SCOMM

113:4

Thursday, January 27th, 2000 – 5:00 to 6:30pm

Economic Development & Tourism Committee

Agenda:

I. Roll call

II. Reports on Summer Assignments - Transportation Corridor Discussion:
- Rep. Dyson – Williamsport Road – Illiamna Bay to Pile Bay
- Rep. Halcro – Donlin Creek - Kuskokwim Area
- Rep. Cissna – Telecommunications Highway - Kensington Mine Road
- Rep. Phillips – Rock Creek – Nome Area
- Rep. Phillips – Rail Line to Arctic Coal Project
- Rep. Rokeburg – Pogo Project, Delta Junction and rail possibilities

III. Discussion on the priority of issues for future meetings
Including the following issues:
- E-commerce
- Potential economic ties to Alberta
- Anchorage-Fairbanks Airport Authority
- Overview of the Developments in the Alaska Mining Industry
- Tourism review (cruise ship update).
- Other issues of interest to committee members.

IV. Notices

Reminder to provide written summaries of road/transportation discussions.

Next meeting: Possible Joint WTO, DMVA and EDTC meeting to hear a presentation by General Oates on the Missile Defense Program and its affect on Alaska. Feb. 8th ???

Next Scheduled Meeting: Wednesday, November 9th, 5:00 pm House resources room 124. On the agenda will be the discussion of HB 265 – an act to extend the termination date of the Alaska Regional economic assistance program.

V. Adjournment

GP:sp

Alaska State Legislature

Official Business

State Capitol
Juneau AK
99801-1182

Economic Development and Tourism Committee
Representative Gail Phillips, Chair

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Rep. Halcro – Donlin Creek - Kuskokwim Area
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Rep. Cissna – Telecommunications Highway - Kensington Mine Road
Rep. Dyson – Williamsport Road – Illiamna Bay to Pile Bay
Rep. Rokeburg – Pogo Project, Delta Junction and rail possibilities

Note: The Representatives will provide written updates on their projects for the meeting minutes.

Discussion on the priority of issues for future meetings
Including the following issues:

E-commerce
Potential economic ties to Alberta
Anchorage-Fairbanks Airport Authority
Overview of the Developments in the Alaska Mining Industry
Tourism review (cruise ship update).
Other issues of interest to committee members.

The meeting will be held in House Resources Room # 124.

GP:sp

Chairman: Representative Gail Phillips
Committee Members: Representatives Ramona Barnes • Fred Dyson
Norman Rokeburg • Andrew Halcro • Sharon Cissna • Beth Kertula

SOUTHWEST ALASKA TRANSPORTATION PLAN

FREIGHT MOVEMENT ISSUES AND IMPACTS

TECHNICAL MEMORANDUM

DRAFT

prepared for the

Alaska Department of Transportation and Public Facilities

prepared by

Parsons Brinckerhoff

December 1999

PB 100 YEARS

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INTRODUCTION

This report explores the probably freight movement impacts of selected alternatives developed as part of the Southwest Alaska Transportation Plan. The analyses presented herein focus on the proposed Trans-Peninsula Roadway, which would create an new overland route from Williamsport, which lies on the western shore of Cook Inlet, down the Alaska Peninsula, terminating at Ivanof Bay, Between these beginning and endpoints, the road would also link the following communities:[1]

- Pile Bay
- Pedro Bay
- Iliamna
- Nondalton
- Igiugig
- Naknek
- Egegik
- Pilot Point
- Ugashik
- Port Heiden
- Chignik Lagoon
- Chignik Lake
- Chignik
- Perryville

Ferry service linking the Kenai Peninsula with the Alaska Peninsula at Williamsport is proposed in conjunction with these roadway segments. Of the many transportation concepts explored and developed as part of the Southwest Alaska Transportation Plan, it is the proposed roadway links and Kenai to Alaska Peninsula ferry service, which taken together constitute a regional surface network, that have the most potential to impact freight movement—as reflected in changes or shifts in mode split, intermodal transfer nodes, and shipping costs. For this reason, the probable freight impacts of the Trans-Peninsula Roadway System merit special attention. The freight movement impacts of two scenarios within this alternative are explored: (1) those impacts associated with implementation of the Trans-Peninsula Roadway System in its entirety; and (2) those impacts resulting from implementation of a select portion of the alternative, namely, the proposed roadway and improvements between Williamsport and Pile Bay, along with navigational improvements at Williamsport.

Rehabilitation of the existing Williamsport to Pile Bay Road has important freight movement implications in its own right, whether or not any other links are built. The existing Williamsport to Pile Bay road is a 15.5-mile gravel road with one drained, earthen lane and no shoulder. Historically, the road has been used to transport fishing vessels of the Bristol Bay gillnet fleet between Cook Inlet and Bristol Bay, which allows a safer, faster route than sailing around the Alaska Peninsula. However, the road and its bridges are in extremely poor repair. Portions of the road do not meet minimum width standards and are too narrow for current use. All of the bridges have sufficiency ratings below 50, and one has washed out and been dismantled. The major limitation restricting boat-haul traffic is the existing metal bridge across the Iliamna River, whose interior dimension of 12 feet is too narrow for the typical gillnet boat. The project contemplated as part of this regional transportation plan would reconstruct and widen the existing road in accord with national design standards.[2] Also included as part of this project

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[1] Levelock could be added to this list, depending on which of two options were selected.

[2] The project would rebuild the existing road to meet standards set forth for a rural major collector with an ADT of less than 250 vehicles per day, as specified by the American Association of State Highway and Transportation Officials (AASHTO).

element would be navigational improvements at Williamsport, including dredging the approach channel, as recommended by the US Army Corps of Engineers in its 1995 study.

If this project were implemented, then it would become feasible (technically) to barge goods to Williamsport, truck them to Pile Bay, and then barge them to communities lying along the shores of Iliamna Lake. Goods could be moved down the Kvichak River to Bristol Bay between early August and late October, when the river is ice-free and when its water level is high enough to support navigation. The lake itself is navigable for six months a year, between May and October. As such, a marine shipper would need to dedicate a barge to serve Iliamna Lake communities during the six months the lake is navigable.[3]

Three challenging tasks had to be accomplished in order to quantitatively estimate the impacts of the roadway links proposed as part of the Southwest Alaska Transportation Plan: (1) documentation of existing freight movement patterns in the region--by mode, volume, direction, and commodity type; (2) development of freight demand forecasts by community and basic commodity type for the 2020 design year; and (3) development of a methodology with which to compare aggregate freight movement costs under both existing conditions and under the proposed infrastructure improvements. Each of these tasks was made difficult by the paucity of detailed and complete data on commodity flows by type, volume, seasonal split, shipping cost, or mode.

Moreover, to the author's knowledge, to date, no systematic study of freight movement in Southwest Alaska has ever been undertaken.[4] While this report constitutes an effort to develop a stronger, more empirically based understanding of the region's freight patterns and needs, the scope of the planning effort precluded the level of additional primary data collection that would be necessary to develop a suitably accurate, detailed understanding of how freight moves into, out of, and around the region.

Because of the many gaps in the data, and other data issues, such as comparability, the discussion and findings reported herein have had to be built on the basis of numerous assumptions. Although these assumptions are based on the best information currently available (absent a major new data collection effort), there is no denying that changing one or more assumptions could change the outcome significantly. In this case the ultimate outcome of the report is an estimate of total freight movement cost savings achievable by building a road from Williamsport to Ivanof Bay. In sum, the findings reported herein should be taken for what they are—a conceptual, planning-level estimate of costs and benefits. Even where data are available, problems exist in terms of their comparability. For example,

- While the US Army Corps of Engineers (COE) Waterborne Commerce Statistics Department collects data on marine shipments to and from Chignik, the Federal Aviation Administration (FAA) does not collect data on airborne cargo for this community. In fact, "complete" data sets, that is, COE, FAA, and AMHS, are only available for a handful of communities.

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[3] Another reason to explore the freight movement impacts of this project as a stand-alone element has to do with the fact that of all the roadway links contemplated, this one faces fewer environmental and political obstacles than do the others. The Williamsport to Pile Bay segment may face fewer implementation obstacles because a roadway—albeit in poor repair and primitive—already exists. The project proposed as part of this transportation plan would renovate this road, paving it, widening it, and bringing it up to national standards. As such, the political and environmental issues surrounding most roadway projects in Alaska would not be as formidable as building a new stretch of infrastructure through undeveloped wilderness.

[4] To the author's knowledge this report reflects the first instance in which available primary data sources for different modes have been assembled in a single document for what comparative analyses they can support.

- While the COE data on marine shipments specify both origin and destination, the FAA reports only "freight enplaned."
- While the COE reports the basic type of commodity shipped by sea, no specification of any kind of airborne cargo is available in FAA data, nor in the AMHS data.
- None of the available sources provide any indication of the value of goods shipped.

Insofar as these fairly disparate data sources had to be combined in order to develop a single, multimodal picture of overall volumes moved, mode split, and other measures, the level of specificity was determined by the "lowest common denominator." From the data it was possible to determine how much freight, in aggregate, is handled in Southwest Alaska; mode split by volume, and gross breakdowns of commodity type. Additional manipulations were used to develop a sense of freight movement in the many smaller communities for which no data at all are available. These analyses are discussed in Part 3.

Because understanding the nature, sources, and limitations of the data upon which the report is based is so important to interpretation of the results, the report begins with a discussion of the data sources themselves.

NOTES ON THE FREIGHT MOVEMENT DATA

Three major source types were used to gain an understanding of freight movement in Southwest Alaska: (1) published primary sources; (2) unpublished primary sources, namely, in-person and telephone interviews with representatives of shipping companies operating in Alaska; and (3) published secondary sources.

Primary Sources

Published sources. Compilation by mode of the "raw" data needed to establish existing freight movement patterns in the region had already been carried out in an earlier deliverable for this planning effort, "Southwest Alaska Existing Conditions Technical Memorandum," April 1998. This document reported statistics gathered by the Federal Aviation Administration, the US Army Corps of Engineers Waterborne Commerce Statistics Division, and the Alaska Marine Highway System.[5] The nature and type of data provided by each of these sources are summarized in Table 1. These data are at the core of the freight demand forecasting process, and in turn, for the analysis of freight movement impacts attributable to the proposed alternatives, with particular emphasis on the Trans-Peninsula Roadway System.

[5] AMHS provided the consultant team with access to its computerized database, which includes information on the volume of freight vans carried, by sailing, origin, and destination.

Table 1.
Primary Sources of Freight Movement Data for Southwest Alaska

Freight Mode	Primary Sources	Type of Data	SW Communities for which data are available	
Air Freight[6]	Federal Aviation Administration: 1. Airport Activity Statistics of Certificated Route Air Carriers 2. Commuter Air Carrier Activity	• Tons of enplaned mail and cargo from 1987-95 for certificated route air carrier; from 1988 to 1996 for small certificated and commuter air • Enplaned tons are tons put on the airplane at the given location carriers	Cold Bay Dillingham Iliamna King Cove King Salmon Kodiak	Port Heiden St. George St. Paul Sand Point Togiak Unalaska
AMHS Freight[7]	AMHS Database	• Van volumes by number and van length • Origin and destination for all ports served by AMHS	Chignik Cold Bay False Pass King Cove	Kodiak Port Lions Sand Point Unalaska

Private Marine Freight	US Army Corps of Engineers, Waterborne Commerce Statistics Center	• Incoming and outgoing tonnage by freight category:
		  • Petroleum and petroleum products
		  • Durable goods
		  • Fish and fisheries products
		  • All other commodities 1986 to 1994
			Chignik
			Cold Bay
			Dillingham
			Egegik
			False Pass
			Iliamna
			King Cove
			King Salmon
			Kodiak
				Naknek
				Old Harbor
				Port Heiden
				Port Lions
				St. George
				St. Paul
				Sand Point
				Togiak
				Unalaska

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6 Data on cargo and mail shipped via air are available from the Federal Aviation Administration /Bureau of Transportation Statistics (BTS) from two sources: 1) *Airport Activity Statistics of Certified Route Air Carriers* and 2) *Commuter Air Carrier Activity*. These data provided the tons of enplaned mail and cargo from 1987 to 1995 for certified route air carrier, and from 1988 to 1996 for small certified and commuter air carrier freight. For this analysis, data from more recent years was used, that is, 1990 to 1995 for certified route air carrier and 1990 to 1996 for small certified and commuter air carrier. The data (for both cargo and mail) from these data sets were summed for each year to develop an annual average for each airport. The data are collected as enplaned tons; i.e., cargo put on the airplane at the given location.

