

# 4 Resource and Economic Development Impacts

---

This chapter discusses the current conditions, trends and possible opportunities for resource development within the study area and their potential access needs. The industries addressed are minerals, gas and oil, alternative energy, tourism, agriculture and timber. Research for this chapter included interviews with resource agencies and developers, website research and relevant reports.

## 4.1 Mineral Industry

The study area has a rich history of gold development. In addition, there are major deposits of coal and other minerals which have the potential to be commercially developed someday. Mineral exploration is on the rise and mineral development will likely continue to play an important part of the economy of the region and contribute to the need for transportation improvements in the future.

### 4.1.1 Mineral Industry Current Conditions

Three of the State's six major mineral production sites are found in the study area and are an integral part of the study area economy. These are Pogo Mine (gold), Fort Knox Mine (gold, sand and gravel) and Usibelli Mine (coal).

The following is a list of other significant mineral deposits being actively extracted in the study area (per Szumigala and Hughes).

|  |   |
|--|---|
| Wind River (lead and zinc)                 | Hot Springs (placer gold, lead, tin)    |
| Tolovana (placer gold)                     | Fairbanks (gold, tungsten)              |
| Fort Knox (gold)                           | Ryan Lode (gold)                        |
| Grant Mine (gold)                          | True North (gold)                       |
| Dolphin (gold, arsenic, bismuth, antimony) | Mt. Prindle (uranium)                   |
| Circle (placer gold, tin, tungsten)        | Three Castle Mt. (lead, zinc)           |
| Bonnifield (copper, lead, zinc, silver)    | Delta (copper, zinc, lead, silver gold) |

|                                   |                                    |
|-----------------------------------|------------------------------------|
| Mosquito, Peternie (molybdenum)   | Taurus (copper, gold)              |
| Slate Creek (asbestos)            | Fortymile (placer gold)            |
| Coal Creek (tin, copper tungsten) | Golden Zone (gold, copper, silver) |
| Nim (copper, gold, silver)        | Zackly (copper, gold, marble)      |
| Chistochina (copper, placer gold) | Nebesna (gold)                     |
| Kennecott (copper, gold)          |                                    |

#### 4.1.1.1 Pogo Mine

The Pogo Mine is owned by Pogo Joint Venture (JV), a JV between Sumitomo Metal Mining Co., Ltd., Sumitomo Corporation and Teck Cominco Ltd. Teck Pogo Inc. operates the mine for the JV. It is located about 38 miles northeast of Delta Junction. Hard rock underground gold mining began in 2006, although the mine was in development for several years prior to 2006. The first bar of gold was produced in February 2006. Teck Pogo Inc. milled 649,000 metric tons of ore in 2007 and produced 260,000 ounces of gold. Ore is processed on-site. Pogo predicts a 10-12 year life for the operation, although the mine's life could be extended if exploration locates additional deposits in the area.

A 49-mile all-season private road (Shaw Creek Road) provides access to the mine site from the Richardson Highway at approximately Milepost 287. Workers travel to the mine site by bus and live at the mine during their work rotations. The Mine employs approximately 215 workers directly and about 100 others work for contractors<sup>1</sup>.

The DOT&PF's Average Annual Daily Traffic (AADT) count on the Richardson Highway at Shaw Creek is about 1,660 vehicles. Teck-Pogo estimates traffic on the mine road averages approximately 50 vehicles per day (both semi-tractor trailers and light vehicles). Adding 50 more vehicles per day does not trigger the need for geometric changes in this section of the Richardson Highway, although this might change if the mine operation grows significantly or if Teck-Pogo decides to stop bussing operations.

DOT&PF replaced the Shaw Creek Bridge in 2010. This project improves the intersection of the Richardson Highway and Shaw Creek Road by adjusting the approach from Shaw Creek Road and improving the sight distance and turning radius.

<sup>1</sup> Pogo Mine 2006 Annual Activity and Monitoring Report, Page 1, Teck-Pogo Inc.

#### **4.1.1.2 Fort Knox Mine**

Fort Knox Mine is a conventional truck and shovel open pit mine continuously operated since 1996. Fort Knox processed 13,362,000 metric tons of ore and produced 333,383 ounces of gold in 2006. Kinross Gold USA, Inc. estimates the mine's life will end in 2011. After 2011, they will re-handle low-grade, stockpiled ore via a leach pad until 2015. Additional discoveries could extend the life of the operation.

Fort Knox is located approximately 20 miles from Fairbanks at the end of a five-mile access road located off the Steese Highway. AADT on the Steese Highway at the junction of Fairbanks Creek Road, near the Twin Creek Road (access to Fort Knox Mine) is 265. Workers live in the Fairbanks area and commute to the mine. According to a 2007 Fort Knox annual activity report, the mine employed 395 people on two shifts per day, 365 days of the year.

Ore is processed on site and the gold is shipped over the existing highway system. The gold is refined in the Lower 48. It is unlikely that additional surface transportation infrastructure will be necessary to support current or planned operations.

#### **4.1.1.3 Usibelli Mine**

The Usibelli Mine in Healy is the only operating coal mine in Alaska. It was started in 1943 and is family-owned and operated. It includes both surface and underground mining and has an estimated 30 years of reserve coal at current production rates (about 1.4 million tons/year). The mine employs about 95 people, almost one tenth of the Healy population.

The mine is accessible from the existing public road network (Parks Highway to Healy Spur Road). The Healy Spur Road has about 1,525 AADT at the junction with the Parks Highway. The Parks Highway in the area has an AADT of about 3,365. The southbound turning pocket to the Healy Access Road on the Parks Highway will probably accommodate the traffic needs in the area for the foreseeable future.

Coal is shipped by rail north to Fairbanks or south to Seward, where it leaves the state. The Usibelli Mine generally ships a full train of coal to Seward twice a week. A typical train has about 70 cars. Each car holds 100 tons of coal, or 7,000 tons of coal per train. Summer traffic from passenger trains can affect the mine operations, but to date, schedules have been coordinated.

#### 4.1.1.4 Other Mining Operations

**Polar Mining Inc.** (gold, silver, screened aggregate) and **Earth Movers of Fairbanks, Inc.** (gold placer mine) also have sizeable operations in the Fairbanks area. A few smaller gold placer operations in the study area include an operation northeast of Fairbanks and near the Canadian border in the southeast part of the study area. The study area saw a large increase in smaller mining activity in 2006. Employees in the industry nearly doubled between 2005 and 2006 (453 to 821). Operators nearly tripled (37 to 100).

**Ahtna Native Corporation.** The Ahtna region is host to a large array of metallic mineral deposits, and some unique deposit types. Most of the mineral occurrences are situated on Ahtna lands that lie within Wrangell-St. Elias National Park and Preserve. Of the 55 known mineral occurrences, nine are historically-producing dormant mines, 27 are development prospects, and the remaining 19 are exploration prospects of varying importance. Eight of the occurrences are placer gold deposits.

While some very significant deposits have been discovered, the region has seen very little mine development. Identified minerals include gold, copper, zinc, chrome, platinum, palladium, tin, lead, tungsten and uranium.

