farebox recovery ratio – a key measure of efficiency utilized by public transportation agencies. A 2005 start-up was assumed for planning purposes. The rail service's ratio will improve over time assuming that ridership builds more rapidly than costs increase. Cost and revenue projections for the service scenarios appear in Table 6-1 below. The calculations assume a Minimal Service Level, use of RDC rolling stock, and contingencies of 25 to 30 percent for capital improvements.

The study recommends either scenario for implementation. Whether or not ARRC provides crews and MOE forces will depend on the railroad's ability to provide these forces on a price basis competitive with what an independent contractor can offer.

Table 6-1
Commuter Rail Ridership Revenue and Costs in 2005

	ARRC Operation	Contractor Operation
Ridership	152,000-168,000	152,000-168,000
Capital Costs	$28,200,000	$28,200,000
Revenue	$603,000	$603,000
Operating Costs	$3,277,000	$2,800,000
Required Subsidy	$2,674,000	$2,197,000
Subsidy per Passenger-trip	$15.91 - $17.59	$13.08 - $14.45
Farebox Recovery Ratio	18.4%	21.5%

Source: *Southcentral Rail Network Commuter Study and Operation Plan,* prepared for the Alaska Railroad Corporation by Wilbur Smith Associates, January 2002.

Funding Strategies

The study also reviewed of how other commuter rail services obtained funding to cover their initial capital costs and ongoing operating costs. The review provided prospective funding mechanisms and thoughts on how to obtain such funding for an Anchorage area commuter rail service. Based on the review, the study recommended the following be pursued:

- Federal New Rail Starts discretionary funds should be considered for up to 50 percent of the initial capital cost of the commuter rail project.
- New or expanded state and local sources of funds should be pursued to provide funding matches to capital grants (initial capital funds and ongoing capital investments in the system), and to provide operating subsidies for ongoing operations and maintenance of the system.

Management Structure

The study recommended a Joint Powers Authority (JPA) as the most practical alternative. A JPA appears to require no special enabling legislation. Also, a JPA would provide the commuter rail focus that would enhance the potential for a successful implementation.

How to share the capital and operating costs not covered by Federal sources will be a primary concern of the Anchorage area commuter rail JPA members. A key finding of the review was that there appear to be as many ways to share such costs as there are multi-jurisdictional agencies. This is because the sharing arrangements have been products of negotiation, wherein each agency bargained according its own particular needs. A cost sharing arrangement among Anchorage rail JPA members also would be a unique product of negotiation.

Steps to Implementation

The critical first step in establishing a commuter rail service will be the formation of a sponsoring agency, composed of the Municipality of Anchorage, the Cities of Wasilla and Palmer, the Mat-Su Borough, and potentially the Alaska Department of Transportation and Public Facilities. The new organization will first need to formulate a comprehensive funding plan that would detail the specific funds, the strategies to get those funds, and the timing of the spending leading to start-up of service. Next will be the hiring of agency staff to oversee the detailed engineering analysis, environmental assessments, station and car shop construction, rolling stock procurement, and other tasks required for the successful implementation of commuter rail.

6.4 RECOMMENDATIONS

Local Transit Service

Continue to support the expansion of MASCOT service and further coordination of private non-profit and public transit services.

Commuter Service
Support the existing MASCOT commuter service and future efforts to expand that service or to initiate a multi-agency joint powers sponsored service between the Valley and Anchorage.

Participate in the Regional Transportation Planning Organization (RTPO) discussions of rail and bus commuter service between the Borough and Anchorage. Support development of cost-effective rail and bus services.

Support the expansion of the Municipality of Anchorage-operated Share-A-Ride, and Share-A-Van programs. They are increasingly popular and should enjoy expanded user interest, especially if the price of gasoline continues to increase. To increase the success of this program, it is recommended that the Borough:

- Help promote awareness of the Share-A-Ride and Share-A-Van programs;
- Coordinate the distribution of carpooling information in the Borough;
- Establish a permanent administrative link with the Anchorage Share-A-Ride and Share-A-Van programs;
- Seek out opportunities in the future to help coordinate carpooling efforts among those employed in the Borough who commute from Anchorage;
- Designate and construct parking lots that are lighted and maintained for individuals wishing to car or van pool; and
- Identify methods of consolidating work-trips (trip-ends) to Anchorage as a means of making public transit or ridesharing more feasible.

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7 AIR TRANSPORTATION

Aviation is an important form of transportation in the Matanuska-Susitna Borough. It provides the only access to some of the more remote areas of the Borough and plays a major role in the recreation and tourism industries within the Borough. With an estimated Borough population of 76,006 in 2005[1], and an estimated 1,100 aircraft, the Borough hosts an average of one airplane for every 69 residents. The number of aircraft reported as personal property within the Borough has increased from approximately 500 in 1984 to over 1000 in 2004. This 100% increase over 20 years is a trend that is likely to continue as the Borough continues to grow. The Borough does have an aviation personal property tax of $75 per single engine aircraft and $125 annual tax for multi-engine aircraft registered in the Borough.[2]

7.1 EXISTING AIR TRANSPORTATION FACILITIES

There are currently eight airports within the Mat-Su Borough that are under the jurisdiction of the Alaska Department of Transportation and Public Facilities (ADOT&PF). In addition, there are two municipal airports. Several, but not all of these airports have air taxi operations. However, none has regularly scheduled commercial airline operations. Table 7-1 summarizes and lists the publicly-owned airports in the Borough.

Public Airports under ADOT&PF Jurisdiction

The facilities in the Borough under ADOT&PF jurisdiction include: Big Lake Airport; Goose Bay Airport; Lake Louise Airport; Sheep Mountain Airport; Skwentna Airport; Summit Airport; Talkeetna Airport; and Willow Airport. ADOT&PF is responsible for the maintenance and operations of these airports. The only airport under ADOT&PF jurisdiction with a manned Flight Service Station is the Talkeetna Airport which also has the highest activity level of the eight airports. All but two of the ADOT&PF-owned facilities are included in the 2005 National Plan of Integrated Airport Systems (NPIAS). (*FAA Order: 5090.3c*) Sheep Mountain and Summit airports are not included in the NPIAS. Federal interest in the national airports system extends only to those facilities which make a significant contribution to the regional air transport needs in the national system. To be considered for inclusion into the NPAIS, an airport must have at least ten locally-owned based aircraft, be no closer than 20 miles from the nearest NPAIS airport, and must be located at a site that can be expanded and improved to provide safe and efficient airport facilities. The activity criteria may be relaxed for remote locations or

[1] US Census Bureau: www.census.gov

[2] Matanuska-Susitna Borough Assessor's office 5/2005.

other mitigating circumstances. Inclusion in the NPIAS is a requirement for receiving federal funding for airport improvements. The ADOT&PF is currently in discussion with the FAA to establish Summit Airport on the next NPIAS revision due for public release in 2007.

The Big Lake Airport has a gravel runway 2,435 feet in length and 70 feet wide. The airport lighting is via pilot control and the weather data source is via transcribed weather broadcast. There is no designated runway for planes equipped with skis in the winter although a snow pack is maintained when possible to allow for planes on skis. Big Lake is not a recognized float plane base but the lake is used regularly by airplanes in both summer and winter. Big Lake Airport has on average approximately 55 aircraft operations per day.

Along the north boundary of Fish Creek Park (Tract 5b, First Addition to Fish Creek Subdivision) a 0.41 acre parcel has been reclassified to "Reserved Use-Transportation" as a public easement for transportation purposes that is limited for the purpose of aircraft movement between the Big Lake Airport and Fish Creek for the conversion of landing gear, and for public recreation as a day use area. Permit is required and can be obtained through the Land Management Division.

Table 7-1
Public Airports in the Mat-Su Borough

Airport	*Owner*	*Length (ft.)*	*Width (ft.)*	*Surface*	*Navigation Aids*	*Instrument or Visual*
Big Lake	*DOT&PF*	*2,435*	*70*	*Gravel*	*VORTAC*	*IFR*
Goose Bay	*DOT&PF*	*3,000*	*75*	*Water*	*None*	*VFR*
Lake Louise	*DOT&PF*	*700*	*18*	*Water/Gravel*	*None*	*VFR*
Palmer	*City*	*6,000*	*100*	*Asphalt*	*VASI/PAPI*	*IFR*
Sheep Mountain	*DOT&PF*	*2,270*	*60*	*Gravel*	*None*	*VFR*
Skwentna	*DOT&PF*	*3,400*	*75*	*Gravel*	*VASI*	*VFR*
Summit	*DOT&PF*	*3,840*	*80*	*Gravel/dirt*	*NDB*	*VFR*
Talkeetna	*DOT&PF*	*3,500*	*75*	*Asphalt*	*VOR/DME*	*IFR*
Wasilla	*City*	*3,700*	*75*	*Asphalt*	*PAPI*	*IFR*
Willow	*DOT&PF*	*4,400*	*75*	*Gravel*	*None*	*VFR*

The Goose Bay Airport has a gravel runway 3,000 feet in length and 75 feet wide. The airport lighting is via pilot control. There is no weather data source. There are no designated facilities to accommodate float planes or planes equipped with skis although a snow pack is maintained when possible to allow for planes on skis. There is no state maintenance performed on this facility and there are approximately 97 aircraft operations on a weekly basis.

The Lake Louise Airport has been closed indefinitely since 2001 due to runway erosion. The airport has a gravel runway 700 feet in length and 18 feet wide. There is no lighting or weather data source available and no facilities for float planes. The airport is not maintained in the winter. Lake Louise is used regularly by airplanes in both summer and winter and while it is not recognized as a public float plane base, the lake is routinely used for float plane access to the area. Evergreen Lodge on Lake Louise is recognized as a private float plane base.

The Sheep Mountain Airport has a gravel/dirt runway 2,270 feet in length and 60 feet wide. There is no lighting or weather data source available. The airport does not accommodate float planes and no state maintenance is performed on the airport or runway. The runway condition is not monitored, and pilots are advised to perform a visual inspection prior to using. This airport experiences minimal traffic with roughly 115 operations on an annual basis.

The Skwentna Airport has a gravel runway 3,400 feet in length and 75 feet wide. The airport lighting is via pilot control but there is no weather data source. There are no facilities to accommodate float planes. There is no designated runway for planes equipped with skis in the winter although a snow pack is maintained when possible to accommodate planes on skis west of the runway 27 threshold. The runway is marked with reflective cones. However, the Skwentna River is eroding the southeast end of the runway.

Figure 7-1: Skwentna Airport

The Summit Airport has a gravel runway 3,840 feet in length and 80 feet wide. The runway is not monitored and there is no airport lighting. The weather data source is via transcribed weather broadcast. There is no line-of-sight visibility between the runway ends. Small brush and weeds up to 30" high are common on sections of the airfield. There are no float plane facilities available and the airport is not maintained during the winter. The airport has approximately 67 operations on a monthly basis.

The Talkeetna Airport has an asphalt runway 3,500 feet in length and 75 feet wide. The airport lighting is via pilot control and the weather data source is via transcribed weather broadcast. There is no designated runway for planes equipped with skis in the

winter although a snow pack is maintained when possible to allow for planes on skis. There are no facilities to accommodate float planes. A gravel helipad 480 feet in length and 85 feet wide is also available at the airport. The helipad is currently located on the active runway. The airport hopes to complete an apron expansion in 2007 to facilitate future helicopter operations. The airport averages approximately 82 operations on a daily basis.