7 Data on freight movement via AMHS were available from the AMHS Database, which provides van volumes, including each van's length in feet, by origin and destination. Van volumes were converted to a tonnage unit based on length. To convert feet to tons, each foot was multiplied by 650 for total pounds, then divided by 2000. The authors acknowledge that this equivalent is imprecise, since vans' weights are not measured or recorded. Nonetheless, the 650-pound figure is a conservative estimate the reference for which is *TRB Special Report 223, "Providing Access for Large Trucks,"* 1989, p.177. Data were available for each year from 1988 to 1997. For this analysis, data was averaged for the more recent years of 1992 to1996, because the data set for 1997 appeared incomplete.

Table 2.
Freight Movement Summary
for Southwest Alaska

Community	FREIGHT MOVEMENT MODE					Total Tonnage
	Air	AMHS Vans		Private Marine		
	Combined Air (tons of cargo & mail enplaned)	Origin	Destination	Total Average (incoming tons)	Total Average (outgoing tons)	Total Reported
Akutan				8,300	11,200	19,500
Chignik		11	2	9,800	1,500	11,313
Cold Bay	782	8	29	3,100	900	4,819
Dillingham	4,372			10,900	7,300	22,572
Egegik				400	1,100	1,500
False Pass		4	0	300	100	404
Iliamna	1,255			0	0	1,255
King Cove	44	0	0	7,100	4,500	11,644
King Salmon/Naknek	5,413			19,800	23,600	48,823
Kodiak & Surrounding	3,516	770	845	252,900	304,800	562,831
Old Harbor				600	700	1,300
Port Heiden	119					119
St. George	59					59
St. Paul	181					181
Sand Point	185	2	6	9,100	100	9,393
Togiak	118					118
Unalaska	1,272	15	11	312,700	436,100	750,098
Total	17,326	810	893	635,000	791,900	1,445,929

Interviews. Another key source of primary data were in-person and telephone interviews conducted with representatives of Alaska Airlines, PenAir, ERA Aviation, Everts Air Fuel, Samson Tug and Barge, Crowley Marine Services, Bush Consolidators, Northland Transportation, Coastal Marine Transportation, Coastal Freight and Salvage, Iliamna Transportation Company, Harkness Enterprises, Sea-Land, Airland, and Carlile Transportation. These interviews elicited the carriers' views as to the probable pricing and service level effects of the alternatives proposed in this planning effort. These representatives also served as a "sounding board" in terms of the reasonableness of the methodology established to assess the freight movement impacts of the proposed alternatives.

In addition to the shippers and consolidators, a useful resource was found in Dennis Niedermeyer, at the suggestion of Southwest Alaska Advisory Committee member, Sheila Bergey. Niedermeyer, who is employed by the Lake and Peninsula School District, manages the district's capital projects. The projects are scattered throughout the Borough (whose boundaries, incidentally, incorporate almost all of the communities that would be linked by the Trans-Peninsula Roadway System). His work puts him in a unique position in terms of experiencing firsthand the difficulties and high costs associated with getting a wide range of goods, including building materials, heavy machinery, and petroleum products, to construction sites. His firsthand knowledge provides insight into the cost of moving goods to and within the region by type, mode, community, direction, and season.

In fact, Niedermeyer was in several respects a better source than the shippers themselves. First, he, unlike them, was able to provide candid, realistic rate estimates. The shipping companies contacted were, virtually without exception, circumspect about revealing rates for contract shipments. They attribute their reticence to two primary factors: (1) that revealing their rates would give their competition useful intelligence which would then be used to compete against them; and, (2) that revealing rates in a public document could open shippers up to charges of price gouging and other undesirable public scrutiny. The shippers did provide broad rate ranges, but anonymously. To the extent that shippers were used to estimate rates, under existing conditions, and under the hypothetical situation involving the proposed roadway system, multiple shippers were contacted and rate quotes were generally averaged to strive for as much validity in those rate quotes as feasible. Another reason that Niedermeyer's input was helpful is that shippers appeared to be familiar with only their mode and market niche, whereas Niedermeyer was able to provide a more accurate overview of freight shipment across commodity types and modes.

Secondary Sources

As noted, available primary sources in Southwest Alaska are limited in their ability to illuminate the full extent of regional freight movement. Therefore, a literature review was conducted to ferret out bits and pieces of freight movement information—particularly for smaller communities, on which subject the primary sources are completely silent. What we had hoped to find at this point was a clearer indication of how freight moves on to the smaller communities after having reached the marine and aviation hubs for which primary data are collected. Ultimately, this effort simply revealed how little freight movement in the Southwest has been studied. As such, the information uncovered in this literature review was of limited value in painting with even broad brushstrokes a picture of regional freight movement. In any case, listed in Table 3 are the secondary sources referenced in this effort to "fill in the blanks."

Table 3.
Secondary Sources of Freight Movement Data for Southwest Alaska

1. Alaska Department of Transportation and Public Facilities, *Alaska Intermodal Transportation Plan, Appendices A-C*, October 1994.
2. Alaska Department of Transportation and Public Facilities, Division of Planning Central Region, *Nondalton-Newhalen/Iliamna Pioneer Road Economic Feasibility Study*, March 1986.
3. Alaska Marine Highway System Department of Transportation and Public Facilities, *Alaska Marine Highway System Master Plan*, July 1991.
4. Community Planning, *Draft Secondary and Cumulative Impacts Study of the Proposed Iliamna-Nondalton Road Reconstruction*. Alaska Department of Transportation and Public Facilities, September 1996.
5. Department of Community and Regional Affairs, *Community Information Summaries*, downloaded from website www.comreg.af.state.ak.us, June 1997.
6. Fried, Neal and Windisch-Cole, Brigitta, "A Trends Profile- The Bristol Bay Region" *Alaska Economic Trends*, July 1997.
7. HDR Alaska Inc., *Draft Assessment of Transportation Need, King Cove-Cold Bay Transportation Improvement Assessment*. Alaska Department of Transportation and Public Facilities, December 1997.
8. Kodiak Chamber of Commerce, *Kodiak Community Profile and Economic Indicators*, 1997.
9. Lake and Peninsula Borough, *Lake and Peninsula Borough FY'95 Transportation Improvement Program Priorities*. Prepared for the Alaska Department of Transportation and Public Facilities, October 1993.
10. Parsons Brinckerhoff, HDR Alaska, the Glosten Associates, Northern Economics, and Ogden Beeman Associates, *Southwest Alaska Transportation Plan- Existing Conditions Technical Memorandum*. Alaska Department of Transportation and Public Facilities, April 1998.
11. TRA-BV Airport Consulting, *Alaska Aviation System Plan Update Appendices*. Prepared for Alaska Department of Transportation and Public Facilities, March 1996.
12. TRA-BV Airport Consulting, *Alaska Aviation System Plan Update Executive Summary*. Prepared for Alaska Department of Transportation and Public Facilities, March 1996.
13. Tryck, Nyman, Hayes, Inc., *Reconnaissance of Navigation Improvements, Western and Arctic Coasts of Alaska, Task 1, 2, & 3*. Prepared for Alaska District Corps of Engineers, August 1997.
14. *Economic Impacts of the Copper River Highway*. Prepared for the State of Alaska Department of Transportation and Public Facilities, by the Institute of Social and Economic Research, University of Alaska, Anchorage, June 1993.
15. *Navigation Channel Feasibility Report and Environmental Assessment, Williamsport*; US Army Corps of Engineers, Alaska District, December 1995.
16. Parsons Brinckerhoff, Northern Economics, and the Glosten Associates, *Southwest Alaska Transportation Plan- Travel Demand Estimates Technical Memorandum*. Alaska Department of Transportation and Public Facilities, September 1998.

PART 1. OVERVIEW OF FREIGHT MOVEMENT IN SOUTHWEST ALASKA

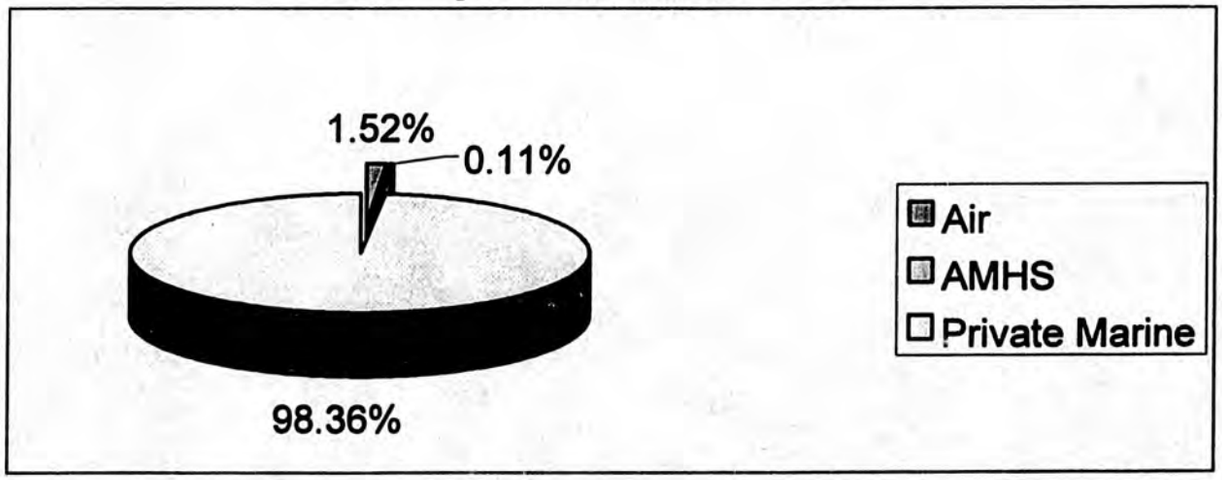
Because manufacturing in the region, outside of fish processing, is extremely limited, virtually everything Southwest Alaskans consume, apart from the subsistence resources they harvest, must be shipped in—by air or by sea. Imports include building materials, machinery, fishing support supplies, groceries, and consumer durables.

The vast majority of imports to the region originate not in Anchorage, but in the Puget Sound ports of Seattle and Tacoma. This is due to the fact that (1) Anchorage is a relatively minor manufacturer; and (2) Anchorage has few warehousing facilities, which limits its ability to serve as a transshipment point (Terry Hart, Sea-Land, Alaska Northbound Marketing Director, personal communications, September 23, 1999). In fact, Alaska ranks among the Port of Tacoma's biggest customers.[8] Unalaska, in addition to its role as a major fishing and fish-processing source, serves as a key international transshipment site—for Asia-bound goods and ship traffic.

MODE SPLIT

By volume, the vast majority of goods to and from Southwest Alaska are shipped by sea, via private carriers, which include both ships (container and Ro-Ro) and barges. Marine shipping accounts for over 98% of the volume of goods shipped through Southwest Alaska.[9] AMHS freight haul makes up a miniscule percentage (less than 1%) of the region's total freight movement (Figure 1).

Figure 1.
Combined Freight Movement
Mode Split in Southwest Alaska



[8] Both SeaLand and TOTE, the largest Alaskan shippers, operate out of the Port of Tacoma.

[9] Data on private freight marine was available from the US Army Corps of Engineers, Waterborne Commerce Statistics Center. This data included both incoming and outgoing tons for 1986 to 1994 for 4 major categories: 1) petroleum and petroleum products, 2) durable goods, 3) fish and fisheries products, and 4) all other commodities. In analyzing the data it was important to note that in 1990 the Waterborne Commerce Statistics Center changed its data collection methods and started to record data in short tons, so an entry after 1990 of "0" indicates less then 500 short tons were reported. Annual data was averaged for Petroleum, Petroleum Products, Durable Goods, Fish, Fisheries Products, and All Other Commodities for 1986 to 1995.

Marine shipping in Southwest Alaska is challenging because of the region's harsh weather, small populations, and relatively undeveloped ports. Winter ice typically prevents any navigation to Bethel and other Bristol Bay ports as well as the northwest coast of the Alaska Peninsula. Small villages must often be served by lightering cargo from barges or small ships to landing craft or small boats. In the Bristol Bay region it is common for barges to be grounded at low tide and to spend a tide cycle on the beach discharging cargo. Barge-mounted cranes are typically used.

There are three primary components to marine shipping in Southwest Alaska:

(1) The large international shipping fleet represented by Sea-Land Services and American President Lines, both of which call at Unalaska on a weekly basis and transport frozen seafood products to the Far East. Sea-Land serves Kodiak and Dutch Harbor with freight from Seattle; APL only picks up export products for the Far East.