**Doyon Limited.** There are 12.5 million acres of Doyon Limited lands. They include historical placer gold mining districts and geologically attractive environments, such as, the Tintina Gold Belt. The Tintina Gold Belt is a world class gold deposit. Pogo, Fort Knox, True North, Vinasale, Donlin Creek and Shotgun are part of that belt. The Ambler Schist Belt is favorable for world-class base metal deposits (Bornite, Arctic and Chandalar Copper Belt) and sedimentary basins favorable for oil and gas deposits (Kandik, Yukon Flats, Nenana).

A feasibility study was completed in July 2007 on coal gasification in Healy, Alaska. The proposed location is six miles north of the current coal mining operations at Two Bull Ridge. A new mining operation nearby at Jumbo Dome would be developed to supply coal to the proposed facility. The study concluded that the proposed project is feasible.

#### 4.1.1.5 Potential Exploration/Production Areas

The 1981 Interior Alaska Transportation Study listed many areas where there was potential for production at some point. Although there is coal at Jarvis Creek, the deposits at Healy are still

the only ones under production. The Delta Mineral Belt (south of Tok) and the Golden Zone near Denali Park were specifically identified as areas where there was exploration going on. The Denali Mining Belt was last explored in 2001. The Golden Zone is still under exploration today. The Richardson District was in exploration through 2004.

The Gold King area mining claims were subject to a bankruptcy court proceeding in 2004 where the claims were sold to the Federal government.

There are substantial deposits of limestone in the study area. At one time, DNR permitted a mine for limestone in the Wickersham Dome area (1996). Globe Creek Mining and Fairbanks Exploration Inc. were involved in this effort.

The north flank of the Alaska Range, including the Johnson and Robertson River drainages, were also identified in the 1981 plan as having potential for large, high-grade deposits. That area has not been in active exploration since 1986 (DGGS yearly reports of exploration and production).

#### **4.1.2 Mineral Industry Trends**

Mineral exploration in the Interior is growing. Pogo Mine, Fort Knox and Usibelli are pursuing exploration for more resources even as they are in active production. In the last year, the mineral industry has also seen a trend toward greater exploration on small-scale production and potential mineral resources are being explored on Ahtna and Doyon Corporation lands.

The BLM recently (January 2007) completed a report of several years of mineral investigations in the Delta River Mining District Area, East-central Alaska. This report covers much of the study area. The report concludes: “Mineral exploration activity is likely to continue in the Delta River Mining District study area with special attention given to the nickel-copper-PGE potential of the mafic-ultramafic rocks in the southern part of the area. To date no deposits of sufficient tonnage and grade to be considered economic have been discovered. There is a chance that a small tonnage-high grade deposit may be discovered that would make underground mining economically feasible. Alternatively, the discovery of a high tonnage-low grade deposit is also a possibility. A deposit of this size may be mined by surface mining techniques. Any potential mining operations would likely take 8 to 10 years or more to go from discovery to production given the design, economic feasibility, environmental. Logistical and permitting requirements that precede mine development.”

While the mineral industry spent \$331 million in development statewide in 2006, (up from \$209 million in 2005),<sup>2</sup> about \$176 million was spent on mineral exploration. Much of those expenditures occurred in mining operations located in the study area. Active exploration in the study area is shown in Figure 1 and is described below.<sup>3</sup>

**Figure 1 Active mineral exploration in the study area**



Ongoing explorations include:

Teck Cominco Inc. continued exploration on the Pogo Property, West Knoll, South Pogo, 4021, Cholla Ridge, Chorizo, Spring Grid and Tam Ridge. No results were announced. Rimfire Minerals Corporation conducted a mapping and reconnaissance geochemical sampling survey in the Goodpaster area. No results were announced. International Tower Hill Mines Ltd. acquired all Alaskan mineral properties from AngloGold Ashanti. They drilled eight holes and found good gold deposits. Tower Hill also acquired the Livengood project and drilled seven holes, finding gold. They also acquired Coffee Dome, Giles, West Pogo, Chisna and Blackshell. Testing indicated vein-style gold at Blackshell. In addition, Tower Hill entered into an agreement with Doyon, Ltd for the West Tanana property, collected soil samples and outlined a

<sup>2</sup> Resource Development Council, August 16, 2007, <http://www.akrdc.org/issues/mining/overview.html>

<sup>3</sup> Alaska's Mineral Industry 2006: A Summary by D.J. Szumigala and R.A. Hughes.



large gold-arsenic-bismuth-tellurium anomaly adjacent to Monday Creek. Full Metal signed an agreement with Doyon for over 800,000 acres of lands in the Fortymile area. They delineated massive sulfide mineralization on the Little White Man (LWM) and Fish prospects. They found copper, lead, silver and zinc. Kinross Gold Inc. continued exploration around the Fort Knox Mine. Best results assayed 0.0612 ounces of gold per ton of ore. Freegold Ventures Ltd. discovered new high-grade gold veins at Golden Summit near Fairbanks. Other tests were conducted at Cleary Hill, the Wackwitz Vein and the Colorado Vein. Results varied from 0.48 ounces of gold per ton to 2.4 ounces of gold per ton. Midas Resources Ltd. explored the Uncle Sam prospect. All drill holes encountered gold in a vein interpreted as very similar Fort Knox. Smaller explorations were conducted in Stone Boy Creek near Pogo, the Delta property near Tok, and in American Creek in the Hot Springs mining district. The ADNR Division of Geology and Geophysical Survey mapped 600 square miles in the Bonnifield Mining District in 2006. Other potential development areas include lands managed by Ahtna Native Corporation and Doyon Limited.

#### **4.1.3 Mineral Industry Potential Access Needs**

Most of the major producers have indicated that they have no major infrastructure needs or requirements in the near future. Air support during mineral exploration is typically provided by helicopters that do not require extensive transportation infrastructure. It is assumed that the developer would finance any access routes that become necessary to major mineral development in the future. However, there may be some impacts to adjacent highways. An example could be potential development in the Tangle Lakes area which might impact the nearby Richardson Highway in terms of increased truck and vehicle traffic.

#### **4.2 Oil and Gas Industry**

According to the Division of Oil and Gas report on 2006 operations, three current oil and gas exploration licenses are on State land. Only one of the licenses is in the study area--the Nenana Basin. In 2007, the Copper River Basin license was converted to a lease. One oil and gas license application is in the study area, in the Healy Basin.

## 4.2.1 Oil and Gas Industry Current Conditions

Potential oil and gas reserves are located in the study area. In addition, there is also potential for two gas pipeline developments in the study area.

### 4.2.1.1 Nenana Basin

It is important to consider Nenana Basin, located south and west of Fairbanks, when discussing resource development in the Interior. The Nenana Basin, also known as the Middle Tanana Basin, consists of a swampy lowland area drained by the Tanana River. The road to Totchakat would access the Nenana Basin for potential gas or minerals as well as agriculture lands. The last estimate for this route was \$72 million. In the early 1980s Unocal and Atlantic Richfield drilled exploration wells searching for oil in the Nenana Basin. Atlantic Richfield abandoned these wells when oil prices dropped suddenly in 1984. In 2002, the State of Alaska issued an exploration lease of 483,942 acres to Andex Resources in the Nenana Basin.