Figure 7-2: Talkeetna Airport

The Willow Airport has a gravel runway 4,400 feet in length and 75 feet wide. The airport lighting is via pilot control. When available, weather data reports are provided on an hourly basis only. The airport is maintained by ADOT&PF year-round. Willow Lake is not a recognized float plane base but the lake is used regularly by airplanes in both summer on floats and winter on skis.

7.2 MUNICIPAL AIRPORTS

The Palmer Airport managed by the City of Palmer is one of two municipal airports located within the Borough. The Palmer Airport was constructed in 1947 and at that time consisted of two 3,000 foot runways. Ownership of the airport was transferred from the State of Alaska to the City of Palmer in 1963. The airport has three runways for aircraft use. The primary runway is a 6,009 foot long by 100 foot wide paved runway (16/34). A gravel runway is available for aircraft with tundra tires parallel to 16/34. This runway 16/34S is 1560 feet long and 60 feet wide. A 3,615 foot long by 75 foot wide paved runway (9/27) provides crosswind coverage but is closed to aircraft greater than 12,500 pounds. The 3,615 foot runway has a paved parallel taxiway while the 6,000 foot runway has only exit and apron taxiways. The airport has two apron areas, one for general aviation, and another for commercial cargo and/or passenger operations. The Federal Aviation Administration maintains a manned Flight Service Station with two employees. There are 215 based aircraft at the Palmer Airport.


Figure 7-3: Palmer Airport

Generally, all of the tie downs are leased during the summer months and approximately 75% of the spaces are leased during the winter months. Services available at the airport include: a flight school; 24 hour fuel service; engine rebuilding; airframe repair/painting; and avionics. Although there are no scheduled commercial flights using the Palmer Airport, one local air service has used the airport as a staging area for air shipments to rural Alaska for several years. Also, federal agencies periodically use the airport for logistical support and the state division of Forestry uses the airport during the summer fire season. Existing land use around the airport is compatible with general aviation use. The airport has extensive traffic and is listed as the 6th busiest airport in Alaska with an average of approximately 138 operations on a daily basis.

Figure 7-4: Wasilla Airport

The Wasilla Airport, managed by the City of Wasilla, is the other municipal airport located within the Borough. The airport is located on 370 acres. In 1993, the airport was relocated from a densely developed area of Wasilla to a less developed area near Jacobson Lake. The relocation was necessary due to incompatible land uses surrounding the old Wasilla Airport. The airport consists of a 3,700 foot long by 75 foot wide paved runway. The airport has 112 tie-down spaces and nine lease lots. The airport has been designed to include an additional 1.1 million square feet of aircraft parking and leasing space north of the runway and an additional 500,000 square feet of leasing area south of the runway. An airport master plan was completed in 2003. The master plan includes provisions for a parallel taxiway and tie down facility for local and transient light aircraft and to establish a commercial base of operations for aircraft servicing; charter; maintenance; and other aviation related businesses. In the long-term, the city is interested in establishing a commercial base of operation for region-serving passenger and/or cargo services that will provide ways to maintain the economic vitality of the region through the safe and efficient use of the transportation resources available to the community. Ideally, the airport should accommodate wheels, skis and floats. The Wasilla Airport's proximity to Jacobsen Lake makes it feasible for the airport to accommodate float planes. The property surrounding Jacobsen Lake has mixed land use purposes that may cause concern with future development of the facilities. The addition of a winter ski runway paralleling the existing runway would accommodate planes on skis. The existing land use surrounding the New Wasilla Airport is compatible with general aviation aircraft operations and business opportunities.

7.3 PRIVATE AIRPORTS

There are numerous private airstrips within the Borough. It is estimated that there are currently in excess of 100 such airstrips in locally populated areas and up to as many as 250 private airstrips through out the entire Borough. Many of the private airports are located within subdivisions in the road-accessible portion of the Borough. Many of these private airstrips have not received an airspace review by the Federal Aviation Administration (FAA). Several residential airparks have been developed throughout the Borough that provide private aviation airports for residents and local aviation enthusiasts.

As the borough continues to grow, the availability of large, open land areas that provide the space needed for safe aviation activities are limited in quantity and face more operational restrictions. The FAA does require that a private airport complete an airspace analysis evaluation to ensure the safe operations of aircraft in the vicinity of other developments in the area. Very few airport owners complete this evaluation and enforcement of this policy is limited due to lack of trained personnel and the quantity of airports needing completion evaluations.

Figure 7-5: Willow Airport

7.4 CONTROLLED AND RESERVED AIRSPACE

The Matanuska-Susitna Borough has areas of controlled and reserved airspace for various facilities located within the Borough boundaries as well as outside the boundaries. Reserved and controlled airspace includes military training areas, areas surrounding public airports, and designated flight routes between public airports. Although many of the facilities are located outside the boundaries of the Mat-Su Borough, they indirectly affect the allowed land use within the controlled area.

7.5 RECOMMENDATIONS OF PRIOR AIR TRANSPORTATION STUDIES

An Upper Cook Inlet Airport System Plan was developed in January 1982 to address the aviation needs of the Upper Cook Inlet Region for 5, 10, and 20 years into the future. The Upper Cook Inlet Region as defined by the plan included the Municipality of Anchorage and an area of the Mat-Su Borough bounded by Skwentna on the west, the Mat-Su Borough boundary on the north and south, and Sutton on the east.

The Upper Cook Inlet Airport System Plan recommended development of three new float plane bases and two new wheeled general aviation airports in the Mat-Su Borough. The float plane bases were proposed for Talkeetna (Lake Christiansen area), Wasilla, and Point MacKenzie. The wheeled general aviation airports were proposed for Wasilla (done in 1992) and Point MacKenzie. In addition, the plan recommended a new air carrier airport for the Willow area which, at that time, was the proposed capital site.

The recommendations of the Upper Cook Inlet Airport System Plan were reviewed and modified by the Borough's 1984 Transportation Comprehensive Development Plan. The proposed air carrier airport at the capital site was deleted and the development time for both float and general wheeled aviation facilities in the Point MacKenzie area were extended with development being contingent on the need to relieve congestion at the Anchorage area facilities.

The Alaska Aviation System Plan (AASP) is a comprehensive plan that identifies the aviation facilities and the needs of the aviation transportation system in Alaska. The plan was first completed in 1986 and has been updated twice once in 1992 and again in 1996. The plan is due for revision in the near future. Many of the recommendations in the AASP include establishing a criterion of standards use by airports and airport revenue sources for all state owned facilities.

7.6 EXISTING FEDERAL REGULATIONS

The FAA provides guidance on actions involving all types of airports. Airports by FAA definition include "any airport, heliport, helistop, vertiport, gliderport, seaplane base, ultralight flightpark, manned balloon launching facility, or other aircraft landing or takeoff area." Their definition does not include all locations where aircraft operations (landings and takeoffs) occur. For instance, it does not include all of the lakes and rivers, sand and gravel bars, glaciers, or areas of tundra used by many pilots to access remote areas or favorite fishing and hunting areas.

The FAA has the responsibility of collecting and distributing accurate airport data for the purpose of enhancing the safety of the National Airspace System (NAS). In order for the FAA to accomplish this task, airport owners or operators are required to report certain proposed activities to the FAA. First, they must inform the FAA of the intent to perform activities such as construction, alteration, deactivation, etc. in connection with an airport. Second, they must inform the FAA when such projects are completed.

The FAA performs aeronautical studies and airspace reviews on all airport proposals submitted to them. Airspace reviews deal with the effect the proposed facility will have on traffic patterns and airspace as well as the impact of manmade and natural objects on the airport. When federal funds are used for an airport facility, the FAA will either approve or disapprove the proposed facility. When federal funds are not involved, the

FAA will issue a document known as an airspace determination. The airspace determination results in a statement with regard to the use of associated airspace for the proposed facility. The statement is one of non-objection; non-objection with conditions; or objection. Environmental and land use compatibility impacts are considered in FAA determinations when Federal funds are used. In Alaska, the responsibility to approve and regulate airport operations rests with the governmental agencies having the authority to enact land use ordinances within their respective jurisdictions.

The Wendall H. Ford Aviation Investment and Reform Act for 21st Century (AIR-21) provides grant funds for general aviation airports listed in the latest published National Plan of Integrated Airports (NPIAS). General aviation airports with an identified need can get up to $150,000 per year each year that Congress budgets $3.2 billion or higher for the Airport Improvement Program (AIP). This entitlement is available to use in the fiscal year it becomes available and the following 2 fiscal years.

7.7 EXISTING LOCAL REGULATIONS

There are currently no Borough-wide land use regulations to control the location of proposed airports or the land uses surrounding airports. Although this lack of regulation is often perceived as freedom to develop land as one wants, this freedom can also have negative impacts when not incorporated in an overall regional plan. This was demonstrated in the City of Wasilla where the old airport was located too close to residential and commercial development that had been developed surrounding the facility. Due to the encroachment, the airport was unable to meet minimum FAA operational and safety standards for runway protection zones and transition zones at public airfields. A new municipal airport site was selected but had difficulty obtaining FAA approval due to the proximity of private airstrips.

7.8 DISCUSSION OF ISSUES

The Borough had a population of just over 76,000 in 2005. Although there are two municipal airports and eight public airports within the Borough, there are currently no regularly scheduled airline commuting services or air freight services available for residents. In addition, air transportation provides the only access to many of the non-road accessible areas within the Borough but there are no designated public float plane facilities for summer use or designated landing strips for planes equipped with skis in the winter.

As noted earlier, the FAA has the responsibility of collecting and distributing accurate airport data for the purpose of enhancing the safety of the National Airspace System. In order to properly perform this task, it is necessary for them to keep records on all airports whether public or private. FAA regulations require notification of intent to perform activities associated with airports, however, as a practical matter they are not

always notified of activities involving smaller, private airports. This can result in two or more airports developing in close proximity to each other or private airports developing in close proximity to public airports. Without the FAA airspace review, conflicts in air traffic patterns or with manmade or natural objects are not identified. The development of private airports without local governmental knowledge can affect the development of public airports or other public facilities such as schools for which land has been identified and set aside. This was the case with the relocation of the Wasilla Airport. The FAA was initially reluctant to approve the Wasilla public airport due to private airports within the vicinity.

Another concern with private airports is the need to balance conflicting desires and needs of residents within an area. One person's dream of a private airstrip next to his or her home may be in direct conflict with a neighbor's dream of peace and tranquility. Safety issues may also be of concern when airports develop within residential areas. There is currently no process by which neighboring residents are informed of proposed private airports.

Many areas within the Borough have become popular recreation sites for residents as well as visitors. These areas become congested with various recreational activities occurring at the same time. The potential for conflicts increase when occupants of aircraft, boats, jet skis, etc. all attempt to utilize the same area at the same time. Conflicts also increase between aircraft when an area becomes popular enough to draw sufficient air traffic.