(2) The specialty ship fleet of Coastal Transportation and Western Pioneer Shipping. Both maintain fleets of small refrigerator ships. They are configured to carry frozen seafood south and general cargo and seafood processing supplies north. Coastal has a fleet of seven ships and Western Pioneer has a fleet of ten. Western also operates a fleet of bulk petroleum barges that distributes refined products from the Alaska Peninsula to Southwest Alaska and other points in Western Alaska.

(3) The barge operators that operate seasonal common carrier and contract services to Southwest Alaska. The principal barge operators are Northland Services and Samson Tug and Barge. These operators carry the majority of bulky freight to and from the towns and villages of Southwest Alaska. Container and individual items, such as buildings, vehicles, boats, construction equipment, and bulk materials can be transported on the flat deck barges operated by these carriers. Crowley Maritime also operates petroleum barges in the region. These carriers also act as feeder services for the international shippers and gather and distribute freight using Dutch Harbor as the hub. Other hubs include Naknek, Bethel, Sitka, and Kodiak. Sitka and Kodiak are used for transshipment of cargoes moving from Southeast Alaska and Prince William Sound ports.

A feature of marine service to Southwest Alaska is that capacity is quite elastic. Extra voyages can typically be added at the end of the normal season. For long-range projects, extra equipment can be dedicated to a service area. For example, both Western Pioneer and Coastal supplement their service during the peak of the fishing season. Furthermore, contract towing, wherein a customer contracts for a particular service, can provide substantial capacity; particularly for remote areas with only occasional service. Although excess capacity exists, it may not be available to all of the region's remote villages, or even some of its relatively large communities. This is because the fixed cost of making a stop is quite high. Aside from the fuel, and fixed vessel costs for the voyage, there is also the likelihood that a full longshore gang has to be called out—even for a small amount of cargo. One operator even noted that they provide service at a substantial loss during the off-season, in order to maintain relationships with customers for the peak season.

Table 5 contains a general schedule for marine service to Southwest Alaska ports. Do note that one item in this table is not up to date. Crowley recently rescinded its regularly scheduled service to Southwest Alaska for 1999, citing declining business, ostensibly related to poor fish harvests in Bristol Bay.

Table 4.
Freight Movement Mode Split
by Southwest Alaska Community

COMMUNITY	MODE			TOTAL	MODE SPLIT		
	Combined Air (tons of cargo & mail enplaned)	Combined inbound and outbound AMHS	Combined inbound and outbound Private Marine	TOTAL FREIGHT MOVED	% OF TONNAGE MOVED BY AIR	% OF TONNAGE MOVED BY AM.	% OF TONNAGE MOVED BY PRIVATE MARINE
Akutan			19,500	19,500	0.00%	0.00%	100.00%
Chigniks[a]		13	11,300	11,313	0.00%	0.11%	99.89%
Cold Bay	782	37	4,000	4,819	16.23%	0.77%	83.00%
Dillingham	4,372		18,200	22,572	19.37%	0.00%	80.63%
Egegik			1,500	1,500	0.00%	0.00%	100.00%
False Pass		4	400	404	0.00%	0.99%	99.01%
Iliamna	1,255			1,255	100.00%	0.00%	0.00%
King Cove	44		11,600	11,644	0.38%	0.00%	99.62%
King Salmon/Naknek	5,423		43,400	48,823	11.11%	0.00%	88.89%
King Salmon	5,423			5,423	100.00%	0.00%	0.00%
Kodiak	3,516	1,615	557,700	562,831	0.62%	0.29%	99.09%
Naknek		0	43,400	43,400	0.00%	0.00%	100.00%
Old Harbor			1,300	1,300	0.00%	0.00%	100.00%
Port Heiden	119			119	100.00%	0.00%	0.00%
St. George	59			59	100.00%	0.00%	0.00%
St. Paul	181			181	100.00%	0.00%	0.00%
Sand Point	185	8	9,200	9,393	1.97%	0.09%	97.95%
Togiak	118			118	100.00%	0.00%	0.00%
Unalaska	1,272	26	748,800	750,098	0.17%	0.00%	99.83%
Total	**22,749**	**1,703**	**1,470,300**	**1,494,752**	**1.52%**	**0.11%**	**98.36%**

Note that "complete" mode split data are available only for a small subset of Southwest Alaska communities: Cold Bay, Dillingham, Kodiak, Sand Point, and Unalaska. This is a function of the basis upon which the data are collected. Akutan, as well as the Chigniks, for example, certainly experience some degree of airfreight movement. However, since cargo enplanement data are not available for these communities, it is no possible to ascertain the aviation cargo mode split without additional data collection. Similarly, the absence of marine cargo data for the communities in the Iliamna Lake area is another limitation. Though waterborne commerce statistics from the US Army Corps of Engineers are unavailable for Iliamna, it has been reported in another secondary source that only about 40% of freight is flown into Iliamna, the rest arriving by barge and landing craft (US Army Corps of Engineers, Navigation Channel Feasibility Report and Environmental Assessment, December 1995). The absence of marine cargo data for the communities in the Iliamna Lake area is another limitation.

Table 5.
General Service Schedule for Private Marine Shipping to Southwest Alaska

Carrier	Coastal Transportation	Crowley Marine Services, Inc	Northland Services, Inc	Samson Tug & Barge	SeaLand Service	Western Pioneer	American President Lines
Frequency of Service Port	Jan 1-Nov 15 Weekly Nov 16-Dec 31 Bimonthly Apr-Aug Twice Weekly	April–September Only	April–September Only	Year-Round Service–Weekly May–September	Year-Round Service	Supplemented During Fishing Season	Year-Round Service
Akutan	Weekly					Every 10 days	
Aleknagik		Village service* provided via Dillingham	Service provided via Bristol Bay Villages				
Anchorage		4 times per season	6 times per season		Bi-Weekly		
Chignik	Weekly	2 times per season				Every 10 days	
Clarks Point		3 times per season					
Cold Bay	Weekly					Every 10 days	
Dillingham		7 times per season	9 times per season				
Egegik		2 times per season	4 times per season				
Ekuk			3 times per season				
Ekwok		Village service* provided via Dillingham	Service provided via Bristol Bay Villages				
False Pass	Weekly					Every 10 days	
Igiugig			Service provided via Bristol Bay Villages				
Illiamna			Service provided via Bristol Bay Villages				
King Cove	Weekly			Bi-Weekly		Every 10 days	
Kodiak		1 time per season		Bi-Weekly	Bi-Weekly	Every 10 days	
Kodiak Island		3 times per season					
Koliganek		Village service* provided via Dillingham	Service provided via Bristol Bay Villages				
Larsen Bay						Every 10 days	
Levelock			Service provided via Bristol Bay Villages				
Manokotak		Village service* provided via Dillingham	Service provided via Bristol Bay Villages				
Naknek		7 times/season (incl. occasional village svc)	9 times per season				
Nelson Lagoon		1 time per season					
New Stuyahok		Village service* provided via Dillingham	Service provided via Bristol Bay Villages				
Newhalen			Service provided via Bristol Bay Villages				
Old Harbor						Every 10 days	
Ouzinkie						Every 10 days	
Pedro Bay			Service provided via Bristol Bay Villages				
Pilot Point		Village Service provided via Naknek					
Port Heiden		Village Service provided via Naknek					
Port Lions						Every 10 days	
Port Moller		4 times per season				Every 10 days	
Saint Paul	Weekly					Every 10 days	
Sand Point	Weekly		2 times per season			Every 10 days	
Seattle	Weekly	Varies	Varies	Bi-Weekly	Weekly	Every 10 days	
South Naknek		5 times per season					
Togiak			2 times per season				
Ugashik		Village Service provided via Naknek					
Unalaska (Dutch Harbor)	Weekly			Bi-Weekly	Bi-Weekly	Every 10 days	Weekly

**Village service is subject to sufficient cargo*

PRIVATE MARINE TRANSPORT

The only mode for which it is possible to determine what commodity is being shipped, as opposed to simply volumes, is private marine. The statistics collected by the US Army Corps of Engineers Waterborne Commerce Statistics Department are broken down into four broad categories: Petroleum Products (which include gasoline, jet fuel, and industrial lubricants); Durable Goods; Fish and Fisheries Products; and "All Other." For the purposes of the analyses conducted in this report, Durable Goods and "All Other" are collapsed into a single category, "All Other."

The single largest category of goods shipped to and from Southwest Alaska communities as reported in the Waterborne Commerce Statistics is "Other," which includes diverse commodities, such as lumber, dry groceries, fishing gear, machinery, mobile homes, cement, boats, automobiles, toys, office supplies, and apparel. All told, "Other" accounts for about 40% of the goods shipped by sea to and from Southwest Alaska communities (Table 6).

Trailing close behind "Other" by volume, is the region's primary economic mainstay and export: fish products. Overall, fish products make up about 35% by volume of products shipped to and from Southwest Alaska by private marine carriers. The highest percentage is experienced in Egegik, where 60% of goods carried by marine carriers are fish products. percentages in King Salmon/Naknek and King Cove are also relatively high.

Petroleum products make up a significant proportion of the freight carried by private marine shippers within Southwest Alaska. Petroleum products, compared to products such as lumber, dry groceries, or heavy machinery, are relatively inexpensive to ship, since they require much less handling and less wasted space than do products that have to be packaged and moved individually. Petroleum products are simply pumped in and pumped out mechanically.

Overall, about 26% of the volume of cargo moved by private marine carriers consists of petroleum products. The percentage is particularly high in selected communities, such as Old Harbor, where it reaches fully 83.3%, and to slightly lesser extents in Cold Bay and Chigniks, where the totals are 74.6% and 64.6%, respectively. Unalaska is by far the single largest recipient of petroleum products—ostensibly related to its role as a fueling and transshipment point for marine vessels. Unalaska alone accounts for 447,873 tons of petroleum shipments per year, which represents 70.5% of the regional total of petrol products.

Table 6.
Private Marine Shipments for Southwest Alaska:
Basic Commodity Type Splits
(incoming and outgoing, in tons)

Trip End	Incoming or Outgoing Petrol	Incoming or Outgoing Fish	Incoming or Outgoing Other	TOTAL	PETROL SPLIT	FISH SPLIT	"OTHER" SPLIT
Chignik (or Fisheries or Lagoon)	5,250	375	2,500	8,125	64.6%	4.6%	30.8%
Cold Bay	2,750		935	3,685	74.6%	0.0%	25.4%
Dillingham and Aleknagik	7,000	3,750	11,265	22,015	31.8%	17.0%	51.2%
Egegik	375	1,125	375	1,875	20.0%	60.0%	20.0%
False Pass	125		125	250	50.0%	0.0%	50.0%
Iliamna and Newhalen			976	976		0.0%	100.0%
King Cove	3,375	3,625	4,414	11,414	29.6%	31.8%	38.7%
King Salmon and Naknek	11,000	24,375	24,387	59,762	18.4%	40.8%	40.8%
Kodiak	65,875	105,625	427,903	599,403	11.0%	17.6%	71.4%
Old Harbor	625	125		750	83.3%	16.7%	0.0%
Port Heiden			114	114	0.0%	0.0%	100.0%
Port Lions	625		882	1,507	41.5%	0.0%	58.5%
Sand Point			139	139	0.0%	0.0%	100.0%
St. George			60	60	0.0%	0.0%	100.0%
St. Paul			176	176	0.0%	0.0%	100.0%
Togiak and Togiak Fish			139	139	0.0%	0.0%	100.0%
Unalaska	293,500	383,250	122,930	799,680	36.7%	47.9%	15.4%
Total	**390,500**	**522,250**	**597,320**	**1,510,070**	**25.9%**	**34.6%**	**39.6%**

AMHS FREIGHT TRANSPORT

As noted, the percentage of freight carried by AMHS in Southwest Alaska is extremely small. Private carriers simply do not perceive AMHS in its current capacity as a competitor for marine shipment (Terry Hart, Alaska Northbound Marketing Director, personal communications, October 1999).This is likely due to several factors, including the following:

- Current AMHS service to Southwest Alaska communities along the Alaska Peninsula and Aleutian chain is extremely infrequent.
- Compared to private marine shippers, AMHS vessels have very little capacity. For example, while the vessels used in Sea-Land's Alaska service have capacity for about 400 vans, the *Tustumena* can only accommodate in the neighborhood of eight vans.
- Given that they make multiple port calls, AMHS vessels are relatively slow cargo conveyers, compared to private service.
- As a non-competing freight carrier, AMHS is not oriented to providing high-volume, highly efficient logistical capability. For instance, while private carriers often arrange for the delivery of goods from ship or barge to its ultimate destination, AMHS does not offer full service shipping services.
- Most goods shipped to Southwest Alaska originate in Seattle/Tacoma, not Anchorage. Even if they did originate in Anchorage, they would still have to be transported overland to the current ferry terminal at Homer, since AMHS does not currently operate out of Anchorage. Costs accompany each modal transfer. In contrast, private carriers can sail directly to Southwest Alaska from Seattle, or they can proceed to Southwest Alaska following a brief stop in Anchorage to unload goods.