Doyon has partnered with Usibelli Energy, Arctic Slope Regional Corporation, and Andex Resources to explore for oil and gas within the Nenana Basin and Yukon Flats areas on approximately 38,000 acres of Doyon land. It is likely the gas would be converted to liquefied natural gas (LNG) and then transported by tanker truck on the Parks Highway.

While the total amount of recoverable reserves are unknown, it is estimated that 250 million barrels of oil and 250 billion to 1 trillion cubic feet of gas are in the Nenana Basin.

### 4.2.1.2 Copper Basin

The Copper River Basin sits in a lowland area due north of the Gulf of Alaska, bounded by the Alaska Range, the Wrangell Mountains and the Chugach Mountains. Some limited oil and gas exploration occurred prior to the mid-1980s with geophysical surveys and 11 wildcat wells. Several of the wells encountered oil and gas. Mud volcanoes in the Tolsona area emit gas containing a high percentage of methane.<sup>4</sup>

The State issued exploration licensing in 2000 to Forest Oil Corporation for 318,756.35 acres of the Copper Basin. The license was converted to a lease on October 1, 2007. Information on future work in the area is not yet available, except for plans to shoot seismic lines and to drill a well west of Glennallen.

---

<sup>4</sup> Petroleum Oil News, Dispelling the Alaska Fear Factor, Chapter 6, 2005



According to the Alaska Journal of Commerce, May 27, 2007, Rutter and Wilbanks Corporation planned to explore the Copper River Basin for natural gas on Ahtna, Inc. land. As of July 2007, news reports indicated Rutter and Wilbanks, Inc. had located favorable reserves of natural gas.

#### **4.2.1.3 Healy Basin**

The Healy Basin is on the Yukon-Tanana terrane, drained by the Nenana River and bisected by the Parks Highway. The highest petroleum potential in the basin is for gas and shallow coal bed gas. Usibelli Coal Mine Co. has applied for a gas only exploration license for the minimum \$500,000 work commitment for over 200,000 acres of exploration property. Their application is pending and, as of February 2010, is still listed as “proposed”.

#### **4.2.1.4 Central/Circle**

In December 2007, DNR issued a notice of intent to evaluate oil and gas exploration proposals for the Crooked Creek-Circle Basin area (Central/Circle area). Exploration licenses are issued for areas outside of the State’s competitive oil and gas lease sale areas. As of April 9, 2008, one proposal had been received and was under evaluation. BGI North America, LLC proposed the minimum work commitment of \$500,000 with a 10-year term. If awarded, BGI would have exclusive rights to explore state land within the license area for deposits of oil and gas. After public comment, ending July 2008, DNR would analyze the comments and determine whether it is in the State’s best interest to pursue the license. As of February 2010, the exploration license for the area is still listed as “proposed”.

#### **4.2.1.5 Yukon Flats Basin**

The Yukon Flats Basin is approximately 15,000 square miles of lowlands near the Yukon River, between the Trans-Alaska Pipeline and the Canadian border. The following discussion is a brief overview of interest shown in the Basin in the past. In 1994, drilling at Fort Yukon discovered gas bubbling from coal. In 2004, deeper drilling at the same site encountered two coal seams, both of which contained methane. Oil companies have shot ten seismic lines in the flats, five in 1972 and five in 1988. Results of the 1988 seismic line explorations were not revealed. A few years ago, the Alaska Division of Geophysical and Geological Surveys detected some shallow

coal beds. A recent USGS assessment of the basin showed some potential for oil and gas reserves in the basin that could prove comparable to the volumes of gas in the Cook Inlet.<sup>5</sup>

Recent geological reports in the Stevens Village, Beaver and Fort Yukon area show possible deep basins of oil and gas. Doyon, Limited proposed to trade 150,000 acres of high habitat-value land to US Fish and Wildlife Service (USF&WS) for oil and gas rights to 200,000 acres of Federal lands. This was a significant proposal for oil and gas in the Yukon Flats area. The USF&WS conducted an Environmental Impact Study and was expected to issue a Record of Decision by the end of 2008. The Draft EIS has a very brief discussion about access roads. There are two alternative routes, North and South, both of which connect to the Elliott Highway in the vicinity of Livengood. The USF&WS states that development of the access route will require a separate EA or EIS process. Doyon promotes the route as 35-foot gravel private road. If the access is private, then there will be very low ADT and no improvements are needed to the Elliott Highway other than those already anticipated for the gas pipeline. The trade has been placed on hold, and Doyon, Limited announced new oil and gas exploration activity in the Stevens Village area to be conducted in winter 2010. Exploration will be a joint Doyon and Dinyee project.

#### **4.2.1.6 Kandik Basin**

The Kandik Basin straddles the Canadian border on the east side of central Alaska approximately 80 miles from Circle. The basin has several sandstone and limestone formations which often indicate the presence of petroleum reservoirs. There has been limited exploration of the basin to date. In 1976, a well drilled on the Alaska side encountered oil and traces of gas.<sup>6</sup>

#### **4.2.1.7 Delta Junction/Big Delta**

The Department of Natural Resources, Division of Oil and Gas has received applications for shallow natural gas leases in the Delta Junction/Big Delta area for acreage just north and west of the City of Delta Junction, but no leases were issued. The alternative highway route for the natural gas pipeline passes next to the Delta Junction lease block.

---

<sup>5</sup> Petroleum Oil News, Dispelling the Alaska Fear Factor, Chapter 6, 2005

<sup>6</sup> Petroleum Oil News, Dispelling the Alaska Fear Factor, Chapter 6

#### 4.2.1.8 Potential Gas Lines

Two large-scale gas lines may affect the Interior. TransCanada and Denali - The Alaska Gas Line Project are both working on plans for separate 1,700 mile super-sized pipelines to link to existing infrastructure in Canada and the Lower 48 by 2018.<sup>7</sup> One potential pipeline would carry gas from the North Slope to the lower 48 and the other would carry gas to Southcentral Alaska.

The proposed Alaska Natural Gas Pipeline would carry gas from the North Slope to markets primarily in the lower 48. Estimates are that at least 35 trillion cubic feet of identified gas reserves are trapped beneath the North Slope – about 50 percent more than the United States uses in a year.<sup>8</sup>

Enstar, the Anchorage natural gas distributor, is determining a "more precise route, more precise cost and more precise timeline" for a 690-mile small-diameter pipeline to increase natural gas supplies to the population center around Southcentral Alaska. The company is concerned about gas supplies because production from its historic source – Cook Inlet area gas fields – is diminishing. Enstar is considering the North Slope or gas fields in the foothills of the Brooks Range as a source. The pipeline envisioned would follow the rights of way of the Parks and Dalton Highways. Enstar officials believe that the highway route, although longer, would be cheaper than crossing state and Federal parklands. The company must decide whether to sanction the project and spend around \$60 million on the second phase of the project, which may be completed by 2015.<sup>9</sup>

The Alaska Natural Gas Development Authority (ANGDA) has been involved in looking into spur lines from the proposed Alaska Natural Gas Pipeline under AGIA. The spur would roughly follow the Glenn Highway to Palmer. ANGDA presented a Power Point presentation in February 2008 that included a slide showing the proposed segments: Segment 1, Delta Junction – Glennallen; Segment 2, Glennallen – Palmer; Segment 3, Palmer – Beluga Gas Reservoir. The Power Point included a slide that showed a timeline, delivering a pipeline with operational gas

---

<sup>7</sup> *Alaska Business Monthly*, Bridging the gap: What's being done to supply the Railbelt with natural gas? May 2009, p 60.