7.9 RECOMMENDATIONS

Improved Airports

Recognizing the importance of aviation within the Borough, it is recommended that a system of improved airports and float plane bases be developed and maintained. The ADOT&PF airports should continue to be improved to provide for the needs of air taxi operators and private pilots. The improvements should be prioritized based on activity level and safety needs. The two municipal airports should be improved to provide for the needs of commercial aviation companies as well as air taxi operators and private pilots.

Land Use Compatibility

As the Matanuska Susitna Borough continues to develop, the implementation of a Borough ordinance that incorporates zoning and land use compatibility requirements should be considered. The Federal Aviation Administration does require that all public airports receiving federal funding comply with compatible land use grant assurances including “the adoption of zoning laws, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In

addition, it will not cause or permit any change in land use, within its jurisdiction that will reduce the compatibility, with respect to the airport, of the noise compatibility measures upon which Federal funds have been expended".[3] Proper zoning of land on and around the airport can prevent the need to acquire land in fee or easement to protect the airport.

Where the zoning authority refuses to enact appropriate zoning to protect the airport, the airport authority must be prepared to acquire the necessary control of land, especially in the approach areas, to ensure right of flight. Such acquisition is clearly more expensive than appropriate zoning. Failure to properly zone property creates the potential for conflicts with adjacent land uses that can not only cause expensive legal fees but also endanger the public and users of the airport. The FAA encourages appropriate zoning and planning to prevent encroachment by incompatible uses around the airport, which left unchecked, can ultimately cause an airport to close.

Float Plane Bases

Although public float plane bases are not generally recognized in the Borough, many of the lakes are used as float plane bases with the private sector providing the necessary facilities. Development of such facilities should be encouraged when the need is demonstrated. The facilities should be developed with appropriate FAA notification and airspace review and in compliance with US Coast Guard standards for navigable waterways.

Private Airfields

It is recommended that the Borough explicitly permit new private runways, and that a letter of non-objection from the FAA be required for any new private airstrips. A review by the FAA of proposed new private airstrips will identify any potential conflicts in air traffic patterns or with manmade or natural objects. Property owners within one-half mile of a proposed approach/departure and the airport itself should be notified prior to development. It is not intended that existing private airstrips be required to provide a letter of non-objection; they would be considered grandfathered. Owners of existing private airstrips are, however, encouraged to obtain a letter of non-objection from the FAA.

An Acknowledgement of Existing Land Use Regulations is currently required for new construction prior to any residential development in the Matanuska-Susitna Borough. It is recommended that this acknowledgement be expanded to include all aviation developments and submitted to the Code Compliance staff for review and approval. This will ensure that new airstrips developed for private use will have adequate clearance zones for safe operations and that multiple private facilities will not be able to be developed should a conflict in airspace or airport layout be discovered during the permit approval process.

[3] AC 150/5300-13 Airport Design

Areas of Air Traffic Congestion

As popular recreation areas within the Borough become congested resulting in air traffic conflicts, FAA-approved pilot handouts should be developed and distributed to local pilots. The handouts would inform pilots of the correct flight patterns for an area thus reducing the potential conflicts. The handout could be utilized in conjunction with the FAA Aviation Facilities Directory currently available. It is anticipated that the airspace in the Borough will remain Class E, uncontrolled airspace due to the number of operations in the region.

Capital Projects

The ADOT&PF does not have any major capital projects planned at these facilities in the short term planning period, the next 5 – 10 years. The ADOT&PF does have a bid ready for Lake Louise; however these plans are currently waiting for funding that will build a usable airport. Talkeetna is the only state facility currently scheduled for airfield improvements. An apron expansion to accommodate helicopters is scheduled for 2007. It is anticipated that the financial resources of the federal aviation trust fund for Airport Improvement Program funding will continue to feel financial restraints during the next 10 years. The federal resources available will limit all future airport development projects to only essential operational improvements deemed necessary by the FAA to keep the airport open and operating in a safe manner. Many small general aviation airports will see declining financial resources available for facility improvements.

Acquisition of Facilities

There are generally five resources used to finance airport development, airport cash flow, revenue and general obligation bonds, Airport Improvement Program grants, passenger facility charges, and state and local grants. Access to these sources of financing varies widely among airports, with some large airports maintaining substantial cash reserves while the small commercial service and general aviation airports often require subsidies from local and state governments to fund operating expenses and finance modest improvements. Historically the combined resources have been adequate to achieve needed development.

The State of Alaska is considering privatization of several aviation facilities over the next 20 years. The AASP recommends a policy that supports the transfer of airports from state to local control. While this needs to be evaluated on a case-by-case basis, dependent on the capabilities and needs of the local government it is recommended that the Borough consider the acquisition of the state-owned facilities. This will require extensive financial and land use planning prior to acquisition to ensure land use compatibility and to determine whether an airport can generate sufficient revenues to cover maintenance and operations expenses.

8 THE ALASKA RAILROAD

The Alaska Railroad has played a fundamental role in the development and economy of the Mat-Su Borough. Wasilla, Palmer, Chickaloon, Sutton and other communities got their start as a byproduct of railroad construction and operation between 1915 and 1920. Although some early industry such as coal mining has been relegated to history for the most part, gravel extraction and transport continues to be a thriving basic industry. The railroad has expanded its range of freight and passenger services, most dramatically over the past 20 years. It will play a key role in the long-term growth of Port MacKenzie and development of Mat-Su Valley industry.

The railroad was purchased from the Federal government by the State of Alaska in 1985. It operates independently as a state-owned corporation – the Alaska Railroad Corporation, or ARRC – under the direction of an appointed board of directors.

8.1 EXISTING CONDITIONS

As part of the ARRC capital improvements program, the railroad is nearing completion track realignment between Anchorage and Wasilla. The multi-year realignment program has eliminated or reduced the curvature of approximately 70 sharp curves in this part of the main line. Among other benefits, this program will reduce the train running time between Anchorage and Wasilla from 95 minutes to less than an hour. This travel time reduction is particularly beneficial in at least two ways:

- The running time between Anchorage and Fairbanks prior to the improvements was approximately 12 hours. Because Federal regulations prohibit a single train crew from being on duty for more than 12 hours, train delay would often result in the need to replace the crew at considerable expense and additional delay. Track improvements that cut a half an hour from the average running time will frequently make the difference between a crew making the entire run between Anchorage and Fairbanks or having to be replaced enroute.
- While it will not guarantee the viability of Mat-Su to Anchorage commuter rail service, the improved running time will make such service operationally feasible for the first time.

From the junction of the main line and the Palmer Branch (near the junction of the Parks and Glenn highways) west to Wasilla, the railroad was built with a number of sharp curves, which reduce train speed, increase rail and wheel wear, and lengthen the distance by rail in comparison to a relatively straight rail alignment. In addition, the current alignment limits road connections along the south side of the Parks Highway. The ARRC desires to eliminate at-grade crossings, reduce track curvature, and improve operating efficiencies. Removing at-grade crossings reduces the risk of vehicle-train

accidents and eliminates the necessity of sounding the train horn at every at-grade crossing. Reducing sharp track curvature reduces the risk of train derailment, reduces maintenance of way costs, and shortens travel time. ARRC recently commissioned the following studies to address rail safety in the Wasilla area:

- **South Wasilla Track Realignment Environmental Assessment** (2005). Prepared for ARRC by HDR Alaska, Inc. The ARRC is planning to straighten curves along four miles of mainline track in south Wasilla to enhance safety, reduce horn noise, improve train travel time, improve operating efficiencies and reduce costs. The study assessed the environmental consequences of the changes.
- **Knik-Goose Bay Road Grade Separation Alternatives Analysis** (2005). Prepared for ARRC by HDR Alaska, Inc. This alternatives analysis study examined several different options for grade-separating the Knik-Goose Bay Road rail crossing just south of the Parks Highway.

8.2 WASILLA AREA ALTERNATE ROUTES

Both the Alaska Railroad (ARRC) and the Parks Highway go through downtown Wasilla, providing a critical transportation link between south-central Alaska and Interior Alaska. For more than 20 years, there has been growing interest in re-routing the railroad south of the current alignment and considering an additional highway route south of Wasilla to carry through traffic. However, the growing population and related traffic growth coupled with ever growing train traffic on the ARRC mainline through town has led the ARRC, ADOT&PF, and the City of Wasilla to recently commission studies to examine alternative routes and assess impacts. These studies include:

- **Wasilla Realignment Alternatives Analysis** (2005). Prepared for ARRC by HDR Alaska, Inc. This study identified and evaluated potential routes for the Alaska Railroad mainline track to bypass downtown Wasilla. This analysis identified a range of potential realignment routes, established evaluation criteria to assess the routes, and presented analysis to narrow the corridors to those that are reasonable and practical.
- **Wasilla Alaska Railroad Relocation Study** (2002). Prepared for the City of Wasilla by LCMF Inc. This study identified potential rail corridors around the City of Wasilla.
- **Draft Parks Highway Corridor Management Plan**: Vision Statement and Scoping Document (2002). Prepared for ADOT&PF by CH2MHill. This is a conceptual-level draft plan that addressed the long-term transportation needs and future development of the Parks Highway corridor.
- **New Parks Highway Location Study** (1982). This study looked at alternative alignments for the Parks Highway through the Wasilla area to accommodate the projected traffic growth while the highway continues to function as an interstate highway.

Co-located Wasilla Bypass

The opportunity to develop a corridor to co-locate both rail and highway bypasses is an idea the ARRC and ADOT&PF have been exploring. The most recent analysis conducted for the ARRC was the Wasilla Realignment Alternatives Analysis in 2005. This study assumed that the bypass route would consist of a 500-foot wide corridor right-of-way (ROW), wide enough to accommodate both rail line and a highway. The 500 foot ROW assumes a highway ROW of 300 feet and a rail ROW of 200 feet. Additional ROW would likely be needed at highway interchanges.

During the 2005 State Legislative session, $2 million was included in the Governor's Fiscal Year 2006 Transportation Initiative to be used by ADOT&PF to initiate a joint rail/road corridor study to determine if a shared transportation corridor around Wasilla is needed. The ARRC contributed an additional $2 million in funding to the project. The funding will provide further environmental analysis and preliminary engineering of alternative routes. Land development is rapidly closing opportunities for a bypass corridor that avoids improved property. Corridor preservation measures should be implemented to both alert prospective homeowners and to preserve the ability to construct a bypass without high social and environmental impacts or cost-prohibitive right-of-way costs.