AIR FREIGHT TRANSPORT

Although air freight makes up less than 2% of all Southwest Alaskan freight movement by volume, it is very important for certain types of goods, such as those with high value and or relatively low weight and volume. Another function served by air freight is to move goods that could be moved by barge more economically—such as building materials—but which, for whatever reason, including poor planning, have to be flown in—either because they are so time-sensitive or because winter ice precludes marine shipment.

Air freight is also critical to those communities, such as Dillingham and Iliamna, which are difficult or impossible to reach by water during much of the year. The dependence of communities like Dillingham and Iliamna on air freight is reflected in Table . This table indicates that 19% of Dillingham's freight moves by air, and 100% of Iliamna's.[10] Cold Bay, and King Salmon also rely relatively heavily on of air freight. In Cold Bay, 16.23% of freight by volume is handled by air. In King Salmon, the figure is 11.11%.[11]

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[10] The 100% air freight figure for Iliamna is misleading insofar as it does not take into account the barge shipments provided by Coastal Transportation Inc., which serves communities on Lake Iliamna during the brief summertime window when the Kvichak River is high enough to support navigation. This case again reflects the limitations of the US Army Corps of Engineers statistics, which are only collected at relatively major marine ports; the data collection does not extend to cover what happens to the freight once it is broken down to smaller vessels at ports such as Naknek.

[11] Another possibility for these communities' high air freight mode split is that the communities that experience higher rates of air transport also have lower rates of seafood exports—which magnifies the weight of cargo flown out since the mode splits are calculated on a percentage of volume basis.

Three of the four communities that are relatively dependent on air freight have long runways (Cold Bay, Dillingham, and King Salmon). In fact, each of these communities was considered a candidate in an earlier analysis to serve as a regional aviation hub. Clearly, these communities are already to some extent functioning as hubs.

Table 7.
Airport Runway Lengths for SW Alaska Communities Most Dependent on Air Freight

Airport	Runway Length (feet)
Cold Bay	10,420
Dillingham	6,404
Iliamna	5,085
King Salmon	8,500

The Role of the Mail Service in Southwest Alaskan Air Freight Movement

The US Postal Service (USPS) plays a bigger role in air freight movement in Bush Alaska than virtually anyplace else in the country. In fact, Crowley Marine cites USPS Bypass Mail as the #1 factor in its suspension of regularly scheduled barge service to Southwest Alaska (Jim Vandeveen, Crowley Marine, personal communications, 11/10/99). The USPS is mandated by law to provide universal mail service throughout the US at uniform rates, regardless of the fact that it is far more expensive to carry out this service in places like Southwest Alaska, where long distances and harsh conditions make air movement of the mail (including freight, such as groceries, carried as mail) necessary. Because mail rates must be uniform throughout the country, it costs far less to mail freight by parcel post through the USPS than it would to send goods through a private carrier. Tables 8 and 9 provide a comparison of rates for private air freight movement, priority mail, and Bypass Mail.[12]

[12] The Bypass Mail Program allows post shipments to bypass a post office, with postage affixed at its origin, thus benefiting from the uniform rate used by the postal service as described below.

Table 8.
Typical Air Freight and Mail Rates Between Representative City Pairs
($/Pound)

City Pairs	Distance (mi.)	Freight Rate		USPS Priority Mail 2 days			USPS Parcel Post (Bypass) Mail 4-7 Days		
		100lb	100lb-499lb	Up to 1lb	10lb	10lb-70lb (limit)	1lb	10lb	70lb (limit)
Anchorage–Dillingham	329	.70	.50	10.00	1.00	.48	2.31	.31	.08
Anchorage–Iliamna	195	.45	.34	10.00	1.00	.48	2.31	.31	.08
Anchorage–King Salmon	289	.70	.50	10.00	1.00	.48	2.31	.31	.08
Anchorage–Kodiak	252	.70	.49	10.00	1.00	.48	2.31	.31	.08
Anchorage–St. Paul	767	1.07	.97	10.00	1.00	.48	2.31	.31	.08
Dillingham–Anchorage	329	.45	.32	10.00	1.00	.48	2.31	.31	.08
Iliamna–Anchorage	195	.35	.32	10.00	1.00	.48	2.31	.31	.08
King Salmon–Anchorage	289	.45	.32	10.00	1.00	.48	2.31	.31	.08
Kodiak–Anchorage	252	.45	.34	10.00	1.00	.48	2.31	.31	.08
St. Paul–Anchorage	767	.69	.58	10.00	1.00	.48	2.31	.31	.08

Table 9.
Rates Applied to Example of 70-lb. Package

City Pair	Shipping Cost via Commercial Air	Shipping Cost via Priority Mail	Shipping Cost via Parcel Post (Bypass Mail)
Anchorage–Dillingham	$49.00	$33.60	$5.60
Anchorage–Iliamna	$31.50	$33.60	$5.60
Anchorage–King Salmon	$49.00	$33.60	$5.60
Anchorage–Kodiak	$49.00	$33.60	$5.60
Anchorage–St. Paul	$74.90	$33.60	$5.60
Dillingham–Anchorage	$31.50	$33.60	$5.60
Iliamna–Anchorage	$24.50	$33.60	$5.60
King Salmon–Anchorage	$31.50	$33.60	$5.60
Kodiak–Anchorage	$31.50	$33.60	$5.60
St. Paul–Anchorage	$48.30	$33.60	$5.60

An example illustrates the tremendous savings achievable by sending goods via the US Postal Service. Whereas it would cost $49.00 to send a 70-pound package from Anchorage to Dillingham via a private air freight shipper, the same package could be sent for $33.60 via Priority Service, or for a mere $5.60 if sent via Bypass Mail. No wonder one overland shipper in Alaska noted that, "*Everything that can be shipped through the Mail already is.*" Another cited the case of an Alaskan who had had most of the materials he used in building his house shipped piecemeal via Bypass Mail.[13] Freight consolidators, whose niche in the logistics market focuses on exploiting the opportunities provided by the USPS, operate in both Anchorage and Seattle.

The subsidization of mail delivery costs provides considerable benefits for the Alaskan residents and for air carriers that operate in the state. Air carriers rely on their mail delivery work as a mainstay of their Alaska service (Neil Fried, State of Alaska Economist, personal communications, September 30, 1999). The carriers' duty to carry mail to remote areas of the state also makes it more economical for them to provide passenger and private freight service. In the absence of the air freight business provided by the federal government to carriers to deliver mail by air, Alaskans would receive less frequent air service—at higher cost.

Under the current system, the USPS allocates mail equally among all carriers offering regularly scheduled service within a similar time frame. "The requirement to maintain competitive service frequency to handle a share of the mail has resulted in more frequent passenger service between Anchorage and Fairbanks and western-arctic hubs, and between hubs and outlying villages that could be supported otherwise" (*Alaska Intermodal Transportation Plan*, Alaska Department of Transportation and Public Facilities, October 1994). Communities in Southwest Alaska that currently serve as hubs include Cold Bay, Port Heiden, Dillingham, Kodiak, King Salmon, and Unalaska/Dutch Harbor.

Between 1987 and 1995, about 11% of total air freight by volume to Southwest Alaska comprised mail. Moreover, this percentage is increasing. The costs borne by the USPS to serve Alaska with the Bypass Mail Program have multiplied rapidly (Table 10). Between 1986 and 1991 the intra-Alaska air transportation costs paid by the USPS increased from $59 million to $95 million, most of which went to pay to move parcel post mail. "The increase in costs is due to increased volume, especially to bush destinations, as well as rate increases made under the continuing ratemaking responsibility of the US Department of Transportation to regulate the mail pay rates to air carriers in Alaska.

The deficit resulting from the difference between Alaska parcel post revenue from postage and the cost of purchased air transportation alone has risen from $23 million in 1986 to $70 million in 1991" (*Alaska Parcel Post Task Force Report.* 1993, provided by Carl Siebe, DOT&PF, January 1999). According to this report, the USPS, which was separated from direct Congressional control in 1971, is under pressure to operate more cost-effectively, and to balance user fees, in the form of postage, with delivery methods that allow the USPS to meet the actual costs of providing service. With this goal in mind, the USPS is seeking ways to deliver mail to remote regions of Alaska at a lower cost. Any such efforts will be monitored carefully by Alaska's congressional delegation, insofar as their effects on Alaskans' mobility and access to goods and services will be significant, particularly in the bush. In light of this pressure, one observer

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[13] As the result of public outcry over this case, USPS regulations were tightened up to specifically exclude building materials from eligibility for mail shipment (Sam Krogstad, Bush Consolidators, personal communications, October 4, 1999). Other items that cannot be mailed are hazardous materials, as defined by either the USPS or the air carrier.

suggested that the assumption that Alaska will always enjoy low postal rates may not be valid—particularly if and when the state's clout in Congress, now at an all-time high—were to suffer (Neil Fried, personal communications, September 30, 1999.[14]

Table 10.
Alaska Parcel Post
Financial and Operating Summary, 1986-1991

Fiscal Year	Volume (pounds) Mainline	Bush	Revenue	Costs	Loss
1986	90.5	36.4	$8	$31	$23
1987	96.2	38.5	$8	$47	$39
1988	102.3	42.6	$9	$58	$49
1989	108.5	47.0	$11	$62	$51
1990	113.2	49.5	$10	$79	$69
1991	113.7	52.0	$12	$82	$70
% Increase	25.6%	42.9%	50.0%	164.5%	204.4%

Were postal rates paid to move freight as mail to rise to levels that more accurately reflect the actual costs of delivery, then several repercussions would be likely.

- Rural Alaskans, including those who live and work in Southwest Alaska, would have to pay higher rates to mail in consumables, including groceries;
- The price of private freight *and* passenger movement would likely increase, with decreases in service frequency and convenience;
- As the result of the first two repercussions, benefits due to provision of a modal alternative, e.g., the Trans-Peninsula Roadway System, would be much magnified, with a shift from air to roadway transport of mail and other goods assumed.

[14] Congress could end the bypass mail system, which would adversely affect the convenience of using parcel post and add to the total cost of moving goods (though not the postage rates themselves). Congress could also require that all postage rates reflect the cost of provision, but that would affect communities in every state and would probably not be politically feasible regardless of Alaska. Congress could not selectively change rates for Alaska alone.

PART 2. FREIGHT TRANSPORT DEMAND FORECASTS

Described in this section is the methodology developed to forecast freight transport demand for Southwest Alaska. Forecasts were developed for Petroleum Products, Fish Products, and "Other" Products, including Mail.

FREIGHT FORECASTS FOR PETROLEUM PRODUCTS

To forecast petroleum freight moved, several variables were tested statistically to determine which of them produced the best "fit" in predicting freight volumes. The best and final model includes population, and a variable to indicates the type of airport and marine facilities at the community (either only a community services port, a commercial services port or airport HUB, or both a commercial services port and an airport HUB). For the purpose of the forecast it is assumed that the types of marine or airport facilities at a community will be the same in the year 2010 and 2020. This model is as follows:

$$\text{Tons of Petroleum Shipped} = (2.443375)(\text{Population}) + (27778.04)(\text{Port Types})$$

The "goodness of fit" or R^2 coefficient for this model was poor, about 0.286, indicating that only about 29% of the variation in petroleum shipped can be explained by population and marine and airport types. This model is based on a limited data set of only 11 records. Only a limited data set is available because confidentiality requirements. To help improve the accuracy of the model, forecast volumes were adjusted.[15]

Petroleum shipments are forecast to stay about the same at most communities in Southwest Alaska. Petroleum shipments, however, are forecast to decrease at Cold Bay for the low, base, and high 2010 and 2020 scenarios. Shipments are also forecast to decrease slightly at several other communities in the low and base 2010 scenarios, and in the low 2020 scenario. These forecast decreases in petroleum movement are related to projected population decreases in the corresponding communities. The complete results of this analysis can be found in "Southwest Alaska Transportation Plan Travel Demand Forecasts," (September 1998).