<sup>8</sup> <http://www.stateline.org/live/ViewPage.action?siteNodeId=136&languageId=1&contentId=58284>

<sup>9</sup> <http://www.adn.com/oil/story/411458.html>

flowing in early 2014. A possible line to Valdez was shown on the map as “Other Proposed Gas Pipelines” along with pipelines up the Yukon and Kuskokwim Rivers.

#### **4.2.2 Oil and Gas Industry Trends**

Overall, developed oil and gas production is declining in Alaska. As a result, new exploration in the Interior is occurring to help provide local supplies to nearby communities. If exploration reveals enough reserves to develop these resources, and it is economically viable, then it is likely energy firms will develop these fields.

#### **4.2.3 Oil and Gas Industry Potential Access Needs**

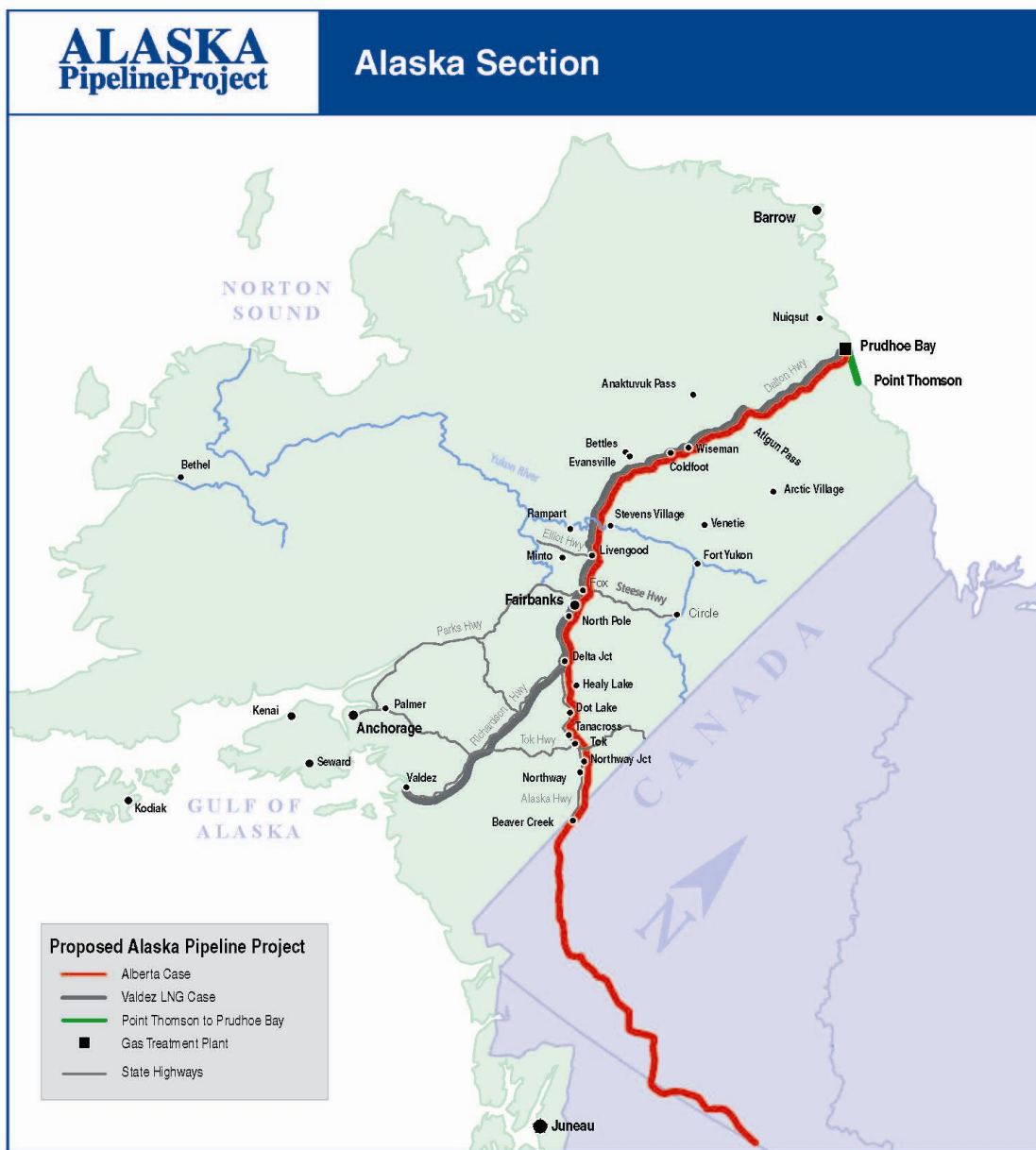
Should oil and gas exploration in the study area prove profitable, it is likely that access roads will be needed. Currently a road feasibility study, funded by the Denali Commission, is exploring potential routes from the Dalton Highway to Stevens Village. Doyon Limited supports this study as a means of providing potential access to lands east of Stevens Village where minerals and oil and gas reserves may exist.

The Alaska Natural Gas Pipeline route has not been determined, but impacts would likely be on the Parks, Alaska, Richardson and Dalton Highways. Enstar’s proposed ‘bullet’ line to Anchorage would likely affect the Parks and Dalton Highways. The Yukon River Bridge on the Dalton Highway is a place where there is potential to provide a takeout point to serve down-river villages with natural gas.

Air support during oil and gas exploration is typically provided by helicopters that do not require extensive transportation infrastructure. The construction of a gas pipeline would require more extensive air support, similar to the surge in air passenger and cargo traffic that occurred during the Trans-Alaska pipeline construction. Within the study area, Fairbanks International Airport would likely absorb the greatest increase in passenger and cargo traffic, although airports located along the pipeline route(s) might experience a substantial increase in traffic, as well.

The proposed Alaska Natural Gas Pipeline along either the Parks or Richardson Highway corridors could benefit communities located on the pipeline route, spurring population and economic growth that would create additional demand for transportation services and infrastructure.

**Figure 2 Trans Canada and Exxon Mobil Proposed Alignment for the Alaska Pipeline**



Source: [www.thealaskapipelineproject.com](http://www.thealaskapipelineproject.com)

The possible Glenn Highway pipeline spur is shown on ANGDA maps as following the highway alignment about halfway from Glennallen to Palmer. The alignment then goes north into the mountains, coming down north of Chickaloon, meeting back up with the Glenn Highway at the Parks Highway/Glenn Highway Wye. The ANGDA website indicates that portion of the alignment to access the Beluga Gas Reservoir is not yet determined. It is possible road improvements will be needed to support this spur line.