8.3 NEAR-TERM PROJECTS

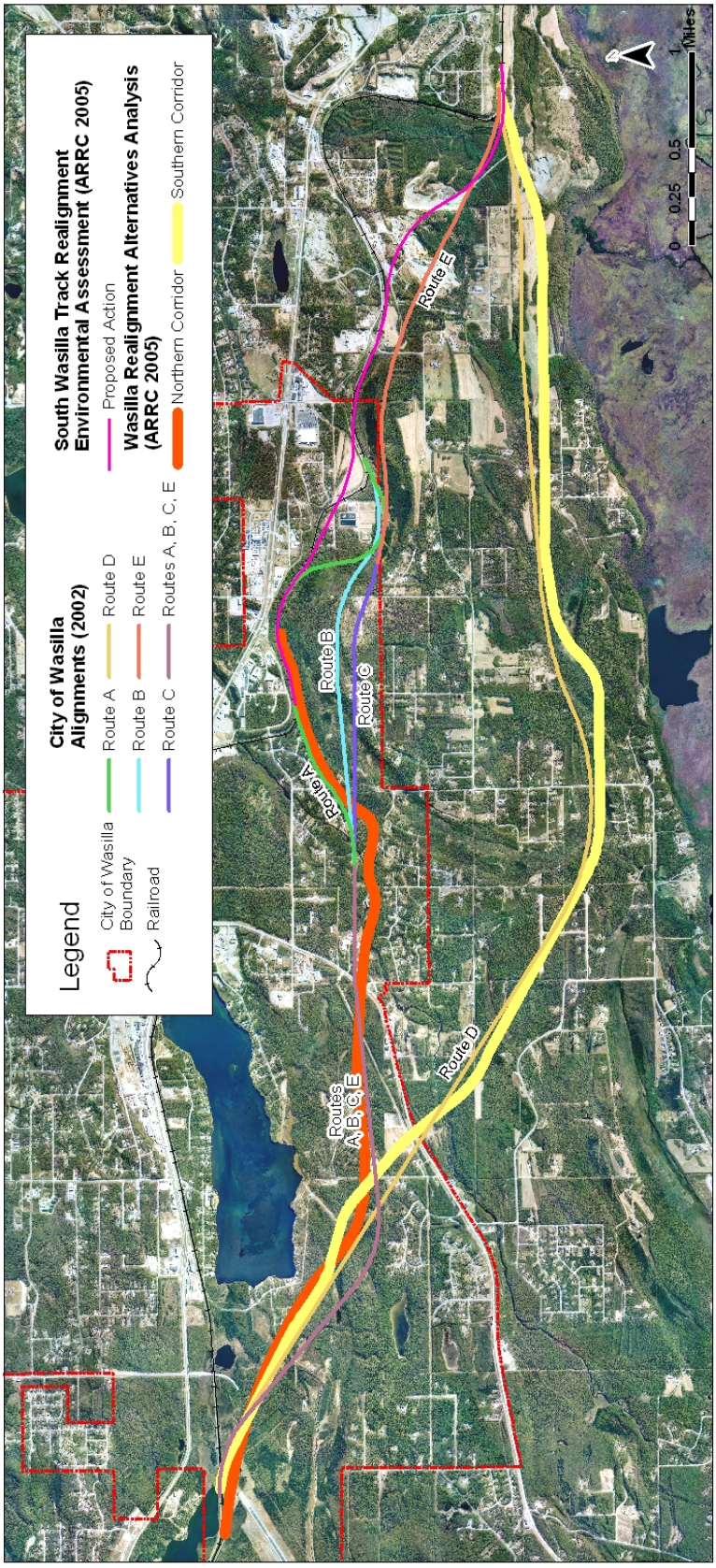
In the shorter term, regardless of whether the rail line is re-routed away from downtown Wasilla in the future, the ARRC is pursuing a four-mile track realignment project – the South Wasilla Track Realignment – to improve the safety and efficiency of its operations. The project meets the goals of improved operational efficiencies, enhanced safety, decreased train travel times, reduced train horn noise, and reduced operations and maintenance costs. This realignment in south Wasilla would begin in the vicinity of ARRC milepost 154 (south of Gershmel Loop, where the track begins a sharp curve to the north), and reconnect with the existing alignment near ARRC milepost 158 (just south of the intersection of the Old Matanuska Road and Glenwood Avenue). Figure 8-1 illustrates the preferred routing as well as the alternate routes considered.

The final route selection will be based on the findings of the Rail Line Extension Environmental Impact Statement (EIS). The EIS will look at several alternative routes plus the no action alternative and will include an extensive public process to help determine the final alternative.

8.4 RAILROAD-HIGHWAY GRADE CROSSINGS

A railroad-related issue that directly impacts the movement of people within the Mat-Su Borough is the adequacy and safety of the railroad-highway grade crossings located on the main line and the Palmer branch. The decision to grade- separate a rail-highway

crossing is primarily a matter of safety and economics. Separating a grade crossing normally requires a significant investment and impacts many users and nearby property owners.


Legend
City of Wasilla Boundary
Railroad
City of Wasilla Alignments (2002)
Route A
Route B
Route C
Route D
Route E
Routes A, B, C, E
South Wasilla Track Realignment Environmental Assessment (ARRC 2005)
Proposed Action
Wasilla Realignment Alternatives Analysis (ARRC 2005)
Northern Corridor
Southern Corridor
Route A
Route B
Route C
Route D
Route E
Routes A, B, C, E
0 0.25 0.5 1 Miles

Decisions should be based on long term, fully allocated life cycle costs, including both highway and railroad user costs, rather than purely on initial construction costs. And as traffic is increasing on nearly all roads in the Mat-Su, projected traffic levels should be used. Analysis of whether to separate an at-grade crossing should consider the following[1]:

- Savings in highway-rail grade crossing surface, crossing signal installation, and maintenance costs;
- The benefits of improved emergency access;
- Eliminating train/vehicle collisions (by using accident prediction values);
- Driver delay cost savings;
- Costs associated with providing increased highway storage capacity (to accommodate traffic backed up by a train);
- Fuel and pollution mitigation cost savings (from idling queued vehicles);
- Effects of any "spillover " congestion on the rest of the roadway system;
- The potential for closing one or more additional adjacent crossings; and
- Train derailment costs.

At-grade crossings have been eliminated in the Mat-Su Borough primarily in connection with major highway improvement projects. For example, recent projects include the at-grade crossing on the Glenn Highway eliminated by the Glenn/Parks interchange project and an at-grade crossing on the Parks Highway one mile west of the Wasilla Airport eliminated by a Parks Highway upgrade project.

For several years the at-grade crossings on the ARRC have been analyzed using an accident prediction model developed through FHWA research. The analysis is based on the Alaska Policy on Railroad/Highway Crossings[2]. ADOT&PF calculates and periodically updates an accident prediction value (APV) for crossings on the railroad that see regular use. The APV consists of a number of factors representing characteristics of the crossing such as traffic volume, the number of trains per day, the type of protection, etc., and is equivalent to the expected number of accidents per year at the crossing. Figure 8-2 contains the data describing the relationship between calculated APV and the appropriate recommended crossing improvement. Recently, a new diagnostic team has been created to review rural crossings with the added criteria of secondary and emergency access routes.

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[1] U.S. DOT, Federal Highway Administration, Guidance on Traffic Control Devices at Highway-Rail Grade Crossings, November 2002.(http://safety.fhwa.dot.gov/media/twgreport.htm#72)

[2] A joint policy developed by the DOT/PF, ARRC, and the Federal highway Administration to inventory the crossings in the state, determine reasonable protection types for each "class" of crossing, and "develop a reasonable structured priority system to implement improvements through a rational and systematic allocation of available resources." The policy was revised most recently in September 1998.

Table 8-1 displays a summary of all at-grade crossings in the Mat-Su Borough, and includes the following information:

- Road names
- Calculated APV values
- Organization responsible for maintenance of the crossing
- Recent or proposed improvements

The FHWA model develops threshold values of the APV to determine the optimum cost-effective safety improvement decisions at each crossing. The allocation model arrives at a threshold of 0.1 as the most cost-effective value for considering going from passive devices only (signs, markings) to active protection.

Figure 8-2
Accident Prediction Value Qualitative Procedure

EXISTING TRAFFIC CONTROL DEVICE	Calculated Accident Prediction Value, APV	RECOMMENDED ACTION FOR IMPROVEMENT
Passive	0.08 to 0.12[2] 0.12 to 0.15 0.15 to 0.23	See note below. Flashing lights Flashing lights or gates and flashing lights
	0.23 to 12.4	Gates and flashing lights
	12.4 to 18.5	Gates and flashing lights or grade separation
	Greater than 18.5	Grade separation
Flashing lights	0.12 to 0.18[2] 0.18 to 3.7	See note below Gates and flashing lights
	3.7 to 5.6	Gates and flashing lights or grade separation
	Greater than 5.6	Grade separation
Gates	1.32 to 1.98[2] Greater than 1.98	See note below Grade separation

[1] When the calculated hazard index falls within this range, the decision may be to do nothing, improve the existing traffic control system, install a different type of traffic control system, or make some other improvement at the crossing.

For about the past ten years ADOT&PF has maintained a general policy to eliminate all at-grade crossings on the Parks, Seward, and other major highways. Most of the remaining at-grade crossings on these highways have been programmed in the STIP at one time, although most of the crossings that have yet to be done have been moved into the outer years as a result of recent funding limitations. Only one of the 53 at-grade crossings listed in Table 8-1 is included in the current 2006-2008 STIP. The Broad Pass grade separation on the Parks Highway is programmed for design in Federal fiscal year 2006:

- **Parks Highway: MP 194 – Broad Pass RR Overcrossing** (Need ID 7000): Replace at-grade crossing with a grade separated crossing.

Construction of the grade separation is shown in the STIP taking place in an unspecified year after 2008.

In addition, improvement or separation of the Knik-Goose Bay Road crossing has been the subject of recent work investigating solutions to congestion in the vicinity of the intersection of the Parks Highway with the Knik-Goose Bay Road and the adjacent railroad crossing. Most recently, an alternatives analysis was completed for the ARRC, ADOT&PF, the Mat-Su Borough, the City of Wasilla and others.[3] The recommendation of the analysis, which considered both road-over-rail and rail-over-road alternatives, is to elevate the railroad track over the Knik-Goose Bay Road. This alternative essentially had much lower impacts on Downtown Wasilla and nearby areas than any of the road-over-rail options.

Figure 8-3: View of the intersection of the Parks Highway, the Knik-Goose Bay Road and the Alaska Railroad.

[3] *Knik-Goose Bay Road Grade Separation Alternatives*, January 2005, HDR Alaska, Inc.