FREIGHT FORECASTS FOR "OTHER" CARGO, INCLUDING MAIL

To forecast freight movement for "Other" cargo, including mail, several variables were tested statistically. The model that proved most effective in mathematically replicating existing freight movement relied on a single variable: population. This model is as follows:

$$\text{Tons of Other Cargo Shipped} = (36.21088203)(\text{Population})$$

At 0.95, the "goodness of fit" measure for this model, otherwise known as the R^2 coefficient, was quite high. This indicates that about 95% of the variation in "Other" cargo shipped can be

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[15] Forecast volumes were adjusted by comparing initial modeling output to known, existing volumes. That is, volumes "forecast" by the model for the existing year, based on current conditions, were compared to the actual volume reported. The ratio between existing year volumes "forecast" and the actual volume reported was then applied to future forecasts.

predicted on the basis of population. However, this model is based on a limited data set of only 16 records. Therefore, it improve its accuracy, forecast trips were adjusted.[16]

Other cargo shipped are forecast to increase at most communities in Southwest Alaska. However, shipments are forecast to decrease at Cold Bay for the low, base, and high 2010 and 2020 scenarios. This decrease corresponds to the forecast for a decreasing population in Cold Bay through the year 2020. In the low and base 2010 scenarios, shipments are also forecast to decrease at Chignik. Shipments are also forecast to decrease at several other communities for the low scenario only for 2010 and 2020.

FREIGHT FORECASTS FOR SOUTHWEST ALASKA COMMUNITIES

A limitation of the freight forecasts at the level just described is that they only project freight volumes for a relatively small number of Southwest Alaska communities—the communities for which primary source data are available. However, only about 40% of Southwest Alaska's residents live in these communities. To fill in this gap in the forecasts, another analytical step was taken. To provide community-specific freight movement forecasts for all Southwest Alaska communities, freight movement values were imputed.

A straightforward process was used to impute freight movement values to Southwest Alaska communities. First, the region's 2020 freight movement forecasts (base case) were totaled and then divided by the 2020 base population forecast for the region as a whole. Separate calculations were applied to Petroleum Products and "All Other." Note that Fish and Fisheries Products movements were not allocated among the communities.[17]

Note too, that Unalaska, which experiences by far the region's highest freight per capita, was excluded from this averaging process. This is because the vast majority of Unalaska's freight movement is attributable to two of its unique roles in the region: (1) its role as a major fish processing location; and (2) its role as a transshipment point for international freight lines bound for Asia. Had Unalaska not been excluded from the equation, then the resulting per capita freight movement estimate would have been grossly inflated. It would not have been as good an approximation of freight moved through the rest of the region's communities, which do not serve as major fish processors or transshipment nodes. For similar reasons, Kodiak's freight movement and population were excluded from the avera . In essence, the goal of this exercise was not to develop the most accurate average, in terms o. per capita freight movement in the region, but rather, to develop a reasonable proxy measure with which to predict consumption-based cargo flows to specific communities. The exclusion of Unalaska and Kodiak from the regional average helped meet this objective.

This averaging process produced a value of 2.7 tons per person for petroleum products, and 4.05 tons per person for "Other" cargo. These values were multiplied by the 2020 base case

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[16] Forecast volumes were adjusted by comparing initial modeling output to known, existing volumes. That is, volumes "forecast' by the model for the existing year, based on current conditions, were compared to the actual volume reported. The ratio between existing year volumes "forecast" and the actual volume reported was then applied to future forecasts.

[17] The reasoning for not imputing fish value is as follows. Fish and Fisheries products are overwhelmingly *exported out* of Southwest Alaska, and the largest producers appear to be represented in the primary source data that are available. It is reasonable to impute freight values for Petroleum Products and "All Other" because consumption of food, fuel, and clothing, all of which must be imported to the region, can safely be assumed. However, any assumption that every community in the region exports fish products or serves as a transshipment point would be far more tenuous, and in some cases, would run contrary to what is known about regional freight movement.

population forecasts for each community. The result was an "imputed" 2020 freight movement forecast total for each community. The results of this process for affected Southwest Alaska communities are compiled in Table 11.

Once the volume of freight movement, roughly categorized by type, had been established for each affected community, it finally became possible to "cost out" the price of moving the forecast volumes under selected scenarios. The process used to establish approximate rates currently paid to move freight to Southwest Alaska, along with estimated rates under different circumstances than currently exist; i.e., under the alternatives proposed as part of this regional transportation planning effort—is described in the following section.

Table 11.
2020 Freight Movement by Southwest Alaska Community

	2020 Population Forecast	2020 Petrol Forecast (tons)	2020 "Other" Forecast (tons)	Total (tons)
Chigniks	377	1,018	1,527	2,545
Dillingham and Aleknagik	2,943	7,946	11,919	19,865
Egegik	167	451	676	1,127
Igiugig	68	184	275	459
Iliamna and Newhalen	346	934	1,401	2,336
Ivanof Bay	27	73	109	182
Kakhonak	207	559	838	1,397
King Salmon and Naknek	1,372	3,704	5,557	9,261
Levelock	139	375	563	938
Nondalton	317	856	1,284	2,140
Pedro Bay	45	122	182	304
Perryville	116	313	470	783
Pilot Point	115	311	466	776
Port Heiden	158	427	640	1,067
South Naknek	165	446	668	1,114
TOTALS	**6,562**	**17,717**	**26,576**	**44,294**

PART 3. DEVELOPMENT OF A FREIGHT ASSESSMENT METHODOLOGY

ESTIMATING EXISTING RATES

Having established a means of predicting freight movement volumes for each community, the next step in the analysis was to develop a framework with which to understand two facets of regional freight movement: (1) how much it would cost to move predicted volumes under an unchanged regional transportation network; and (2) how much it would cost to move predicted volumes if specified improvements in the regional transportation network were implemented. The improvements of interest are implementation of the Trans-Peninsula Roadway System in its entirety, as well as implementation of one element of that system, rehabilitation of the Williamsport to Pile Bay Road. Separate modal rates for the movement of "household goods" for each affected community were eventually established, under both existing conditions and the proposed alternatives.

Rate establishment was one of the most challenging tasks in developing this freight movement assessment methodology. There is no single, convenient source of shipping rates, which in any case vary by mode. Different shippers serve different communities within Southwest Alaska. Many shippers insist on keeping their actual rates confidential since much freight movement in Southwest Alaska is negotiated on a contract basis among competitors. Other shippers are reluctant to reveal their contract rates for fear that their publication will result in accusations of price gouging.

Aside from these complications, establishment of a single set of rates for analytical purposes was also complicated by the very nature of the multiple industries that transport goods. The rate that is ultimately paid to move goods from one point to another depends on complex interactions among many variables, including those listed below. Shipping rates among goods, among modes, and among times of the year—can and do vary tremendously.

- **Mode**. It is generally more expensive to ship goods by air than by sea. For bulk commodities, it is often less expensive to ship goods by sea than by land.
- **Handling**. The amount of handling required. It is relatively inexpensive to move petroleum products, for example, because they can be pumped directly in an out of dedicated storage facilities. They do not have to be assembled, wrapped, unloaded by hand, etc.
- **Special handling requirements**. Goods that require refrigeration or freezing are more expensive to haul than those that do not require this special treatment. Hazardous materials command a premium. In some cases, certain modes are precluded from even carrying the goods.
- **Spatial dimensions**. The dimensions of goods and or their packaging have a bearing on shipping costs. Bulky goods that take up a lot of space are more expensive, per pound, to ship than those that are more compact.
- **Backhaul**. The opportunity for backhaul is a factor. When a shipper can bring a load of goods to a point, and then fill up the vehicle, vessel, or aircraft with goods for the return journey, costs are much lower than if the shipper were to return to home base with an empty container.

- **Port facilities**. Characteristics of marine ports have a bearing on marine shipping costs. Ports with shallow water, such as Ivanof Bay, are more expensive to serve than deep-water ports, such as Chignik.
- **Volume**. Related to the backhaul factor is volume. All other things equal, rates will generally decrease with increased volume on a per trip basis. In addition, frequent shippers will generally enjoy lower rates than infrequent shippers.
- **Distance** between ports is a factor, insofar as longer distances entail higher fuel and labor costs.
- **Season**. This factor has to do with the region's extreme and challenging weather. It is much more expensive to move goods during the winter than during the summer. This is because some ports are not accessible by any mode other than air during the winter. Whereas communities around Lake Iliamna can be reached by moving barges up the river when the river water is high enough, and when it is not frozen (roughly three months per year), the rest of the year, goods, including petroleum products, must be flown in.
- **Natural navigational features.** Freight movement rates are affected by natural limitations to the size and efficiency of vessel that can be used to transport goods. The size of vessel that can currently be used to supply the communities of Iliamna Lake via the Kvichak River, for instance, is limited by the river. Only small barges, in the neighborhood of 150' by 45' are used in this area.
- **Competition** between shippers is a factor. Where two or more shippers compete to haul the same cargo, prices would ostensibly be lower than if one shipper held a monopoly.

Current and forecast rates were developed separately for Petroleum and "All Other" products.[18] Ultimately, distinction of petroleum from "all other" cargo is only possible because the US Army Corps of Engineers separates out petroleum in its Waterborne Commerce Statistics. As desirable as it would have been to provide this level of specification of "Other" commodities, the underlying data upon which the analyses in this report are based do not support that level of detail.

Because there is no way to know what is being shipped by air (absent a major new commodity flow study for Southwest Alaska), and because even the available primary source data are not available for points beyond the region's cargo hubs, a proxy had to be used to represent freight flows. Based on input from shippers, "household goods" were used as a proxy for "Other" freight.

The consultant team is grateful to the many individuals and organizations who provided input and information for the rate establishment task. The data gathering for this task included multiple interviews with overland, marine, and air shippers in the region. The following organizations and individuals provided input into the rate estimation and forecasting process:

[18] It is much less expensive, on a unit basis, to move petroleum than most other commodities because petroleum, a pumped product, requires so little labor and handling.

Alaska Airlines	FS Air Services
Bush Consolidators	Harkness Enterprises
Carlile Transportation	Iliamna Transportation Company
CAT Transport	Lake and Peninsula School District
Coastal Freight and Salvage	Northland Services
Coastal Marine Services	PenAir
Crowley Marine	Reeve Aleutian Airlines
Crowley Petroleum	Samson Tug and Barge
ERA Air Cargo	Sea-Land
Everts Air Fuel	Orson Smith, Ph.D., University of Alaska
Neal Fried, Economist, State of Alaska	Reeve Aleutian Airlines

Listed in Table 12 and Table 13 are separate rate estimates for petroleum and "Other" cargo movement under existing conditions. Communities in the Iliamna Lake area are presented separately.[19] Ultimately, existing shipping rates will be compared to projected rates under the assumption of a changed infrastructure. This comparison will allow us to assess the economic impacts of the Trans-Peninsula Roadway; as they relate to freight movement in particular. This analysis and comparison will call upon the freight movement forecasts described earlier in this report. Rates under the existing infrastructure and projected rates under the improved infrastructure will be multiplied against forecast freight volumes to derive overall cost savings. In evaluating the alternatives, these costs or benefits will be weighed against the capital and maintenance and operations costs associated with the proposed alternative.[20]

19 The Iliamna Lake communities are accessible via either Bristol Bay or Cook Inlet; shipping rates for each point of access are distinct. As such, separating the Iliamna Lake communities from the others makes it easier to understand to the rate tables.

20 This comparison will be documented in the course of carrying out the evaluation process.

Table 12.
Existing Freight Rates for Selected Southwest Alaska Communities

	MARINE			AIR			
	Petroleum Marine ($/gal)	Petroleum Pound Price Equiv ($/lb)	Other Marine ($/lb)	Petroleum Air ($/gal)	ANC-KS ($/lb)	KS- ($/lb)	AIR TOT ($/lb)
Chignik	$0.250	$0.038	$0.250	NA	$0.420	$0.560	$0.980
Chignik Lake	$0.500	$0.076	$0.500	NA	$0.420	$0.560	$0.980
Chignik Lagoon	$0.600	$0.091	$0.600	NA	$0.420	$0.560	$0.980
Egegik	$0.500	$0.076	$0.510	NA	$0.420	$0.250	$0.670
Ivanof Bay	$0.270	$0.041	$0.700	NA	$0.420	$0.670	$1.090
King Salmon and Naknek	$0.300	$0.046	$0.510	NA	$0.420	$0.000	$0.420
Perryville	$0.300	$0.046	$0.600	NA	$0.420	$0.650	$1.070
Pilot Point	$0.520	$0.079	$0.540	NA	$0.420	$0.360	$0.780
Port Heiden	$0.350	$0.053	$0.510	NA	$0.420	$0.450	$0.870

*Air rates in this table are based on a 500-pound shipment. Note that marine rates to Chignik are relatively low, compared to Chignik Lake and Chignik Lagoon. Chignik has a year round, ice-free port, which makes its access relatively easy (and inexpensive). In contrast, a premium must be paid by the residents of Chignik Lake and Chignik Lagoon to import freight from Chignik. It is also notable that although Naknek is much farther from cargo destination points than Chignik, it is not much more expensive to get goods to Naknek than to Chignik. This is in part a function of the volumes carried. Goods transported to Naknek are also transported to the relatively large market of Bristol Bay communities, including Dillingham.