## **4.3 Alternative Energy**

### **4.3.1 Alternative Energy Current Conditions**

There are several alternative energy projects underway or proposed within the study area. These include primarily wind and hydroelectric projects.

#### **4.3.1.1 Wind Power**

Golden Valley Electric Association (GVEA), partnered with Alaska Wind & Solar, experimented with wind power in the late 1990s in the Healy area. A single turbine operated from September 1998 through October of 2000 and GVEA terminated the project in June 2001.

In 2006, GVEA constructed five meteorological towers at Eva Creek near Healy to study winds in the area. As evidenced by a recent GVEA application to the Alaska Energy Authority (AEA) for interconnection, wind generated power from the Eva Creek area may become part of their electrical generation base.

#### **4.3.1.2 Hydroelectric Power**

Small water turbines, called “Free Flow Power” generators, are being promoted for streams with constant flows to provide electricity to individual or small clusters of homes in rural areas. This technology does not involve dams or other stream blockage. Ten locations in Alaska have sought this technology, two of which are inside the study area: Tanana and Eagle. One preliminary permit has been issued for this technology on the Yukon River<sup>10</sup>. A preliminary permit authorizes the permittee to conduct studies for up to three years to support a license application. It will be at least 2011 before this technology can be implemented.

---

<sup>10</sup> Federal Regulatory Website, March 2008.



### **4.3.2 Alternative Energy Trends**

Alaska Environmental Power LLC (AEP) constructed one wind turbine in the Delta Junction area in 2008. A second turbine was constructed in 2009 with plans for installing 10 more turbines in 2010. The ultimate wind farm will generate 15 megawatts of power. AEP has applied for grants from the Denali Commission and the AEA.

There is recent interest in resurrecting the Susitna hydroelectric dam<sup>11</sup>. The dam project was closed in 1986 due to the substantial construction cost at a time when oil prices were very low. Three bills were introduced to the 25<sup>th</sup> Legislature in January 2008 to study the Susitna Hydroelectric Project. The bills did not pass, but may be introduced again in subsequent legislative sessions. Improvements may be necessary to the Denali Highway if the dam is built – the Denali Highway is gravel for most of its length. Width and grade would likely need improvements as well.

Communities in the vicinity of Glennallen, like Gulkana and Copper Center are actively pursuing biofuel technology. Biofuel is a renewable energy resource that takes vegetation and forms it into bricks or pellets for stoves. It can be used in creating both heat and some electricity. Bricks and pellets have slightly different requirements for stoves and are not interchangeable.

### **4.3.3 Alternative Energy Potential Access Needs**

None of the alternative energy projects in operation or proposed currently have a need for new access routes. However, timber sale pioneer roads or other routes used for biofuel might supply needed access for many different uses in the future.

## **4.4 Timber Industry**

Serious commercial interest in Interior forests began in the late 1960s and occurred again in the late 1970s and 1980s. The passage of the Alaska Native Claims Settlement Act (ANCSA) in 1972 and the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 encouraged Native Corporations to survey and assess their new land holdings. Notable project proposals over the last 30 years have included plywood and particleboard plants, compressed fuel logs and log export using river barges. The Toghoththele Corporation organized exports in the 1970s, but little

---

<sup>11</sup> Anchorage Daily News, January 18, 2008.

commercial activity was realized. Sporadic exports of timber by private landowners and logging operations occurred as prices peaked in the late 1980s and early 1990s, but this trend did not continue.

Several efforts to attract and develop large-scale timber industry in the Interior in the early 1990s failed. In 1994, Interior legislators tried to create forest management agreements (FMAs) or long-term leases (LTLs) on State lands, but their proposed legislation stalled because of organized public opposition in the Fairbanks North Star Borough. In 1993 and 1994, the former Department of Commerce and Economic Development hosted stakeholder meetings to help form an Interior or Boreal Forest Commercial Timber Land Owners Association. Due to budget constraints and lack of private landowner involvement, this group never formed. Continued falling timber prices prevented any further interest in this group.

#### **4.4.1 Timber Industry Current Conditions**

Today, the Interior of Alaska holds approximately 22.5 million acres of commercial forest containing 14.25 billion cubic feet of harvestable timber. This includes the Alaska Range north to the Brooks Range and from the western edge of tree line east to the Canadian border.

Most of the commercial timber harvest in the study area is primarily on State (Tanana Valley Forest) and Native corporation (Ahtna, Inc.) land, although the TCC holds offerings on Native Allotments. Two Native Corporations own property within the study area. Doyon, Limited and Ahtna, Incorporated. The Doyon holdings cover nearly the entire study area. However, they are not currently pursuing timber as a marketable resource.<sup>12</sup> There is some small scale logging at various locations in the study area.

Roughly 20 to 30 small mills operate in the Fairbanks North Star Borough. The larger lumber mills process about one to two million board feet annually of grade stamped lumber. Two secondary processors are also located in the borough. In the Delta area, three local timber processors sell log homes and kits, lumber, building materials and three-sided house logs. One mill, operating in Copper Center, focuses on rough-cut lumber, house logs and firewood. In

---

<sup>12</sup> Personal communication April 9, 2008.

Nenana, local lumber sales reached gross sales of nearly \$20 million in 2006 due to several large construction projects. Almost all of the locally produced wood is consumed in the study area.

#### 4.4.1.1 Tanana Valley State Forest

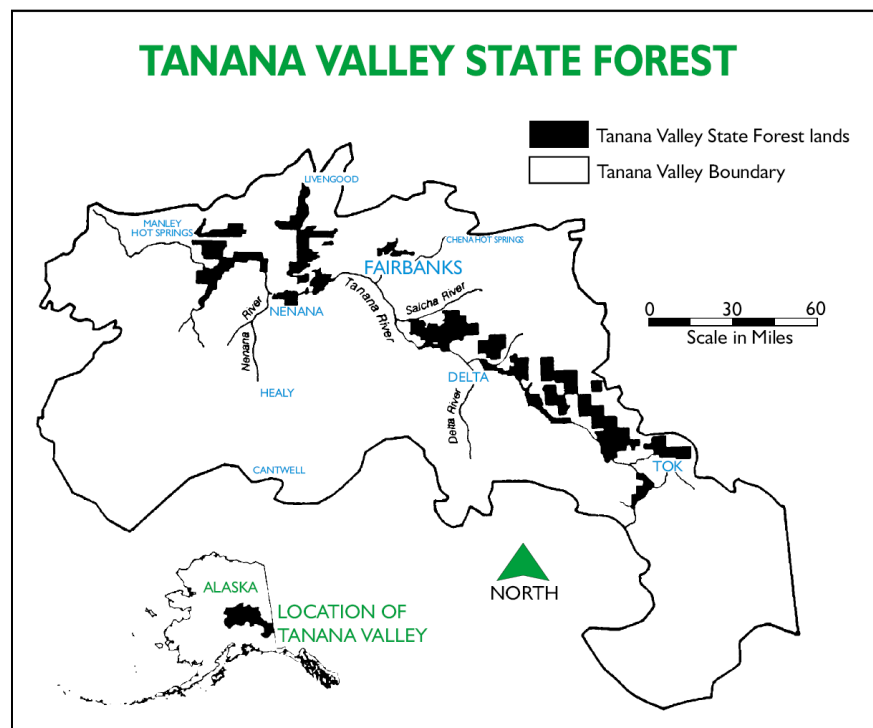
The Tanana Valley State Forest stretches from Manley to Tok and contains 1.8 million acres. Of this, about 1.1 million acres is commercial forestland. The Edgerton, Glenn, Richardson and Tok Cut-Off highways provide general road access to the forest. Approximately 85 percent of the forest lies within 20 miles of a state highway. The forest contains mostly paper birch, quaking aspen, balsam poplar, black spruce, white spruce and tamarack. Timber production is the major commercial activity. The Bonanza Creek Experimental Forest, a 12,400-acre area dedicated to forestry research, is also located within the state forest.