Table 8-1
Mat-Su Borough At-Grade Crossing Accident Prediction Values

ROAD NAME	ROADLOG MILEPOINT	A.R.R. MILEPOINT	LINE DESIGNATION (BRANCH)	MAINTENANCE RESPONSIBILITY	DOT ACCIDENT PRDICTION VALUE	REMARKS	STIP
Walton Road		**155.10**	MainLine	Orphan			
Abby Road		**155.30**	MainLine	MSB	0.0132		
Alagco Pit		**155.60**	MainLine	ValleyBank			
Fairview Loop	**1.240**	**156.20**	MainLine	DOT/PF	0.0208		
Jude Road		**157.10**	MainLine	Wasilla	0.0098		
Glenwood Avenue		**158.60**	MainLine	Wasilla	0.0152		
Palmer Wasilla Highway		**158.80**	MainLine	DOT/PF			
Matanuska Road		**158.90**	MainLine	DOT/PF	0.0478	Will be modified or eliminated with upcoming Parks Highway: Crusey to Lucas Project, future year construction.	
Knik-Goose Bay Road	**0.030**	**159.90**	MainLine	DOT/PF	0.3584	Crossing pad repair, main crossing. Signal work incl. median island, signal and gate mods, signing w/HSIP. Upcoming Parks Hwy. Project(s)	
Snyder Crossing		**160.80**	MainLine	Wasilla	0.0277	Crossing expected to be grade separated with upcoming Parks Highway project in this area.	Snyder crossing no longer included in Parks Hwy 42.1-44 project description.
Lucille Lane	**0.011**	**161.20**	MainLine	Wasilla	0.0171	Adjacent traffic signal modifications w/upcomong Parks Hwy. Rehab. Project.	
South Mack Drive		**162.30**	MainLine	Wasilla	0.0190	Mack Road paving project improved approaches, signs and markings.	
Pittman Road	**0.060**	**166.30**	MainLine	DOT/PF	0.0258	Adjacent traffic signal modifications w/upcomong Parks Hwy. Rehab. Project.	
Meadow Lakes		**167.28**	MainLine	DOT/PF	0.0168		
?		**170.40**	MainLine	Orphan	0.0077		
CherriLakeRd-SafetyCncrns		**171.25**	MainLine	Houston	0.0640	Railroad/Highway Grade Crossing Signals, Gates installed 2003.	
Lynx Lake		**180.00**	MainLine	MSB	0.0229		
Kelly Lake Access		**183.67**	MainLine	LatterDaySaints			
Old Willow Road	**1.390**	**185.50**	MainLine	DOT/PF	0.0131		
Fishhook/Willow	**30.820**	**186.90**	MainLine	DOT/PF	0.0168		
AKPacificPowderCo		**193.50**	MainLine	AKPacific			
Kashwitna Trail		**197.80**	MainLine	MSB	0.0074		
Hidden Hills Access		**202.94**	MainLine	MSB	0.0653	Railroad/Highway Grade Crossing Signals, Gates installed 2003.	
Parks Highway	**56.360**	**206.25**	MainLine	DOT/PF	0.0608	New crossing pads, grade raise, approach repaving by M&O in 2003.	
Lankford Farm Xing		**209.55**	MainLine	Lankford,S			
Parks Hwy-Sunshine	**65.500**	**214.30**	MainLine	DOT/PF	0.0206	New crossing pads, grade raise, approach repaving by M&O in 2003.	
Farina Driveway		**221.94**	MainLine	Louis Farina			
Gravel Pit Access		**223.60**	MainLine	ARRC			
Talkeetna Highway	**13.430**	**225.70**	MainLine	DOT/PF	0.0221	New crossing surface pads, grade raise w/Talkeetna Spur Road 3R 2003.	
FAA Road	**0.030**	**226.40**	MainLine	DOT/PF	0.0168	One track out of service. Needs crossing surface repair.	
Chase Trail		**231.60**	MainLine	MSB	0.0324		
Parks Highway	133.44	279.65	MainLine	DOT/PF	0.1471		
CORONADO MINE RD		298.64	MainLine	GOLDEN ZONE INC.	0.0110		
Parks Highway	158.91	305.50	MainLine	DOT/PF	0.2024		Replace at-grade crossing with a grade-separated crossing. Design in STIP for FFY 2006.
E. Mantanuska Spur Rd.	**0.425**	**A0.20**	PalmerBr.	DOT/PF	0.0116	Crossing Surface Reconstruction. Old wood plank surface in poor condition. Unfunded HSIP project.	
Kelper Crossing		**A1.18**	PalmerBr.	Orphan			
Grandview Road (Alagco Pit)	**0.364**	**A2.10**	PalmerBr.	Orphan	0.0295		
Conrock Pit		**A2.70**	PalmerBr.	WilderConstr			
Herman Road	**0.014**	**A2.77**	PalmerBr.	Orphan			
Springer Loop Outer	**0.011**	**A3.28**	PalmerBr.	DOT/PF	0.0319		
Springer Loop Inner	**0.010**	**A3.70**	PalmerBr.	DOT/PF	0.0350		
Fairgrounds Exit		**A4.05**	PalmerBr.	AlaskaStateFair,Inc			
Fairgrounds Exit		**A4.32**	PalmerBr.	AlaskaStateFair,Inc			
Springer Loop Inner	**2.443**	**A4.94**	PalmerBr.	DOT/PF	0.0266		
Commercial Drive	**0.012 &**	**A5.28**	PalmerBr.	City of Palmer	0.0149		
E. Fireweed Avenue	**0.389**	**A5.94**	PalmerBr.	DOT/PF	0.0308		
Ped. Walk Way		**A6.01**	PalmerBr.	City of Palmer			
Evergreen Avenue	**0.011**	**A6.05**	PalmerBr.	City of Palmer	0.0342		
BlueBerry Avenue	**0.118**	**A6.42**	PalmerBr.	City of Palmer	0.0055		
South Valley Way	**0.264**	SP 01-1	MatMaid	City of Palmer	0.0191		
South Chugach St	**0.126**	SP 02-1	Palmer Ind	City of Palmer	0.0173		
Thuma Street	**0.129**	SP O2-2	Palmer Ind	City of Palmer	0.0056		
Cope Industrial Way	**1.288**	SP O2-3	Palmer Ind	City of Palmer	0.0163		

Source: Alaska DOT, Alaska Traffic Manual Supplement, and 2004-2006 STIP, Amdt. #8, 9/23/05, http://www.dot.state.ak.us/stwdplng/cip_stip/stip04_06.shtm

9 MARINE TRANSPORTATION

Marine transportation within the Borough has made significant progress in the ten years since the completion of the 1997 Long Range Transportation Plan. Port MacKenzie has become a functional port with both barge and deep water docks, and the first Port MacKenzie to Anchorage ferry is in development with implementation expected in 2008. This chapter is based on existing planning documents updated with information current as of 2006. The Borough is currently updating the Port MacKenzie long range plan.

9.1 PORT DEVELOPMENT

Background

The Borough has historically given a high priority to the development of a deep water port and related industrial and infrastructure development at the Point MacKenzie area. Port MacKenzie is planned to function as the primary regional facility for the export of resources and for the import of supplies and equipment. The Point MacKenzie area has several characteristics which make it ideal for development as a port district, including access to deep water, the availability of substantial Borough and state uplands for port and industrial development, and close proximity to the Anchorage port and airport systems. Figure 9-1 shows the location of the Port MacKenzie Development District

Planning studies for port development were begun in 1981. Three specific sites were considered for development as a deep water port. They included the East Port, South Port and Knik Dock. In May 1993, the Borough adopted the Point MacKenzie Area Which Merits Special Attention Plan (also known as the Point MacKenzie AMSA). The purpose of this plan was to: facilitate development of a port, associated upland uses, and transportation corridors, including permit approval requirements; protect other important uses and values of the area, and minimize conflicts with port development; and plan for future development of the port district and wise utilization of its coastal resources.

The East Port site was chosen in 1998 as the site for Port MacKenzie, and construction of an access road and a sheet pile barge dock began in 1999. The benefits of the East Port site include better protection from wind and wave exposure in comparison to the other potential Borough sites, as well the key advantage of proximity to large blocks of unsubdivided uplands in single and public ownership for dock facility expansion and industrial development. The first commercial load to be shipped across the dock occurred in 2001, and consisted of pre-fabricated houses for shipment to Western Alaska communities.

Figure 9-1 Port MacKenzie District Development Plan

In 2004, a $14.5 million deep water dock was added to provide infrastructure for the loading and export of wood chips and other bulk commodities, financed by Borough bond sales and private funds. A conveyor constructed to move bulk materials from the storage site on top of the bluff to the dock was financed and built by a chip exporting company, which is available for hire to other shippers who may want to load bulk goods at the port.

Figure 9-2 – Loading Wood Chips for Export at Port MacKenzie

The availability of natural gas nearby and close proximity to shipping routes make Port MacKenzie an attractive location for industries that target Pacific Rim markets. The port area has been considered as a potential site for several port/industrial development projects in the past. These projects included importing iron ore from South America, processing it into high quality iron briquettes used in making steel in a plant at the port, and shipping the finished product to steel makers in the Pacific Rim.

One factor that will facilitate port development is that the Alaska Legislature approved bonding authority up to $50 million for a dock and associated infrastructure to service industrial development at Point MacKenzie. The bonding was approved under the Alaska Industrial Development and Export Authority (AIDEA) Development Finance Program. The bonds would be sold by AIDEA and repaid by user fees paid by tenants for use of the dock.

Port Infrastructure

The initial development of Port MacKenzie has included infrastructure necessary for the current use and future growth of the port. A road to the port site connecting to the Point MacKenzie Road was constructed as part of the initial barge dock project. Electrical power and telephone have also been extended to the port site. In the near term, the port plans to add infrastructure improvements including:

- Extending natural gas to the site,
- Improving the dock access road by reducing the maximum grade of the road,
- Improving the Point MacKenzie Road to include paving and realignment from the current end of pavement at its intersection with Burma Road to the port,
- Constructing a ferry terminal building to include Port offices,
- Expanding the usable area behind the face of the barge dock by approximately eight acres and adding a public boat launch, and
- Constructing a security building at the port entrance gate.

Other road corridors proposed to serve as access to the port and industrial area include Burma Road Realignment to South Big Lake Road as the mid-term road access; and a route west across the Little Susitna River and then north connecting Point MacKenzie with the Parks Highway at Willow as the long-term road access. Moreover, if ports are developed on a regional basis with each port specializing in different activities rather than competing directly, access to the Anchorage port and airport facilities may be important to the success of a port at Point MacKenzie.

Extension of a railroad connection between the Alaska Railroad and a port at Point MacKenzie has been deemed necessary for the full utilization of the port facility. The feasibility of shipping resource products or importing supplies and goods may depend on the availability of rail service. The Borough Assembly has approved a road and railroad corridor from the port site north to connect with the existing Alaska Railroad and the Parks Highway north of Willow. Please see Figure 9-3 which illustrates the approved road/rail corridor connecting the Point MacKenzie area with the Parks Highway.

Figure 9-3: Approved Willow corridor

9.2 POINT MACKENZIE TO ANCHORAGE FERRY

Background

The Borough has been encouraging the development and operation of ferry service between Point MacKenzie and Anchorage for some time. A study done for the Borough by Parker Associates in 1980 indicated that a car ferry operation across Knik Arm from Anchorage to Point MacKenzie would be feasible upon completion of a road to Point MacKenzie. The ferry service envisioned would provide a connection between Port MacKenzie and Anchorage across Knik Arm of Cook Inlet until such time as a bridge is constructed.

Construction of the barge and deep draft docks and an access road north of Point MacKenzie have been a key to development of the adjacent land and creation of a commercial/industrial base in the Borough. Now that the docks, access road and utilities are in place, ferry service would greatly aid the growth and development at Port MacKenzie, principally by reducing the travel times between Anchorage and the Port by an hour and a half to two hours depending on time of day.

Short-term Ferry Development Plans

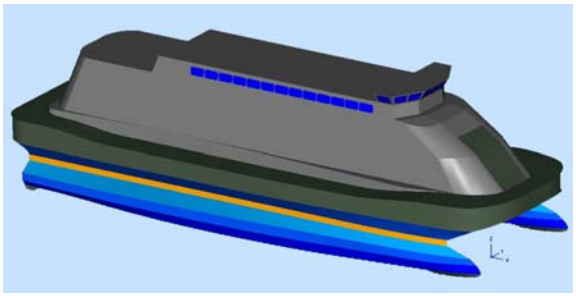
As of 2006, the Borough has Federal funding in place for the first ferry, as well as partial funding of ferry terminals at Port MacKenzie and Anchorage. The Mat-Su Borough and the Alaska Railroad's preferred site for the ferry terminal in Anchorage is the Ship Creek Point site. As of mid-June 2007, the Municipality of Anchorage prefers North Star Terminal; however, permits and a sub-lease from North Star have not been granted..