Table 13.
Existing Freight Rates for Iliamna Lake Communities

	MARINE						AIR				
	From Naknek			From Williamsport							
	Petroleum Marine	Petroleum Pound Price Equiv	Other Marine	Petroleum Marine	Petroleum Pound Price Equiv	Other Marine	Petroleum Air	Petroleum Pound Price Equiv	ANC-ILI	ILI-	AIR TOT
	($/gal)	($/lb)	($/lb)	($/gal)	($/lb)	($/lb)	($/gal)	($/lb)			
Igiugig	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.250	$0.640
Iliamna	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.000	$0.390
Kokhanok	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.200	$0.590
Newhalen	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.000	$0.390
Nondalton	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.000	$0.390
Pedro Bay	$0.800	$0.121	$0.765	NA	NA	$0.370	$0.961	$0.146	$0.390	$0.200	$0.590

Marine shipping rates for petroleum via Williamsport are not provided because petroleum is not currently shipped via Cook Inlet, primarily because of the difficulty of meeting hazardous materials regulations (Rick Harkness, Harkness Enterprises, personal communications, November 1999).

Freight Movement to Iliamna Lake Communities

It bears mentioning that waterborne freight reaches the communities of Iliamna Lake via two routes. The primary route, which accounts for some 80% of Iliamna Lake communities' waterborne cargo, is via Naknek, where barges originating in the Seattle-Tacoma area offload onto much smaller barges that navigate the Kvichak River during its brief season of navigability. This season, during which the river is both ice-free and high enough to support even shallow-draft vessels, generally runs from early August to late November (Rick Harkness, personal communications, November 1999). The rate charged to lighter the goods from Naknek to Iliamna Lake communities is approximately 50% over and above the cost of getting the goods from Seattle to Naknek (Coastal Marine). Via Naknek, petroleum shipment runs $0.80 per gallon, while "Other" cargo runs about $0.77 per pound.

Although reliance on air shipment in the region is atypically high, this route is very important to Iliamna Lake communities because it is the only way to bring in particularly heavy and or bulky equipment, which can neither be flown in nor barged-trucked via Williamsport because of that route's width, height, and weight limitations. The fact that heavy equipment can only be transported for a brief period of the year (and some years not at all, if the river remains low) is thought to have expensive repercussions for area construction costs. The reason for this is that contractors realize that they may have to keep an expensive capital asset, a piece of heavy machinery—in the area for months in which it is not in use. For this reason, it is thought that contractors add a substantial margin to their bids on construction projects to cover their costs and asset depreciation.

The other marine route to Iliamna is via Williamsport, which accounts for some 20% by volume of the cargo surface shipped to Iliamna Lake communities (Rick Harkness, Harkness Enterprises, personal communications, November 1999). Despite Williamsport's navigational challenges (it is shallow, muddy, and strewn with boulders), barges operated by Coastal Freight and Salvage call on this port from Homer from June until November. The limiting seasonal factors are both ice on the lake, and the road's passability due to snow. Upon arrival at Williamsport, barges are offloaded onto a truck operated by Ray Williams' outfit, the Iliamna Transportation Company—which has been in existence since 1938. Upon completion of the road trip, at Pile Bay, cargo may be distributed to its ultimate destination in two ways:

- Some consumers sail their own vessels to Pile Bay to pick up shipments.
- A licensed operator on Iliamna Lake picks up the shipments and distributes them among the Iliamna Lake communities in his vessels.

The rate breakdown, according to area operators, is as follows:

Homer to Williamsport (barge)	$0.12/lb
Williamsport to Pile Bay (truck)	$0.10/lb
Pile Bay to Ultimate Destination (barge)	$0.15/lb
TOTAL	**$0.37/lb**

This rate is considerably lower than the $0.77 per pound rate estimated for shipment via Naknek. However, route is arduous, for several reasons, including Williamsport's shortcomings as a port. Shallow water restricts barge deliveries to about two tides per month, each of which lasts about five days (Otto Kilcher, Coastal Freight and Salvage, personal communications, November 1999). Once transferred to the truck, there are other obstacles, including the washed out bridge on the road at Chinkelyes Creek, which requires that the truck ford the stream. This is hard on vehicle transmission and bearings, and on some cargo in particular, such as sheetrock and cement. Moreover, it poses safety hazards for operators (Ray Williams, Iliamna Transportation Company, personal communications, November 1999).

ESTIMATING RATES UNDER PROPOSED ALTERNATIVES

Having established freight shipment rates under existing conditions, the next analytical task was to project freight shipment rates under two separate scenarios related to alternatives proposed as part of this regional transportation planning effort. Two scenarios were explored: implementation of the Trans-Peninsula Roadway as a complete system, and implementation of the Williamsport to Pile Bay Road as a stand-alone project. While projecting rates for the Williamsport to Pile Bay Road was relatively simple, insofar as it had been studied previously (US Army Corps of Engineers, 1995), projecting rates for the larger project, the Trans-Peninsula Road was more complex.

This task required interface with area shippers, most of whom were reluctant to speculate on what they perceived as an extremely remote possibility. Most of those contacted expressed skepticism that the populations and volumes of freight to be served would justify the projects' large capital and maintenance costs. Ultimately, however, they were persuaded that their educated guesses as to the freight cost impacts of the proposed alternatives would be superior to those of anyone without firsthand experience with shipping in Southwest Alaska.

Modal rate estimates for affected communities were developed by breaking the journey from cargo origin to destination into its constituent modal links or elements. Unit costs were used where possible. Three sets of rates were developed:

- Petroleum Rates Assuming that the Trans-Peninsula Roadway System is Implemented;
- "Other" Cargo Rates Assuming that the Trans-Peninsula Roadway System is Implemented;
- "Other" Cargo Rates Assuming that the Williamsport to Pile Bay Road is Implemented as a Stand-Alone element.

For reasons to be discussed, separate petroleum rates under the Williamsport to Pile Bay Roadway as a stand-alone element were not projected.

Estimated Petroleum Movement Rates (Whole Road Built)

To project what it would cost to transport petroleum products to selected communities if the Trans-Peninsula Road were built, estimates for the barge portion of the trip, as well as the trucking portion of the trip, were elicited from Crowley Petroleum and from several trucking companies now operating in Alaska.

While multiple marine shippers have long served the communities, regional-scale trucking operations on the Alaska Peninsula are nonexistent because Southwest Alaska has so little

roadway infrastructure. Several firms that operate on the Alaska roadway network were therefore contacted.

Upon discussions with shippers, it was determined that a logical delivery pattern for petroleum products, under the assumption that the Trans-Peninsula Roadway is built, would be for a barge to make separate stops in both Williamsport and in Chignik. This is due to the fact that the trucking portion of the trip could be accomplished less expensively by choosing a closer port.

Per gallon barge costs were estimated at 12 cents per gallon from Anchorage to Chignik, and at 10 cents per gallon from Anchorage to Williamsport. Trucking costs were estimated at $6.75 per mile. Trucking cost estimates were developed on the basis of input by Carlile and CAT, trucking firms that now operate in Alaska, but outside of Southwest Alaska. Both firms were quick to point out the speculative nature of their estimates. They pointed out that rates would be sensitive to volume, start-up costs (regarding which there is considerable uncertainty), and unusual maintenance and operations costs attributable to Southwest Alaska's remote and challenging natural environment. In providing their estimates, the trucking companies assumed that the road would be paved, maintained, and designed to AASHTO standards. For the purposes of this analysis, a tanker truck with a 7,500 gallon capacity was assumed.

Mileage between each affected community and the ports of Chignik and Williamsport was calculated based on specifications provided in an earlier deliverable, "Southwest Alaska Description of Alternatives Technical Memorandum." Total petroleum shipment rates for each affected community represent the sum of the barge and trucking related costs. Tables 14, 15 and 16 contain the resulting rate estimates. Table 14 calculates rates under the assumption that Williamsport serves as the intermodal transfer point. Table 15 calculates rates assuming that Chignik serves as the intermodal transfer point. Finally, Table 16 lists the lowest rate for each community, based on marine port of call.

Table 14.
Cost Analysis for Petroleum Movement (Williamsport as Transfer Point)

	Existing Conditions	Estimated Rates Assuming that the Trans-Peninsula Roadway is Built				
	Current Price	Price per gal ANC to Williamsport	Road Distance from Williamsport	Trucking Price Total at $6.75/mi	Trucking Price per gal at 7,500 gal/load	Total Price (barge+road)
	($/gal)	($/gal)	(mi)	($)	($/gal)	($/gal)
Chignik	$0.250	$0.10	466	$3,146	$0.419	$0.519
Chignik Lagoon	$0.500	$0.10	462	$3,119	$0.416	$0.516
Chignik Lake	$0.600	$0.10	450	$3,038	$0.405	$0.505
Egegik	$0.500	$0.10	262	$1,769	$0.236	$0.336
Igiugig	$0.800	$0.10	109	$736	$0.098	$0.198
Iliamna	$0.800	$0.10	53	$358	$0.048	$0.148
Ivanof Bay	$0.270	$0.10	516	$3,483	$0.464	$0.564
King Salmon and Naknek	$0.300	$0.10	184	$1,242	$0.166	$0.266
Nondalton	$0.800	$0.10	69	$466	$0.062	$0.162
Pedro Bay	$0.800	$0.10	26	$176	$0.023	$0.123
Perryville	$0.300	$0.10	506	$3,416	$0.455	$0.555
Pile Bay	$0.800	$0.10	15	$101	$0.014	$0.114
Pilot Point	$0.520	$0.10	317	$2,139	$0.285	$0.385
Port Heiden	$0.350	$0.10	404	$2,727	0.364	$0.464

Table 15.
Cost Analysis for Petroleum Movement (Chignik as Transfer Point)

Anchorage to	Current Price ($/gal)	Price per gal ANC to CHIGNIK ($/gal)	Road Distance from Chignik (mi)	Trucking Price Total at $6.75/mi ($)	Trucking Price per gal ($/gal)	Total Price (barge+road) ($/gal)
Chignik	$0.250	$0.12	0	$0	$0.000	$0.120
Chignik Lagoon	$0.500	$0.12	12	$81	$0.011	$0.131
Chignik Lake	$0.600	$0.12	16	$108	$0.014	$0.134
Egegik	$0.500	$0.12	204	$1,377	$0.184	$0.304
Igiugig	$0.800	$0.12	357	$2,410	$0.321	$0.441
Iliamna	$0.800	$0.12	413	$2,788	$0.372	$0.492
Ivanof Bay	$0.270	$0.12	50	$338	$0.045	$0.165
King Salmon and Naknek	$0.300	$0.12	269	$1,816	$0.242	$0.362
Nondalton	$0.800	$0.12	429	$2,896	$0.386	$0.506
Pedro Bay	$0.800	$0.12	440	$2,970	$0.396	$0.516
Perryville	$0.300	$0.12	40	$270	$0.036	$0.156
Pile Bay	$0.800	$0.12	451	$3,044	$0.406	$0.526
Pilot Point	$0.520	$0.12	149	$1,006	$0.134	$0.254
Port Heiden	$0.350	$0.12	62	$419	$0.056	$0.176

Table 16.
Least Cost Petroleum Rates

	Current Price ($/gal)	Assumes Community Served from	Total Price (barge+road) ($/gal)
Chignik	$0.25	Chignik	$0.12
Chignik Lagoon	$0.50	Chignik	$0.13
Chignik Lake	$0.60	Chignik	$0.13
Egegik	$0.50	Chignik	$0.30
Igiugig	$0.80	Williamsport	$0.20
Iliamna	$0.80	Williamsport	$0.15
Ivanof Bay	$0.27	Chignik	$0.17
King Salmon and Naknek	$0.30	Williamsport	$0.27
Nondalton	$0.80	Williamsport	$0.16
Pedro Bay	$0.80	Williamsport	$0.12
Perryville	$0.30	Chignik	$0.17
Pile Bay	$0.80	Williamsport	$0.16
Pilot Point	$0.52	Chignik	$0.25
Port Heiden	$0.35	Chignik	$0.18

Estimated Petroleum Movement Rates (Williamsport Improvements Alone)

Although, as will be seen in subsequent analysis, it is clear that building the Trans-Peninsula Roadway in its entirety would produce significant petroleum movement cost savings, it is not obvious that rehabilitating the Williamsport to Pile Bay Road alone would do so. Part of the reason for this is that fuel is transported relatively cheaply by plane. According to Everts Air Fuel, petroleum can profitably be flown in at a rate of about $0.96 per gallon (personal communications, November 1999). This rate is comparable to the $0.80 per gallon rate that it costs to move petroleum up the Kvichak River from Naknek.