The community of Tok has proposed to harvest timber (primarily spruce) north of town for an alternative heating and power fuel, initially for the school and other public buildings. This effort would reduce fire threat as well as providing low-emission and lower-cost power.

Few private timber sales occur within the Fairbanks

North Star and Denali Borough. Mills that operate in the area produce logs, lumber and other locally consumed wood products from stands of white spruce and paper birch. Timber stands targeted for commercial sales average above 3,000 board feet per acre.

Alaska Division of Forestry personnel report that hardwoods grow in the Delta area at a slightly higher percentage to the Interior norm. Individual hardwood and softwood trees in the Delta area



**Figure 3 Tanana Valley Forest Location Map**

Source: <http://forestry.alaska.gov/pdfs/tanavmmap.pdf>

are slightly smaller than those around Fairbanks, Nenana and Tanana. The Alaska Division of Forestry's Delta Area includes approximately 480,667 acres of State land, including portions of the Tanana Valley State Forest, which support commercial quality forests and are available for harvest.

The Division of Forestry in Copper River reported two timber sales between 1997 and 2001, totaling 560 acres. A 1968 field inventory for the Copper River area was limited to Chistochina, Chitina, Copper, Gakona, Gulkana, Klutina, Tazlina and the Tonsina Rivers. About 600,000 acres of the original inventory unit was set aside as the Wrangell-St. Elias National Park. The remaining portion has 154,600 acres of timberland with a net volume of about 482.6 million board feet of saw timber. Most of the saw timber is white spruce.

#### **4.4.1.2 Ahtna Inc.**

Several timber inventories have been conducted on portions of Ahtna land. The U.S. Forest Service's 1968 inventory identified 440,000 acres of commercial forestland within two million acres of the Copper River Valley. Between 1989 and 1991, the Forestry Department of the TCC conducted timber inventories on Gakona, Gulkana, Tazlina and Mentasta Village lands.

The timber in the Ahtna region is typically small white spruce that may be used as saw logs or house logs; however, best use of this timber is pulp. In 2002, Ahtna began a multi-year contract with Northwest Pacific Industries (NPI), a Matanuska-Susitna Valley firm, to chip large acreages of beetle-killed spruce, cottonwood and aspen on Ahtna lands. In past years, Ahtna has made a few small timber sales of about 150,000 board feet to local mills in the region.

#### **4.4.1.3 Yukon Flats**

Boreal forests dominate the Yukon Flats area. According to the Yukon Flats Resource Conservation & Development Area Revised Area Plan of 2001, the Council on Athabascan Tribal Government (CATG) would like to pursue forest industry development. Costs for shipping and transportation are high and there are limited possibilities for creating products for export and in locating and reaching possible markets for such products. The major obstacle identified by the CATG in developing the forest industry is excessive costs.

Tribal entities have also been exploring timber as a viable economic resource. The Stevens Village Natural Resource Department is completing their forest inventory and forest stewardship

program and the Circle Village Council is operating a functional sawmill and timber production business.

#### 4.4.2 Timber Industry Trends

The current State timber sale schedule calls for sales to continue between 2008 and 2010. In the Fairbanks area, the schedule is for about 600 acres to be logged per year with a yield of around 700,000 cubic feet of saw logs. In Delta, the estimated sales are between 870 and 2,000 acres of logging to occur with saw logs between about 1,700,000 and 2,700,000 cubic feet.

The forest industry in the Interior has been limited to small mills and cottage industries. In recent years, interest in these resources has increased. Potential products include composite board, flakeboard, fiberboard and waferboard. As the Interior and the Copper River Valley become growing tourist destinations, new buildings in rustic architectural styles may present an opportunity for the local timber industry. The export of logs to Asian markets does not appear feasible, since cheaper and closer higher quality sources are available. Also, foreign markets look increasingly to kiln dried lumber, which would involve a considerable investment by local providers.



There is potential to significantly increase timber production if the gas pipeline is built with a tap to the State Forest area (Delta) *and* if the railroad extension is built. Division of Forestry personnel state that there could be a large pulp mill as well as exports.

#### 4.4.3 Timber Industry Potential Access Needs

During the 1980s, nearly all commercial timber harvesting in the Interior was from the existing road system. Many of the upcoming sales are also located near the road system. The only road building that has historically been required on State timber sales has been onsite, although these roads often provide access to a future timber sale. Also, the Division of Forestry can authorize a purchaser to construct, reconstruct and maintain roads, bridges and other transportation facilities needed for cutting and removing timber.

Notwithstanding the above, the vertical and horizontal curves on the Richardson Highway at Hansen Hollow Road could be improved. One possible solution would be a one-lane, private road alongside the new railroad bridge across the Delta River. This would allow timber trucks to safely navigate the intersection and gain access to known resources.

Other problem areas include the intersection at the top of Tenderfoot north of Delta on the Richardson Highway where sight distance is poor, and Cummings Road east of Delta off the Alaska Highway near the Gerstle River. Division of Timber personnel have stated that, given their limited budget and DOT&PF's role as the lead state transportation entity, they want DOT&PF to accept ownership and maintenance of Cummings Road on the east side of the Gerstle River.

#### **4.5 Agricultural Resources**

The Tanana Valley was the agricultural heart of Alaska until the 1930s when the New Deal brought farming families to the Matanuska-Susitna Valley. Farming remains an important activity with most agricultural products sold and consumed locally.

In 1978, the State began the Delta Agricultural Project I near Delta Junction, creating 22 farms averaging 2,700 acres each. In 1982, the Delta II project formed 15 additional farms, averaging more than 1,600 acres each. Tracts of 2,000 to 3,600 acres were sold by lottery, and State loans were made available to purchase and clear the land. A marketing program was undertaken for barley exports. Grain terminals were built and the Alaska Railroad purchased 20 special grain cars, which were never used.