One vessel will be in operation initially, with the prospects for an additional vessel dependant on demand for the service. The first vessel is being developed by the US Office of Naval Research with participation by the Borough and numerous naval architects and marine systems engineers. Initial research and design work was performed by Lockheed Martin with the intent of developing a new, technologically advanced watercraft. The ferry is designed to shift between conventional SWATH[1] mode used for high-speed travel and a "barge" mode for operation in shallow water and to load/unload vehicles at unimproved sites. This is accomplished through the use of a moveable car deck that can be raised for speed and good sea-keeping, or lowered to become part of the water-displacing portion of the vessel, allowing it to operate in shallow water. The Navy is interested in developing a "proof of concept" vessel that would demonstrate the applicability of this vessel type as a landing craft to support amphibious operations. Following testing by the Navy, the Borough will be able to acquire the vessel. The key characteristics of each mode are shown below in Table 9-1.

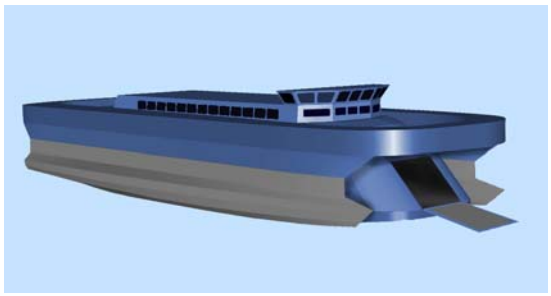
[1] SWATH stands for Small Waterplane Area Twin Hull. A SWATH vessel is similar in appearance to a catamaran, but with a different hull shape.

Figure 9-4 shows an artist's rendering of the proposed ferry, in SWATH, or cruising mode and in barge mode with the cardeck in lowered position. The ferry can also operate in an intermediate mode in which its characteristics resemble a catamaran. With the car deck in up position and the vessel lightly loaded, it can cruise at an estimated 20-25 knots in this "catamaran" mode. The vessel is in final design, and these characteristics may change.

Lockheed Martin SWATH Ferry Design



Ferry in SWATH Mode



Ferry in Barge Mode

Renderings Courtesy Lockheed Martin, 2005

Figure 9-4: Preliminary Cook Inlet Ferry Design

Table 9-1: Proposed Vessel Characteristics

Characteristic	Car Deck Position	Value
Length Overall	n/a	190 ft
Beam (width)	n/a	66.7 ft
Passenger Capacity	n/a	60 minimum
Vehicle Capacity	all	20-25 passenger vehicles/light trucks 4 tractor-trailers
Crew	all	3-4
Speed Barge Mode Catamaran Mode SWATH Mode	down up up	5 knots 25 knots 20 knots
Draft - Barge Mode Catamaran Mode SWATH Mode	down up up	3.8 ft 8.8 ft 11.7 ft

Demand for Ferry Service

A ferry demand analysis conducted for the Borough predicted limited demand for the initial service. Assuming that ongoing Borough support for the ferry service is sufficient to make it clear to potential Port MacKenzie investors that the ferry service will not be just a temporary experiment, residential and commercial development in the Point

MacKenzie area is expected. Five years from start-up, sufficient demand is anticipated that the ferry service will be at capacity during the peak periods. The demand forecast is summarized in Table 9-2. The anticipated markets for the initial ferry service include travel related to:

- Industrial development at Port MacKenzie which will draw workers from Anchorage;
- Residential development in the Point MacKenzie area which will produce commuters to Anchorage;
- Recreational travel from Anchorage to Point MacKenzie and beyond, both summer and winter;
- Freight in truck trailers, both between Anchorage and Mat-Su to serve industrial development at Port MacKenzie;
- Visitors to or from Anchorage and tours operated out of Anchorage.

These initial markets are the product of demand created by significant time and cost savings offered by a ferry service, in combination with the best revenue vs. cost per trip opportunities.

Table 9-2: Summary of Mat-Su - Anchorage Ferry Demand

Season	Timing	Total One-way Passenger-Trips/ Month		One-way Bus Trips per Month		Total One-way Auto-Trips/ Month		One-way Truck Trailer Movements per month	
		low	high	low	high	low	high	low	high
Summer	At Start-up	1,581	3,187	0	43	906	1,836	129	292
	Start-up + 5 Years	7,655	23,590	90	228	4,847	15,787	245	933
Winter	At Start-up	2,249	4,220	0	43	1,220	2,284	129	271
	Start-up + 5 Years	7,767	23,663	86	215	4,971	15,989	245	894
Fall/Spring	At Start-up	559	1,574	0	43	370	942	129	271
	Start-up + 5 Years	4,937	19,324	86	215	3,541	13,800	245	894

Source: *Cook Inlet Ferry Demand Analysis*, HDR Alaska, Inc., 2005.

Markets also exist for service between Anchorage/Mat-Su and Kenai:

- Trailers moving between Anchorage and Kenai-Soldotna and possibly empties returning;
- Kenai Peninsula residents traveling to Anchorage and Mat-Su; and
- Anchorage and Mat-Su residents traveling to the Kenai-Soldotna area or beyond.

As Port MacKenzie and the area near it grow and develop, additional markets will emerge. The most important of these will include:

- Mat-Su residents commuting to work in Anchorage;
- Mat-Su residents shopping in Anchorage; and

- Float plane owners, assuming a float plane base is developed within 15 miles of Port MacKenzie.
- Small tourism business with increased access to Anchorage residents and Anchorage visitors.

Other markets appear immature at the present, but could develop given positive economic and other developments. These markets include:

- Passenger and/or freight service to Williamsport or Iniskin Bay to support the development and/or operation of the Pebble Copper Mine;
- Passenger and/or freight service to Tyonek.

Future Ferry Prospects

As growth in the Point McKenzie area generates more travel to and from Anchorage, a second ferry could be required. A second ferry would give the service the ability to provide sailings in each direction every half-hour. Initially, the more frequent service would be offered during peak periods, with service each hour service continuing during the off-peaks. Capacity of the system could be expanded as demand warrants over time to an assumed maximum of two 200-car ferries operating simultaneously. Such a system, operating 16 hours per day, would have a theoretical capacity of over 12,000 passenger vehicles per day. Peaking and handling of trucks would reduce the likely actual capacity, but it would still be expected to be able to carry 8,000 or more vehicles per day.

9.3 RIVER AND LAKE WATERBORNE TRANSPORTATION

River and lake waterborne transportation provides an important type of access for some of the non-road accessible areas of the Borough. The river system provides access to private residential and recreational properties as well as commercial and public recreational properties in the more remote areas of the Borough. Area lakes also provide access to some properties not otherwise accessible. A good example of this is Big Lake. In the Big Lake area, there are homes, businesses, and recreational properties that are accessible only by water.

Currently, public and private boat launches provide the necessary facilities for river and lake waterborne transportation. It is important that these facilities continue to be available to users. Future availability of existing private facilities could be an issue. There are some concerns associated with the operation and maintenance of the facilities. The first issue is the condition of the private facilities as it relates to safety. Facilities need to be maintained to ensure the public's safety. Another concern is litter cleanup at the facilities as well as along the waterways being used for transportation. Funding sources are available for the government-owned development of boat launch facilities, but those same funding sources are generally not available for the operation and maintenance of the facilities. It is important to partner with private launch facilities to

guarantee access and reduce government maintenance costs. It is also important that maintenance and operating funds be identified and provided for public boat launch facilities.

9.4 RECOMMENDATIONS

Port Development

Continued development of Port MacKenzie is recommended. To the extent that Federal or state grants can be obtained to further the improvement of the port area infrastructure, upgrades and improvements should be made pursuant to the Long Range Port MacKenzie Plan. If bonding is required to make an improvement, the improvement should be linked directly to private investment that will provide a return on the Borough's investment in the form of property or other taxes. A railroad connection between the ARRC main line and the port will be essential for the economic handling of certain commodities.

Ferry Operation from Anchorage to Point MacKenzie

Continued development of a ferry operation between Anchorage and Point MacKenzie is recommended. In order to encourage development at Port MacKenzie and in the general Point MacKenzie area, the Borough should commit to operation of the ferry for a multi-year period regardless of the initial ridership results. Potential investors will need assurance that the ferry will be in place until such time as a Knik Arm bridge is built in order to feel confident that their investment, whether residential or industrial, will not be "marooned" without adequate direct transportation to Anchorage.

River and Lake Waterborne Transportation

River and lake waterborne transportation is recognized as an important element of the overall transportation system within the Borough. It is recommended that the need for continued operation and maintenance of existing public boat launch facilities and public access points to lakes and rivers be recognized. It is also recognized that the financial health of the private launch facilities is important to our transportation system and public/private partnerships should be explored. The clean-up, maintenance, and improvement of existing public access points and boat launch facilities should be a priority. Improvements should include appropriate signage indicating allowed uses; facilities such as fire pits, toilets, and litter containers if camping or picnicking is allowed; and fencing when necessary to delineate the boundaries of public property. Also, new facilities should not be built without a provision for continued maintenance of the facilities.

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

HOUSTON

WASILLA

PALMER

Parks Hwy

King Arthur Dr

Pitman Rd

Schrock Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

Seldon Rd

Church Rd

Spruce Ave

Lucille St

Lucus Rd

Bogard Rd

Seward Meridian Pky

Finger Lake

N Trunk Rd

Palmer-Wasilla Hwy

Wasilla Lake

Lake Lucille

Hyer Rd

S Trunk Rd

Mack Dr

E Fairview Loop

Parks Hwy

Glenn Hwy

Old Glenn Hwy

Big Lake Rd

Johnsons Rd

Vine Rd

Hollywood Rd

Big Lake

W Fairview Loop

Knik-Goose Bay Rd

Knik River

KNIK ARM

To Anchorage

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

2025 2-Lane Road Addition
2025 4-Lane Road
Highway
Arterial or collector road
Local Road
Alaska Railroad
Stream
City
Mud flat
Water feature

Matanuska - Susitna Borough
Long Range Transportation Plan

Base Level Projects

Figure 4-2

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\LRTP_updates_07_12\Figure4-2BaseLevelProjects.mxd | File Date: July 2006 | Author: HDR Inc. AM/JC

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

HOUSTON

WASILLA

PALMER

Parks Hwy

King Arthur Dr

Pitman Rd

Schrock Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

W Trunk Rd

Seldon Rd

Church Rd

Spruce Ave

Lucille St

Lucus Rd

Bogard Rd

Seward Meridian Pkwy

Finger Lake

Palmer-Wasilla Hwy

Wasilla Lake

Lake Lucille

Mack Dr

E Fairview Loop

Hyer Rd

S Trunk Rd

Parks Hwy

Glenn Hwy

Old Glenn Hwy

Big Lake Rd

Johnsons Rd

Vine Rd

Hollywood Rd

Big Lake

W Fairview Loop

Knik-Goose Bay Rd

KNIK ARM

Knik River

To Anchorage

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

Volume-to-Capacity Ratio
- 0.00-0.34
- 0.35-0.54
- 0.55-.074
- 0.75-0.89
- 0.90-0.99
- 1.00-10.0