Also detracting from potential cost savings is the fact that two transfers would be required if only the Williamsport to Pile Bay segment of the Trans-Peninsula Roadway were improved. The first transfer would be from Cook Inlet barge to truck; the second would be from truck back to Iliamna Lake vessel. Because of the labor and coordination they require, transfers are costly.

For these reasons, petroleum shipping rates under the assumption of rehabilitating the Williamsport to Pile Bay Road as a stand-alone element were not developed.

Estimated "Other" Cargo Movement Rates (Whole Road Built)

Although rates to move "Other" cargo were projected in much the same way as were petroleum rates, there were a couple of differences in the methodology. First, whereas Alaska has multiple oil refineries, from which point products can be shipped directly to Southwest Alaska, most "Other" cargo originates in the lower 48, specifically, in the ports of Seattle and Tacoma. As

such, the cost projections for the barge portion of the transport of "Other" cargo originate in Seattle rather than Anchorage. This assumption is based on shippers' input indicating that very little of what is shipped to Southwest Alaska originates within the state--for two main reasons. First, manufacturing and agricultural production in Alaska are very limited. Second, Alaska cities' ability to serve as transshipment points is limited by a lack of warehousing and storage facilities (Terry Hart, Sea-Land, Alaska Northbound Marketing Manager, personal communications, October 1999).

Another difference is in the type of truck used to transport the goods along the road. Whereas a 7,500-gallon tanker truck was assumed to be used to deliver petroleum products, a 35-foot van is assumed to deliver "Other" cargo. A 35-foot van can carry about 22,750 pounds of cargo.[21] The same $6.75 per mile rate is assumed for both petroleum and "Other" cargo transport.

As was done for petroleum rate projections, the barge portion of the transport costs for "Other" cargo was simply added to the truck-related costs for a single per-pound total. Again, rates are calculated using both Williamsport and Chignik as the transfer point from marine vessel to truck (Table 17 and Table 18). Meanwhile, Table 19 compiles the lowest rate for each community based on which port of call is used for the intermodal transfer.

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[21] To estimate the freight-carrying capacity of a van of a given length, the assumed number of feet (35') was multiplied by 650 for total pounds. This 650-pound figure is based on the suggested equivalency found in *Transportation Research Board, Special Report 223-Providing Access for Large Trucks*, 1989, p. 177.

Table 17.
Cost Analysis for "Other" Cargo (Williamsport as Transfer Point)

Seattle to	Barge Cost ($/lb)	Road Distance from Wmsport (mi)	Trucking Cost at $6.75/mi ($)	Total Trucking Cost ($/lb)	Total Cost ($/lb)
Chignik	$0.27	466	$3,146	$0.138	$0.408
Chignik Lagoon	$0.27	462	$3,119	$0.137	$0.407
Chignik Lake	$0.27	450	$3,038	$0.133	$0.403
Egegik	$0.27	262	$1,769	$0.078	$0.348
Igiugig	$0.27	109	$736	$0.032	$0.302
Iliamna	$0.27	53	$358	$0.016	$0.286
Ivanof Bay	$0.27	516	$3,483	$0.153	$0.423
King Salmon and Naknek	$0.27	184	$1,242	$0.055	$0.325
Nondalton	$0.27	69	$466	$0.020	$0.290
Pedro Bay	$0.27	26	$176	$0.008	$0.278
Perryville	$0.27	506	$3,416	$0.150	$0.420
Pile Bay	$0.27	15	$101	$0.004	$0.274
Pilot Point	$0.27	317	$2,140	$0.094	$0.364
Port Heiden	$0.27	404	$2,727	$0.120	$0.390

Table 18.
Cost Analysis for "Other" Cargo (Chignik as Transfer Point)

Seattle	Price per # Sea to Chignik	Road Distance from Chignik (mi)	Trucking Price Total at $6.75/mi	Trucking Price per Pound	Total Price (barge+road)
Chignik	$0.22	0	$0	$0.000	$0.220
Chignik Lagoon	$0.22	12	$81	$0.004	$0.224
Chignik Lake	$0.22	16	$108	$0.005	$0.225
Egegik	$0.22	204	$1,377	$0.106	$0.280
Igiugig	$0.22	357	$2,410	$0.122	$0.326
Iliamna	$0.22	413	$2,788	$0.015	$0.342
Ivanof Bay	$0.22	50	$338	$0.080	$0.235
King Salmon and Naknek	$0.22	269	$1,816	$0.127	$0.300
Nondalton	$0.22	429	$2,896	$0.130	$0.347
Pedro Bay	$0.22	440	$2,970	$0.119	$0.350
Perryville	$0.22	40	$270	$0.134	$0.339
Pile Bay	$0.22	451	$3,044	$0.018	$0.34
Port Heiden	$0.22	62	$419	$0.044	$0.238

Table 19.
Least Cost "Other" Rates

Seattle to	Current Price ($/lb)	Assumes Community Served from	Total Price (barge + road) ($/lb)
Chignik	$0.250	Chignik	$0.220
Chignik Lagoon	$0.600	Chignik	$0.224
Chignik Lake	$0.500	Chignik	$0.225
Egegik	$0.510	Chignik	$0.280
Igiugig	$0.765	Williamsport	$0.302
Iliamna	$0.765	Williamsport	$0.286
Ivanof Bay	$0.700	Chignik	$0.235
King Salmon and Naknek	$0.510	Chignik	$0.300
Nondalton	$0.765	Williamsport	$0.290
Pedro Bay	$0.765	Williamsport	$0.278
Perryville	$0.600	Williamsport	$0.339
Pile Bay	$0.765	Williamsport	$0.274
Pilot Point	$0.540	Chignik	$0.264
Port Heiden	$0.510	Chignik	$0.238

Estimated "Other" Cargo Movement Rates (Williamsport Improvements Alone)

To estimate freight movement cost savings that could be achieved by dredging the channel at Williamsport, along the existing road and its bridges, the elements of current freight delivery to the region were considered. Operators of each of the modal links that is now required to move goods from Homer to the communities of Iliamna Lake via Williamsport were contacted and interviewed. Their estimates of the per pound cost for each modal link of this journey are noted below. Current total costs, that is, under existing conditions, are estimated at $0.37 per pound. These shippers, like others contacted in the course of this research, had a difficult time predicting the impact of channel dredging and road reconstruction. They put the savings achievable by making these improvements in the neighborhood of 20%, as did shippers who now operate out of Naknek. However, the US Army Corps of Engineers (USCOE), in its 1995 study, estimated a much larger shipping cost savings under this scenario—in the neighborhood of 56%. In attempt to reconcile this difference, the approach taken in this assessment is more conservative than the USCOE's, but more optimistic than the shippers': A cost savings rate of 35% was applied to the existing rate, as calculated below.

Homer to Williamsport (barge)	$0.12/lb
Williamsport to Pile Bay (truck)	$0.10/lb
Pile Bay to Ultimate Destination (barge)	$0.15/lb
Existing Conditions Total	$0.37/lb
Estimated Cost Savings with Project:	
$0.37 - ($0.37 * 0.35) = $0.24	$0.24/lb

As pointed out by the USCOE and the shippers themselves, freight movement savings can be anticipated stemming from several sources:

- Reduced damage and wear and tear to transport vessels and vehicles, which should reduce shippers' capital and maintenance and operations costs;
- Reduced operating (and possibly capital) costs due to the elimination of the tide-related barge delays that are now frequently experienced;
- Removing the obstacles to freight shipment along this corridor would likely increase volumes of goods shipped, reducing unit costs;
- Insofar as volumes shipped would increase, new operators may be attracted to the area, thus creating competitive price pressure.

PART 4. RESULTS

The final step in the assessment of the freight movement impacts of the proposed alternatives brings together the three analytical elements just described:

- Freight volume forecasts, by study are community
- Modal rate estimates under existing conditions
- Modal rate estimates under specified transportation improvements

To assess the cost savings achievable by making the transportation improvements proposed, one simply multiplies the forecast volume of goods for the 2020 design year by rates under existing conditions and by rates under the proposed alternatives. Put simply, the difference between these totals represents the freight movement savings achievable by implementing the proposed alternatives. Three sets of probable impacts are provided:

1. Petroleum movement impacts assuming that the "whole road" (the Trans-Alaska Roadway) is implemented;[22]

2. "Other" cargo impacts assuming that the whole road is implemented as a coherent system;

3. "Other" cargo movement impacts assuming that the existing Williamsport to Pile Bay Road and its bridges are rehabilitated, and that the Williamsport channel is dredged, as a stand-alone improvement.

ASSUMING THAT THE TRANS-PENINSULA ROADWAY IS BUILT

Petroleum Movement Cost Savings

Substantial savings in petroleum movement costs can be anticipated if the Trans-Peninsula Roadway System is built. Petroleum movement rates are much decreased from communities that are now particularly inaccessible, such as Chignik Lake, where the shipment rate is projected to fall from $0.60 to $0.13 per gallon. Savings are even greater in Iliamna Lake communities, such as Iliamna, where petroleum shipment costs are anticipated to fall from $0.80 to $0.15 per gallon, a greater than a five-fold reduction. The road would have the greatest freight movement cost savings for those communities that are now hardest to reach—i.e., those surrounding Iliamna Lake.

Modest savings, in contrast, are anticipated in Naknek and King Salmon. Naknek is already served directly by relatively frequent barge service, as part of the larger Bristol Bay market, which also includes communities to the north, such as Dillingham. According to this analysis, the cost of petroleum movement to Naknek is projected to fall only a few cents—from $0.30 to $0.27 per gallon.

In all, 2020 cost savings due to petroleum movement alone are estimated at $755,000 per year. Actual savings could be higher or lower, based on factors including deviations from the population base forecast; the extent to which the improvements encourage competition, which

[22] For reasons already discussed, petroleum movement impacts under the third scenario were r ›t analyzed.

could further lower rates; and the extent to which the improvements foster other forms of economic development, such as tourism. Volume increases spurred by such development could further reduce rates. By the same token, rates could be higher than forecast if significant operating costs faced by shippers have not been taken into consideration; if operating conditions on the proposed roadway prove more difficult to manage and maintain than anticipated; and if other economic mainstays in Southwest Alaska falter, reducing both population levels and the demand for goods shipment.

Beyond the shipping cost savings suggested by this analysis, other economic and social benefits would accrue through implementation of the road, in terms of petroleum shipment alone. Currently, according to Lake and Peninsula School District administrator, Dennis Niedermeyer, the higher cost of shipping petroleum in winter months (when it must be flown into inland communities, and to Bristol Bay communities) effectively forces Southwest Alaska residents to "stock up" during the periods when petroleum can be barged in. However, communities are hard pressed to find storage capacity for all of the fuel needs, which can vary significantly by the harshness of a given winter. In his view, overtaxing fuel storage facilities creates problems in and of itself, such as fuel leaks and spills, whose cleanup is costly—both environmentally and financially. Another of the road's advantages would be reduced dependence on air shipment of petroleum products, which has safety drawbacks.

PETROLEUM MOVEMENT COST SAVINGS SUMMARY

Total petroleum freight movement cost savings achievable if the Alaska Peninsula Roadway is built are estimated at $755,200 annually (Table 20).