The Delta Barley project ultimately failed. One reason cited for the failure was that the Delta barley farms should have been located at Nenana, which is at lower altitude with a longer growing season and better soil (page 18, Investigation of Agricultural Limestone Demand Requirements and Supply Production in Alaska by A.C. Sanuzi, March 1983). In addition, wild bison herds in the Delta area ate the barley (Bison Depredation on Grain Fields in Interior Alaska by Philip Gipson and Jay McKendrick, 1981), no Pacific Rim buyers wanted to purchase barley from Alaska, and, without rail access, there was no low-cost way to transport the barley.

Other agricultural development initiatives include the following:



- A soil survey of 1,901,600 acres west of Nenana in the Totchakat area examined its agricultural potential. In June 2007, the City of Nenana re-examined the original 1981 study of the Totchakat land's development potential including road and bridge access to approximately 300,000 acres for agriculture and forestry development.
- The 1984 Upper Kuskokwim Regional Strategy Project concluded that small-scale agricultural enterprises supplying a limited, local market would be feasible in the McGrath area.
- The 1985 Yukon-Porcupine Regional Planning Study examined commercial agriculture potential in the area from Tanana to Fort Yukon. The study's minimum development scenario, characterized by domestic and small-scale enterprises, probably represents the actual condition of development to date. The TCC and the University's Cooperative Extension Service have collaborated to create joint programs in gardening, food preservation and animal husbandry that are available to tribal enrollees in many Interior villages. The TCC has repeatedly identified agriculture as an economic development priority. The State of Alaska Division of Agriculture is considering additional agricultural land sales in the Copper River Valley. Some demand may exist for additional agricultural land, as farm tracts in the Delta area are fully occupied and the Farm Service Agency reports that there is regular inquiry about the availability of farmland.

#### **4.5.1 Agricultural Resources Current Conditions**

While not a major player in the State's economy, agriculture is a stable industry. However, the cost to transport agricultural products, the lack of adequate processing facilities and dependable seasonal labor creates challenges. Diverse crop production in the study area includes brome hay, vegetables, potatoes, berries, barley and oats for grain and hay, grass seed and greenhouse production of plants and vegetables. Livestock production includes cattle, swine, goats, sheep, yaks, reindeer, bison, elk, musk ox and poultry. The demand for Alaska-produced beef is greater than the supply. Dairy production occurs in Delta Junction (Northern Lights Dairy).

Most crops are grown in the Fairbanks North Star Borough and the Delta Junction areas. Farmers frequently bring fresh produce to the Tanana Farmers Market or sell local produce at roadside stands or local stores. Major operations include pellet and grain feed producers, slaughterhouses, dairy and hay.

Two grain elevators are located in Delta Junction – the Alaska Farmers Cooperative and the former Montana Grain Growers Elevator now owned by two Delta Junction farmers. These facilities are under-utilized.

DNR has a program to auction agricultural lands to the public. In 2008, they successfully auctioned six parcels, ranging from 26 to 120 acres, in the Clearwater area about five miles southeast of Delta Junction off the Alaska Highway. Due to the auction's success (bids went up to 90 percent over the minimum), DNR plans to continue to auction agricultural parcels.

Two USDA-approved slaughterhouses are located in the study area. Delta Meat and Sausage is a private slaughterhouse in Delta Junction and Tanana Valley Meats Farms operates a slaughterhouse and processing plant in North Pole.

Seed potatoes, and to a lesser extent, carrots have been exported to China and Taiwan, but these ventures have been small and no firm export markets have been established. The recent potato blight disease may affect this opportunity. Exports to Canada and the continental United States have also been very small in scale. The ability to sell in quantity to urban markets in Alaska depends on the willingness of retail chains to buy Alaska products. New sales opportunities may exist through niche markets with hotel and restaurant sales, sales to cruise ship and tour lines, and the internet for specialized products such as wild berry jams and birch syrups.

Opportunities include organically grown crops and meat, Alaska's wild harvested and cultivated crops, and native grass seeds and plants for soils disturbed by road construction, military operations, oil field development and mining. Other successfully marketed landscaping products include humus and potting soils

#### **4.5.2 Agricultural Resources Trends**

Because of the great distance to external markets, farmers in Interior Alaska have limited markets. Road systems serving the existing agricultural areas are sufficient for local traffic and are tied into the road and rail system that connects the more populated areas of interior Alaska.

Many farmers provide their own transportation services. Most agricultural commodities move by truck. As fuel costs rise, other options may gain more interest and favor. Rail may also be extended closer to some agricultural areas in the coming years (North Pole to Delta Junction)

making this transportation option more attractive. Little infrastructure for loading and unloading bulk agricultural commodities exists for any mode of transport (highway, rail, or river).

### **4.5.3 Agricultural Resources Potential Access Needs**

Agricultural parcels auctioned by DNR may require driveway permits for highway access or access via section line easements. The Division of Agriculture places the responsibility for parcel access on the successful bidder.

Some undeveloped areas of potential expansion, such as the Nenana-Totchakat and Delta West agricultural areas, are not accessible by road or rail.<sup>13</sup>

## **4.6 Tourism**

For well over 100 years, visitors have trekked into the Interior of Alaska, drawn by the scenic beauty, remoteness and sense of adventure. Early journeys across the Interior often took several days on established trails, and then eventually on unpaved roads, such as the Richardson route from Valdez to Fairbanks. Early travelers often stopped at roadhouses that were about 25 miles apart.

### **4.6.1 Tourism Current Conditions**

Between May and September 2007, there was an estimated 1.7 million out-of-state visitors. Of this number, the Interior region attracted 534,000 visitors (including 450,000 visitors to Denali alone).<sup>14</sup> In the fall/winter 2007-2008 season an additional 247,400 visitors came to Alaska for a total of 1.9 million year round visitors. In 2008, summer visitation dropped about 5 percent to about 1.6 million visitors. The Cruise industry remained strong,<sup>15</sup> bringing many visitors on package tours to Denali and the Interior via train and bus.

Visitors exiting by highway and ferry continued a three year pattern of decline since 2005, decreasing by 6.8 percent and 2.8 percent respectively between 2007 and 2008. The number of

---

<sup>13</sup> The Agricultural Industry in Alaska: A Changing and Growing Industry – Identification of Issues and Challenges, prepared the UAF Cooperative Extension Service, May 2006, page 8

<sup>14</sup> *Alaska Visitor Statistics Program V: Summer 2006*, McDowell Group, Inc., April 2007.

<sup>15</sup> Personal Communication, Alaska Department of Commerce and Economic Development, January 2010.

visitors exiting via the Alcan Highway dropped by 18 percent; and exits on the Top of the World Highway dropped by 9 percent.<sup>16</sup> Air travel declined at about ten percent.<sup>17</sup>

Approximately 63 percent of all rural visitors tour the Interior of Alaska, with about 9 percent at some point using the Alaska railroad. Nearly two-thirds of those that visited Denali National Park were likely to visit Fairbanks.<sup>18</sup>

Numerous tourism operators provide activities in the study area. These include tours via the road system in the Fairbanks area, Wrangell-St. Elias National Park and Preserve, Copper River and the Arctic Circle (along the Dalton Highway). Activities for tourists in the study area range from bicycling tours, guided fishing/hunting, rafting, riverboat cruises, backpacking, mountain climbing, horseback riding, flightseeing, gold panning, and dog sled rides. Cultural tour destinations within the study area include Arctic Village, Coldfoot and Fort Yukon. Although independent travelers and Alaska residents purchase tours, most tours are sold with cruise ship packages.