Local Road
Alaska Railroad
Stream
Mud Flat
Water Feature
City

Average Daily Traffic
20,000 40,000 60,000

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\LRTP_updates_07_12\Figure4-3TrafficforBaseLevelwithoutBridge.mxd | File Date - July 2006 | Author: HDR Inc. JC, AM

Matanuska - Susitna Borough
Long Range Transportation Plan

2025 Traffic Model Results for Base Level
without Knik Arm Crossing

Figure 4-3

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

HOUSTON

WASILLA

PALMER

KNIK ARM

Parks Hwy

King Arthur Dr

Pitman Rd

Schrock Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

N Trunk Rd

Seldon Rd

Church Rd

Spruce Ave

Lucille St

Lucus Rd

Bogard Rd

Seward Meridian Pky

Finger Lake

Palmer-Wasilla Hwy

Wasilla Lake

Lake Lucille

Hyer Rd

S Trunk Rd

Mack Dr

E Fairview Loop

W Fairview Loop

Big Lake Rd

Johnsons Rd

Vine Rd

Hollywood Rd

Big Lake

Knik-Goose Bay Rd

Old Glenn Hwy

Knik River

To Anchorage

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

Volume-to-Capacity Ratio
- 0.00-0.34
- 0.35-0.54
- 0.55-.074
- 0.75-0.89
- 0.90-0.99
- 1.00-10.0

Local Road
Alaska Railroad
Stream
Mud Flat
Water Feature
City

Average Daily Traffic
20,000 40,000 60,000

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\LRTP_updates_07_12\Figure4-4TrafficforBaseLevelwithBridge.mxd | File Date: July 2006 | Author: HDR Inc. AM/JC

Matanuska - Susitna Borough
Long Range Transportation Plan

2025 Traffic Model Results for Base Level
with Knik Arm Crossing

Figure 4-4

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\LRTP_updates_07_12\Figure4-7Trafficfor2015withoutBridge.mxd | File Date: July 2006 | Author: HDR Inc. JC/ AM

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

To Anchorage

HOUSTON

WASILLA

PALMER

Parks Hwy

King Arthur Dr

Big Lake Rd

Big Lake

Johnsons Rd

Hollywood Rd

Knik-Goose Bay Rd

Pitman Rd

Schrock Rd

Vine Rd

Church Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

W Trunk Rd

Seldon Rd

Lucille St

Spruce Ave

Lucus Rd

Bogard Rd

Seward Meridian Pky

Wasilla Lake

Lake Lucille

Finger Lake

Palmer-Wasilla Hwy

S Trunk Rd

Hyer Rd

Parks Hwy

E Fairview Loop

W Fairview Loop

Glenn Hwy

Old Glenn Hwy

Knik River

KNIK ARM

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

Volume-to-Capacity Ratio

- 0.00-0.34
- 0.35-0.54
- 0.55-.074
- 0.75-0.89
- 0.90-0.99
- 1.00-10.0

- Local Road
- Alaska Railroad
- Stream
- Mud Flat
- Water Feature
- City

Average Daily Traffic
20,000 40,000 60,000

Matanuska - Susitna Borough
Long Range Transportation Plan

2015 Traffic Model Results for Base Level
without Knik Arm Crossing

Figure 4-7

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\LRTP_updates_07_12\Figure4-8Trafficfor2015withNeededImprovementswithoutBridge.mxd | File Date : July 2006 | Author: HDR Inc. JCAM

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

HOUSTON

WASILLA

PALMER

KNIK ARM

Parks Hwy

King Arthur Dr

Pitman Rd

Schrock Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

W Trunk Rd

Seldon Rd

Church Rd

Spruce Ave

Lucille St

Lucus Rd

Bogard Rd

Seward Meridian Pky

Finger Lake

Palmer-Wasilla Hwy

S Trunk Rd

Hyer Rd

Wasilla Lake

Lake Lucille

Mack Dr

E Fairview Loop

W Fairview Loop

Big Lake Rd

Johnsons Rd

Hollywood Rd

Vine Rd

Big Lake

Knik-Goose Bay Rd

Old Glenn Hwy

Knik River

To Anchorage

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

Volume-to-Capacity Ratio
- 0.00-0.34
- 0.35-0.54
- 0.55-.074
- 0.75-0.89
- 0.90-0.99
- 1.00-10.0

Local Road
Alaska Railroad
Stream
Mud Flat
Water Feature
City

Average Daily Traffic
20,000 40,000 60,000

Matanuska - Susitna Borough
Long Range Transportation Plan

2015 Traffic Model Results with Needed Improvements
without Knik Arm Crossing

Figure 4-8

Matanuska-Susitna Borough

To Willow/ Fairbanks

To Sutton/ Glennallen

HOUSTON

WASILLA

PALMER

Parks Hwy

King Arthur Dr

Pitman Rd

Schrock Rd

Little Susitna River

Wasilla-Fishhook Rd

Palmer-Fishhook Rd

Glenn Hwy

Matanuska River

W Trunk Rd

Seldon Rd

Church Rd

Spruce Ave

Lucille St

Lucus Rd

Bogard Rd

Seward Meridian Pkwy

Finger Lake

Palmer-Wasilla Hwy

Wasilla Lake

Lake Lucille

Mack Dr

Hyer Rd

S Trunk Rd

Parks Hwy

E Fairview Loop

Glenn Hwy

Old Glenn Hwy

Big Lake Rd

Johnsons Rd

Vine Rd

Hollywood Rd

Big Lake

W Fairview Loop

Knik-Goose Bay Rd

Knik River

KNIK ARM

To Anchorage

Map Projection: AK State Plane Zone 4, NAD 83

0 1 2 Miles

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\ExistingandFuturePathways.mxd | File Date : February 2007 | Author: HDR Inc. JC

Future Pathway
Existing Pathway
Alaska Railroad
Stream
Highway
Arterial or Collector Road
Local Road
City
Mud Flat
Water Feature

Matanuska - Susitna Borough
Long Range Transportation Plan

Existing and Future Roadside Pathways

Figure 5-1

Downtown Wasilla
Wasilla Lake
Lake Lucille
Routes A, B, C, E
Northern Corridor
Route A
Route B
Route C
Route D
Route E
Southern Corridor
N
0
1
2
Miles

City of Wasilla Boundary
Railroad

Wasilla Realignment Alternatives Analysis (2005)
Northern Corridor
Southern Corridor

South Wasilla Track Realignment (2005)
Proposed Action

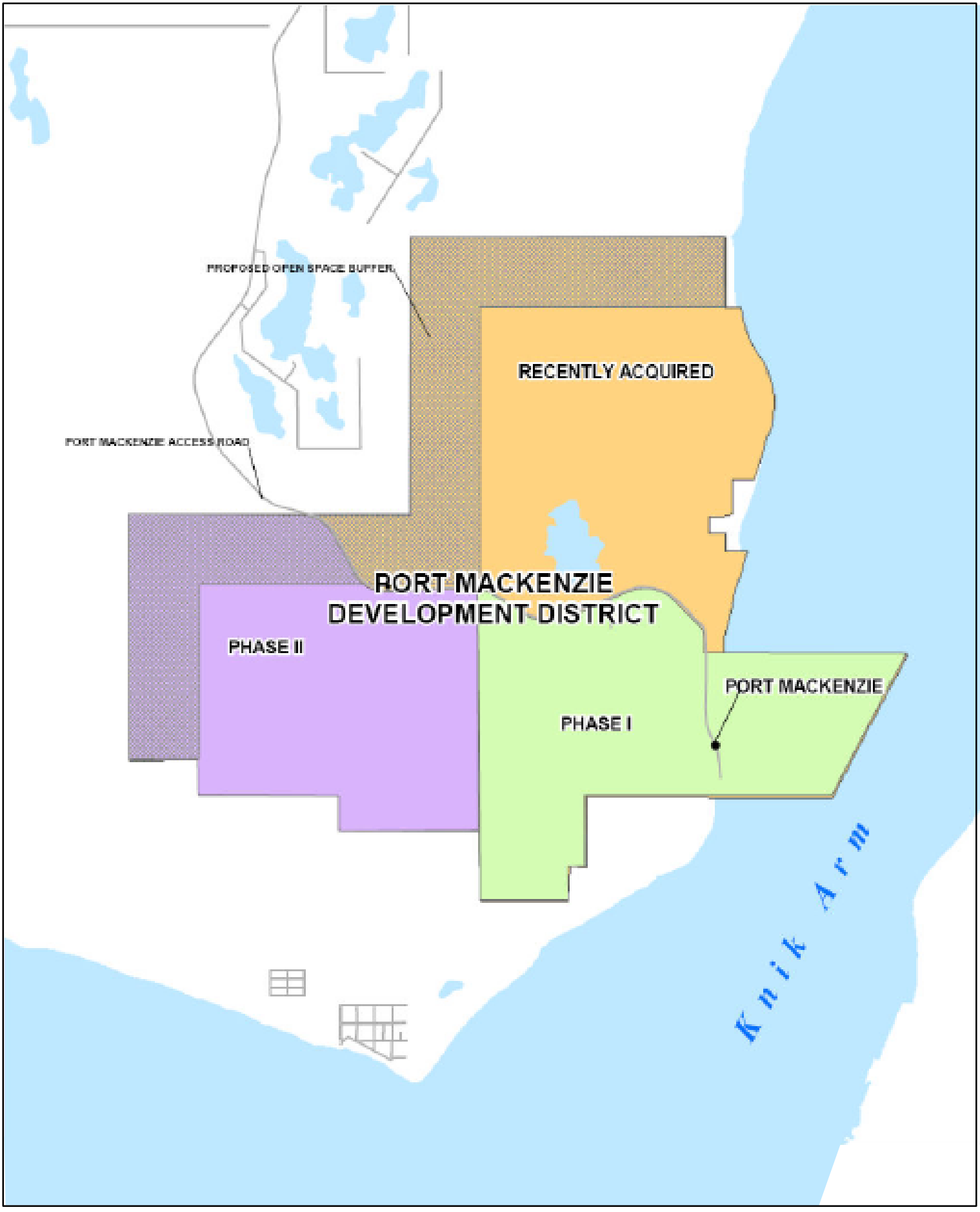
City of Wasilla Alignments (2002)
Route A
Route B
Route C
Route D
Route E
Routes A, B, C, E

The South Wasilla Track Realignment project is not related to efforts to realign the rail outside the middle of downtown Wasilla; it is a project with separate utility and addresses immediate safety and operational efficiency needs. It is included on this map for informational purposes only.