Study area airports used for flightseeing and other air tours include Arctic Village, Chitina, Coldfoot, Copper Center 2, Denali National Park, Fairbanks International, Fort Yukon, Gulkana, Healy River, Kantishna, McCarthy, Tok Junction and Denali Air's private strip located near the entrance to Denali National Park. Backcountry airstrips and lakes that are not registered as airports also support tourism. ERA Aviation also provides flightseeing via helicopter from MP 238 of the Parks Highway, just outside the entrance to Denali National Park.

Many independent tourists drive the highway "loop", travelling the Parks Highway to Fairbanks, down the Richardson Highway, and then leaving the State through Tok or returning to Anchorage via the Glenn Highway. The paved Glenn, Richardson and Edgerton Highways bring travelers to secondary roads such as the McCarthy and Nebesna Roads that enter the Wrangell-St. Elias National Park and Preserve, and the Denali Highway from Paxson to Cantwell. More visitors fly into Alaska and rent cars than drive their own vehicles. Many car rental agencies will not permit rental cars on gravel roads, such as the Nebesna and McCarthy Roads, and the Denali

---

<sup>16</sup> Personal Communication, Alaska Department of Commerce and Economic Development, January 2010.

<sup>17</sup> Personal Communication, Alaska Department of Commerce and Economic Development, January 2010.

<sup>18</sup> *A Profile of Visitors to Rural Alaska, Alaska Travelers Survey*, McDowell Group, March 2006.

Highway. Some of the documented constraints to tourism development include long travel distances, poor road conditions, high fuel costs, long stretches of roads with construction or maintenance delays, and limited signage or tourist amenities.

#### **4.6.2 Tourism Trends**

While travel to Alaska has increased, highway travel has declined slightly as a percentage of all travel to Alaska. The cruise market mode increases every year while other modes remain static or are lower than previous years. Increased fuel prices and a trend toward shorter vacations have contributed to this statistic. The Trend Analysis from the *A Profile of Visitors to Rural Alaska* March 2006 by the McDowell Group additionally states:

The average length of stay in Alaska decreased from 16.2 to 12.5 nights. This is likely related to the decline in the highway and ferry markets, which tend to stay longer in the state when compared to the air market.

A related issue is the rate of visitation to certain communities. Anchorage visitation went up, while Fairbanks and Tok visitation went down. Highway visitors are more likely to visit Fairbanks and Tok; air visitors are more likely to visit Anchorage.

The *Alaska Visitor Statistics Program V Interim Visitor Volume Report, Summer 2007* by the McDowell Group states that overall visitation was up 5.1 percent over summer 2006. The majority of growth was in the cruise visitor, which was up 7.3 percent between 2006 and 2007. Overall highway exits were down.

According to *Alaska Visitor Statistics Program V: Summer 2006* by the McDowell Group, 587,800 visitors to Alaska entered and exited by air. Approximately 34 percent of the visitors who traveled to and from Alaska rented a vehicle while in the state. Previous visitor studies did not include this statistic so a trend cannot be reported on a “fly and drive” aspect of tourism.

#### **4.6.3 Tourism Potential Access Needs**

While the need for new access routes to accommodate tourism has not been identified, improving road conditions, signage and tourist amenities such as maintained rest room facilities may increase tourism or improve the experience.

The aircraft fleet dedicated to flightseeing in the study area is made up of small (up to eight-seat, twin engine) aircraft. These aircraft can operate on smaller (both shorter and narrower) runways

than larger aircraft. Airport improvements do not appear to be needed to support increased flightseeing, since most publicly-owned Interior airports already have runways of 2,000 feet or longer. Public airports that do not meet appropriate FAA design standards should be improved to meet them for the safety of pilots and passengers. The number of Interior flightseeing trips occurring at a single airport in a compressed timeframe is far below the levels that occur in Southeast Alaska cruise ports or in Talkeetna (a primary base for Denali Mountain flightseeing). If flightseeing in the Interior grows substantially, additional aircraft parking apron may be needed at some airports.

## **4.7 Commercial Fishing**

A small commercial salmon (Chinook and Chum) fishery occurs on the main stem of the Yukon River and the Tanana River in the summer and fall. Fish wheels are the dominant gear type in the area.

### **4.7.1 Commercial Fishing Current Conditions**

The Alaska Department of Fish and Game (ADF&G) monitors commercial harvests, limiting fishing areas and seasons as necessary. Additional limitations on the commercial fishery include maintaining adequate escapement for spawning stocks and for the subsistence fishery.

In most recent years, there have been harvestable surpluses of summer Chum. However, in 2007 there was no summer chum fishery in the study area and a limited commercial opening for summer Chinook salmon.

The website for The Yukon Panel states: “Most commercial fishers are residents of the Yukon River drainage and many subsistence fishers also participate in the commercial fishery. The cash income derived from the commercial fishery assists many area residents in their subsistence lifestyle. Income earned from commercial fishing is often used to obtain hunting and fishing gear, such as nets, boats and outboard motors utilized in subsistence activities.”

There is no one area of congregation for commercial fishing in this part of the Yukon River. Those who fish commercially most often use the same equipment as they use in subsistence fishing. They sell to small volume, local processors. John Burr, Area Management Biologist, Division of Sports Fish states that there is a quandary between buyers and commercial ticket



holders because the fishery has been so variable in the last 8 or so years. Buyers do not necessarily want to gear up to buy if the fishery is canceled or curtailed.

There has been commercial and subsistence fishing at Tanana and Rampart. A cannery was established at Rampart in the 1940s. It is unknown when it was abandoned, but the school has been closed since 1999 due to the low population.

According to John Burr, there are personal use fisheries on the Yukon River at the Dalton Highway Bridge and near Fairbanks on the Tanana River. There are no other personal use fisheries in the study area.

### **4.7.2 Commercial Fishing Trends**

ADF&G assesses each salmon run before allowing commercial fishing. The salmon runs in 2009 were below previous years' estimates and the prediction for 2010 was also low.<sup>19</sup>

The value of the 2007 fall fishery was \$18,300, above the 10-year average of \$13,700. With a ban on west coast salmon fishing, prices for all salmon will probably increase and above average prices will continue.

### **4.7.3 Commercial Fishing Potential Access Needs**

There have been no additional access needs identified to support commercial fishing.

---

<sup>19</sup> ADF&G Special Publication 10-02 *Run Forecasts and Harvest Projections for 2010 Alaska Salmon Fisheries and Review of the 2009 Season* February 2010 edited by D.M. Eggers, M. D. Plotnick and A.M. Carroll