Matanuska - Susitna Borough
Long Range Transportation Plan

Wasilla Area Realignment Routes
and Recent Projects

Figure 8-1



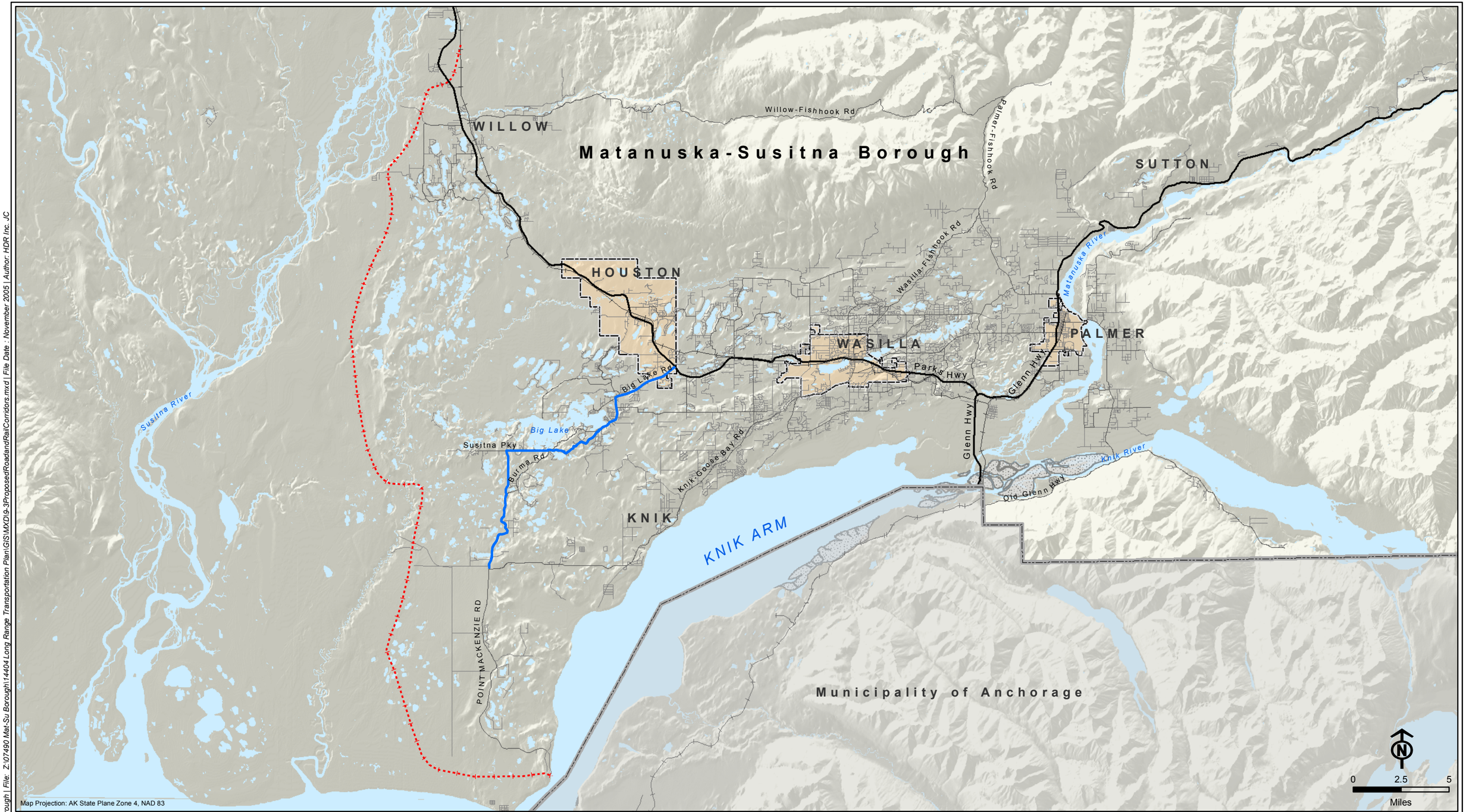
0 0.5 1
Mile

Matanuska - Susitna Borough

Long Range Transportation Plan

Port Mackenzie District Development Plan

Figure 9-1



2002 Rail Route
Burma Road Upgrade
Alaska Railroad
Highway
Arterial or Collector Road
Local Road
Stream
Water Feature
City

Matanuska - Susitna Borough
Long Range Transportation Plan

Proposed Rail and Road Corridors

Figure 9-3

Source: HDR Alaska Inc., Mat-Su Borough | File: Z:\07490 Mat-Su Borough\14404 Long Range Transportation Plan\GIS\MXD\9-3ProposedRoadandRailCorridors.mxd | File Date : November 2005 | Author: HDR Inc. JC

APPENDIX A

INTERSTATE

Glenn Highway
Parks Highway

MAJOR ARTERIAL

Bogard Road (Wasilla-Fishhook to Trunk)
Glenn Highway
Knik-Goose Bay Road
Main-Talkeetna-Yenlo Couplet
Parks Highway
Palmer-Wasilla Highway
Point MacKenzie Road
South Wasilla Alternate
Seward Meridian Parkway (Parks Hwy – Bogard Rd)
Talkeetna Spur Road
Willow-Pt. MacKenzie Highway (Willow Corridor)

MINOR ARTERIAL

Big Lake Road/South Big Lake Rd
Bogard Road (Trunk to Glenn)
Crusey Street
Lake Louise Road
Old Glenn Highway/Arctic Avenue
Palmer-Fishhook Road
Seldon Road (Bogard to Wasilla-Fishhook)
Seward Meridian Parkway (Bogard-Seldon)
Trunk Road
Vine Road
Wasilla Fishhook Road
Willow Fishhook Road

MAJOR COLLECTOR

49th State Street
Beverly Lake Road
Burma Road
Caswell Lakes Road
Church Road
Evergreen Avenue (Palmer)
Fairview Loop
Glenwood Avenue
Hemmer Road
Hermon Road
Hollywood Road
Hyer Road
Johnson Road
Knik River Road
Lucille Street
Mack/Clapp Road
Petersville Road (west)
Pittman Road
Purinton Parkway
Riley Avenue (extended)
Schrock Road
Seldon Road (Wasilla-Fishhook west)
Susitna Avenue (Wasilla)
Susitna Parkway (Big Lake – Burma)
Swanson Avenue (Wasilla)
Vine Extension

MINOR COLLECTOR

1st Avenue (Goose Bay)
58 Mile Road
Alsop Road
Anaconda Avenue
Arabian Lane or Snowgoose Road
Armstrong Road
Ayrshire Avenue
Backacres Avenue
Bear Street
Beaver Lake Road
Beverly Lake Road
Birch Creek Boulevard
Bodenburg Loop
Brocker Lake Road
Brown Swiss Road
Buffalo Mine Road
Bull Moose Drive
Burkholder Lake Road
Calico Drive
Caribou Street
Carmel Road
Carney Road or Welch Road
Caudill Road
Charley Drive
Chickaloon Road
Chugach Street
Clark Road
Clark-Wolverine Road
Clay-Chapman Road
Comsat Road
Crystal Lake Road
Edgerton Park Road
Edlund Road
Ellexson Road
Engstrom Extension
Engstrom Road
Farm Loop Road
Felton Street
Fern Street
Foothills Boulevard
Gershmel Loop
Golden Hills Drive
Government Peak Road
Green Forest Drive
Hatcher Pass Ski Area Road
Hawk Lane
Hazel Avenue
Helmaur Place
Hermann Avenue
Hidden Hills Road
Holstein Avenue
Horizon Drive
Inner Springer Loop
Isthmus Drive
Jersey Avenue
Jonesville Mine Road
Kenlar Road
King Arthur Drive
Koppenburg Road
Lakeview Road
Lewis Loop
Little Jack Avenue
Long Lake Road
Lucus Road
Marth Road
Maud Road
Meadow Lake Road (Loop)
Middle Ridge Road
Misty Lake Road
Moffit Drive (Landfill)
Montana Creek Road
Mulchatna Drive
Nancy Lake Parkway
Nelson Road
Nelson Avenue
Neuser Drive
New Hope Street or Independence Street
North Big Lake Blvd
North Shore Drive
Ogard Street
Old Matanuska Road
Outer Springer Loop
Pamela Drive
Paradise Lane
Peck Street
Peninsula Drive or Schutt Drive
Petersville Road (East)
Plumley Road
Point MacKenzie Road (south of port)
Polar Bear Drive

Raleigh Hill Street
Romano Avenue
Scott Road
Settlement Avenue or Foxtrot Road
Skyview Drive
Smith Road
Smith Street
Soapstone Road
Spruce Avenue
Stacy Street
Stanley Road
Sullivan Avenue
Sunset Avenue
Sunshine Avenue
Susitna Parkway
Suzanna Street
Tazlina Drive
Tex-Al Drive or Jensen Road
Willow Creek Parkway
Wilmington Drive or Pittman Road Extended
Wolf Lake Road
Yoder Road

APPENDIX B
Level of Service Descriptions
For Two-Lane Rural Highways

The highest quality of traffic service occurs when motorists are able to drive at their desired speed. Without strict enforcement, this highest quality, representative of **level-of-service A**, would result in average speeds approaching 60 mph on two-lane highways. The passing frequency required to maintain these speeds has not reached a demanding level. Passing demand is well below passing capacity, and almost no platoons of three or more vehicles are observed. Drivers would be delayed no more than 30 percent of the time by slow-moving vehicles. A maximum flow rate of 420 passenger cars per hour (pcph), total in both directions, may be achieved under ideal conditions.

Level-of-service B characterizes the region of traffic flow wherein speeds of 55 mph or slightly higher are expected on level terrain. Passing demand needed to maintain desired speeds becomes significant and approximately equals the passing capacity at the lower boundary of level-of-service B. Drivers are delayed up to 45 percent of the time on the average. Service flow rates of 750 pcph, total in both directions, can be achieved under ideal conditions. Above this flow rate, the number of platoons forming in the traffic stream begins to increase dramatically.

Further increases in flow characterize **level-of-service C**, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediment. Average speed still exceeds 52 mph on level terrain, even though unrestricted passing demand exceeds passing capacity. At higher volume levels, chaining of platoons and significant reductions in passing capacity begin to occur. While traffic flow is stable, it is becoming susceptible to congestion due to tuning traffic and slow-moving vehicles. Percent time delays are up to 60 percent. A service flow rate of up to 1,200 pcph, total in both directions, can be accommodated under ideal conditions.

Unstable traffic flow is approached as traffic flows enter **level-of-service D**. The two opposing traffic streams essentially begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is very high, while passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 50 mph can still be maintained under ideal conditions. The fraction of no passing zones along the roadway section usually has little influence on passing. Turning vehicles and/or roadside distractions cause major shockwaves in the traffic stream. The percentage of time motorists are delayed approaches 75 percent. Maximum service flow rates of 1,800 pcph, total in both directions, can be maintained under ideal conditions. This is the highest flow rate that can be maintained for any length of time over an extended section of level terrain without a high probability of breakdown.

Level-of-service E is defined as traffic flow conditions on two-lane highways having a percent time delay of greater than 75 percent. Under ideal conditions, speeds will drop below 50 mph. Average travel speeds on highways with less than ideal conditions will be slower, as low as 25 mph on sustained upgrades. Passing is virtually impossible under level-of-service E conditions, and platooning becomes intense when slower vehicles or other interruptions are encountered. The highest volume attainable under level-of-service E defines the capacity of the highway. Under ideal conditions, capacity is 2,800 pcph, total in both directions.

As with other highway types, **level-of-service F** represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity, and speeds are below capacity speed. Level-of-service E is seldom attained over extended sections on level terrain as more than a transient condition; most often, perturbations in traffic flow as level E is approached cause a rapid transition to level-of-service F.