Table 20.
Estimated Petroleum Movement Cost Savings (Whole Road Built)

	2020 Forecast Consumption(gal)	Current Rate ($/gal)	Estimated Rate with Road* ($/gal)	Assumes Product Shipped through	2020 Cost Estimate Using Existing Rates ($ paid)	2020 Cost Estimate Assuming Road is Built ($ paid)	2020 Savings Achievable ($ saved)
Chignik	82,787	$0.25	$0.12	Chignik	$20,697	$9,934	$10,763
Chignik Lagoon	81,967	$0.50	$0.13	Chignik	$40,984	$10,738	$30,246
Chignik Lake	145,082	$0.60	$0.13	Chignik	$87,049	$19,441	$67,608
Egegik	136,885	$0.50	$0.30	Chignik	$68,442	$41,065	$27,377
Igiugig	55,556	$0.80	$0.20	Williamsport	$44,444	$11,000	$33,444
Iliamna	283,546	$0.80	$0.15	Williamsport	$226,837	$41,965	$184,872
Ivanof Bay	22,465	$0.27	$0.17	Chignik	$6,066	$3,707	$2,359
King Salmon and Naknek	1,124,590	$0.30	$0.27	Williamsport	$337,377	$303,639	$33,738
Newhalen	178,810	$0.80	$0.16	Williamsport	$143,048	$28,985	$114,063
Nondalton	259,563	$0.80	$0.16	Williamsport	$207,650	$42,049	$165,601
Pedro Bay	37,037	$0.80	$0.12	Williamsport	$29,630	$4,556	$25,074
Perryville	95,325	$0.30	$0.17	Chignik	$28,597	$15,964	$12,634
Pilot Point	94,262	$0.52	$0.25	Chignik	$49,016	$23,565	$25,451
Port Heiden	129,508	$0.35	$0.18	Chignik	$45,328	$23,311	$22,017
TOTALS					**$1,335,165**	**$579,919**	**$755,247**

*This cost estimate assumes that a tanker truck with a 7,500-gallon capacity is used.

"Other" Cargo Movement Cost Savings

Cargo movement savings achievable by building the Trans-Peninsula Roadway are anticipated in two major areas. The first, and the primary focus of this assessment, is the savings that can be achieved in moving goods and commodities to communities in Southwest Alaska. The second, has to do with savings achievable by providing the region's gillnet fishers a more viable route between their fishing grounds in Bristol Bay, and Cook Inlet, where many store their vessels during the off-season, and where many have repair and maintenance done. These impacts are explored separately.

COMMODITIES MOVEMENT IMPACTS

Listed in Table 21 is a summary of estimated cost savings in commodities movements based on the rate calculations, and port call assumptions earlier discussed. This analysis suggests that around $5.96 million per year could be saved in freight costs in terms of moving "Other" cargo alone, if the Alaska Peninsula Roadway System were built. Note that cargo shipment mode shifts under the proposed infrastructure improvements had to be taken into account in this analysis. These mode shift assumptions are documented in Table 21. These mode shift assumptions under both existing conditions and under the assumption that the Alaska Peninsula Roadway System is built are based on primary source data and area shippers' input.

A few explanations regarding the Iliamna Lake communities are needed to interpret Table 21. First, a weighted average was used in calculating the marine shipment rate under existing conditions for Iliamna Lake communities. This weighted average takes into account the percentage shipped, and rates paid, for marine freight via Naknek and Williamsport, respectively. In terms of projected rates, this analysis assumes that if the Trans-Peninsula Roadway is built, that most waterborne cargo will be shipped to Iliamna Lake communities via Williamsport.

GILLNET FLEET TRANSPORT IMPACTS

In its 1995 economic assessment, the US Army Corps of Engineers (USCOE) pointed out another area of savings that could be realized if these improvements were made. They point to the many gillnet vessels that each year make the trip from Cook Inlet to the fisheries in Bristol Bay and back. Some vessels are transported because they spend the off-season in Cook Inlet; others make the trip periodically for repairs and maintenance purposed. In all, about 825 gillnet boats are estimated to make the round trip each year.

Of these, the vast majority (about 785) sail around the Alaska Peninsula, a 1,100-mile trip that takes three days, and is estimated to cost $1,800. A small contingent (about 40), however, makes the trip via Williamsport, which is almost a thousand miles shorter and is estimated to cost about $1,233 per vessel. Although this trip is less costly in terms of both time and dollars, it is arduous, risky, and can only be undertaken during narrow time windows. Moreover, many gillnet vessels cannot be transported via this route because they are too wide to pass through existing bridges.

According to the US Army Corps of Engineers' detailed analysis, savings in the neighborhood of $1,082,500 could be achieved on the part of gillnet vessel movement alone if the Williamsport Channel were dredged, and if the existing Williamsport to Pile Bay Road and its bridges were

rehabilitated.[23] Accordingly, these estimated savings are added to the freight movement savings estimated earlier.

"OTHER" CARGO MOVEMENT COST SAVINGS SUMMARY

Total "Other" freight movement cost savings under the assumption that the Alaska Peninsula Roadway is built are estimated at $7,802,300. Of this total, $1,082,500 attributable to gillnet vessel transport savings. To these savings can be added $755,000 in petroleum movement savings, along with $5,964,600 in "Other" commodity movement savings (Table 22).

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[23] According to the USCOE, the number of gillnet vessels taking the Williamsport route would increase from 40 to 747 round trips per year (*Navigation Channel Feasibility Report and Environmental Assessment, Williamsport*, US Army Corps of Engineers, Alaska District, December 1995).

Table 21.
Estimated "Other" Cargo Cost Savings (Whole Road is Built)

	MODE SPLIT AND RATES UNDER EXISTING CONDITIONS					MODE SPLIT AND RATES ASSUMING THE TRANS-PENINSULA ROAD IS BUILT				RESULTS		
	Current Mode Split					Projected Mode Split		Rates				
	Marine	Air	Marine	Air	2020 Freight Volume Estimate	Barge/ Road	Air	Barge/ Road	Air	Freight Costs Paid in 2020 Assuming No Change	Freight Costs Paid in 2020 Assuming Road is Built	Savings Possible due to Road
	%	%	($/lb)	($/lb)	(lbs)	%	%	($/lb)	($/lb)	($)	($)	($)
Chignik	95%	5%	0.250	0.980	818,000	95%	5%	0.220	0.980	$234,357	$211,044	$23,313
Chignik Lake	10%	90%	0.500	0.980	1,434,000	95%	5%	0.225	0.980	$1,336,488	$376,784	$959,705
Chignik Lagoon	60%	40%	0.600	0.980	810,000	95%	5%	0.224	0.980	$609,120	$212,058	$397,062
Egegik	80%	20%	0.500	0.670	1,352,000	90%	10%	0.280	0.670	$721,968	$431,288	$290,680
Igiugig	60%	40%	0.686	0.390	550,000	90%	10%	0.302	0.390	$312,180	$170,940	$141,240
Iliamna	60%	40%	0.686	0.390	1,036,000	85%	15%	0.286	0.390	$588,034	$312,458	$275,576
Ivanof Bay	90%	10%	0.700	1.090	218,000	95%	5%	0.232	1.090	$161,102	$59,928	$101,174
King Salmon and Naknek	85%	15%	0.510	0.420	11,114,000	85%	15%	0.300	0.420	$5,518,101	$3,534,252	$1,983,849
Nondalton	60%	40%	0.686	0.390	2,568,000	85%	15%	0.287	0.390	$1,457,597	$776,692	$680,905
Pedro Bay	60%	40%	0.686	0.390	364,000	90%	10%	0.276	0.390	$206,606	$104,614	$101,993
Perryville	90%	10%	0.600	1.070	940,000	95%	5%	0.230	1.070	$608,180	$255,680	$352,500
Pilot Point	75%	25%	0.520	0.780	932,000	90%	10%	0.264	0.780	$545,220	$294,139	$251,081
Port Heiden	70%	30%	0.510	0.870	1,280,000	90%	10%	0.238	0.870	$791,040	$385,536	$405,504
TOTALS					**23,416,000**					**$13,089,993**	**$7,125,412**	**$5,964,581**

Table 22.
Freight Movement Cost Savings Summary
(Whole Road Built)

Trans-Peninsula Roadway (Whole)	
Petroleum	$755,200
Gillnet Fleet	$1,082,500
Other Cargo	$5,964,600
TOTAL	**$7,802,300**

RESULTS ASSUMING THAT WILLIAMSPORT IMPROVEMENTS ALONE ARE IMPLEMENTED

By implementing only select elements of the Trans-Peninsula Roadway system, some significant freight movement cost savings could still be achieved. These savings are assumed to be experienced by the communities of Iliamna Lake.[24] To recap, the freight flow under this scenario would be as follows: barged or shipped into Williamsport, where it would be offloaded onto a truck; trucked across a much wider, completely bridged 15.5-mile roadway; then transferred to another vessel at the road's terminus at Pile Bay for final distribution.

If the Williamsport to Pile Bay Road were rehabilitated, in tandem with navigational improvements at Williamsport, it is estimated that most of the Iliamna Lake-bound cargo now barged up the Kvichak River from Naknek would shift to the Williamsport route. In addition, since marine transport under this scenario would be viable from June through November (a much larger portion of the year than is now the case) it is also assumed that a portion of the cargo now flown into Iliamna Lake communities would be barged, trucked, and then shipped again via Williamsport. Whereas the mode split for Iliamna Lake communities is currently estimated to be 48% marine via Naknek, 12% marine via Williamsport, and 40% air; under the proposed element of the alternative, cargo volumes are assumed to shift to 5% marine via Naknek; 65% marine via Williamsport; and 30% air.

It is estimated that these improvements would lower the cost of moving cargo to Iliamna Lake communities (via a surface route) from 37 to 24 cents per pound. When the assumed mode shift and rate values are applied to the cargo forecast volumes for the 2020 design year, savings attributable to the project can be calculated, as shown in Table 23. In all, freight movement savings achievable under this scenario are estimated at $2,170,300 per year. Because these improvements' value would be comparable to that of building the entire Trans-Peninsula Roadway system in terms of allowing gillnet fleet passage across the Alaska Peninsula, the same yearly savings can be assumed for this stand-alone element. Accordingly, $1,082,500 in gillnet fleet savings can be added to the $2,170,300 figure for "Other" cargo, for a grand total cost savings estimate of $3,252,800 per year (Table 24).

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[24] Area shippers do not believe that the benefits of this element would extend as far west as Bristol Bay, for two primary reasons. First, the Kvichak River's navigability for cargo bearing vessels is a limiting factor. In good years, the period in which the River can be navigated by even small barges is limited to the narrow window between August and October. Although the Kvichak by necessity serves traffic from Bristol Bay to Iliamna Lake, its navigational limitations preclude its utility as a route *to* Bristol Bay. Second, it is relatively cost effective to barge goods to Naknek and other Bristol Bay communities. This is because the population of Bristol Bay communities is large enough to support sizable barge shipments, which lowers unit costs. Moreover, service directly to Bristol Bay communities does not require the extra intermodal transfer that would be required if goods were to shipped by a subsequent, smaller barge down the Kvichak.

Table 23.
Estimated "Other" Cargo Cost Savings (Williamsport Improvements Alone)

	2020	Under Existing Conditions				Assuming that Road and Bridges are Rehabilitated and Channel Dredged				
	Forecast "Other" Cargo (lbs)	Marine via Naknek	Marine via Wmsport	Air	TOTAL Freight Costs Paid	Marine via Naknek	Marine via Wmsport	Air	TOTAL Freight Costs Paid	Savings Attributable to Road
Igiugig										
Mode Split	550,000	48%	12%	40%	$367,180	5%	65%	30%	$212,438	$154,743
Rate		$0.765	$0.370	$0.640		$0.765	$0.240	$0.640		
Iliamna and Newhalen										
Mode Split	2,558,000	48%	12%	40%	$1,707,721	5%	65%	30%	$988,028	$719,693
Rate		$0.765	$0.370	$0.640		$0.765	$0.240	$0.640		
Nondalton										
Mode Split	2,566,000	48%	12%	40%	$1,713,062	5%	65%	30%	$991,118	$721,944
Rate		$0.765	$0.370	$0.640		$0.765	$0.240	$0.640		
Pedro Bay										
Mode Split	364,000	48%	12%	40%	$243,006	5%	65%	30%	$140,595	$102,411
Rate		$0.765	$0.370	$0.640		$0.765	$0.240	$0.640		
Kokhanok										
Mode Split	1,676,000	48%	12%	40%	$1,118,898	5%	65%	30%	$647,355	$471,543
Rate		$0.765	$0.370	$0.640		$0.765	$0.240	$0.640		
								SAVINGS GRAND TOTAL		$2,170,334

Table 24.
Cargo Movement Cost Savings Summary
(Williamsport Improvements Alone)

Williamsport to Pile Bay Road Only	
"Other" Cargo	$2,170,300
Gillnet Fleet	$1,082,500
TOTAL	**$3,252,800**

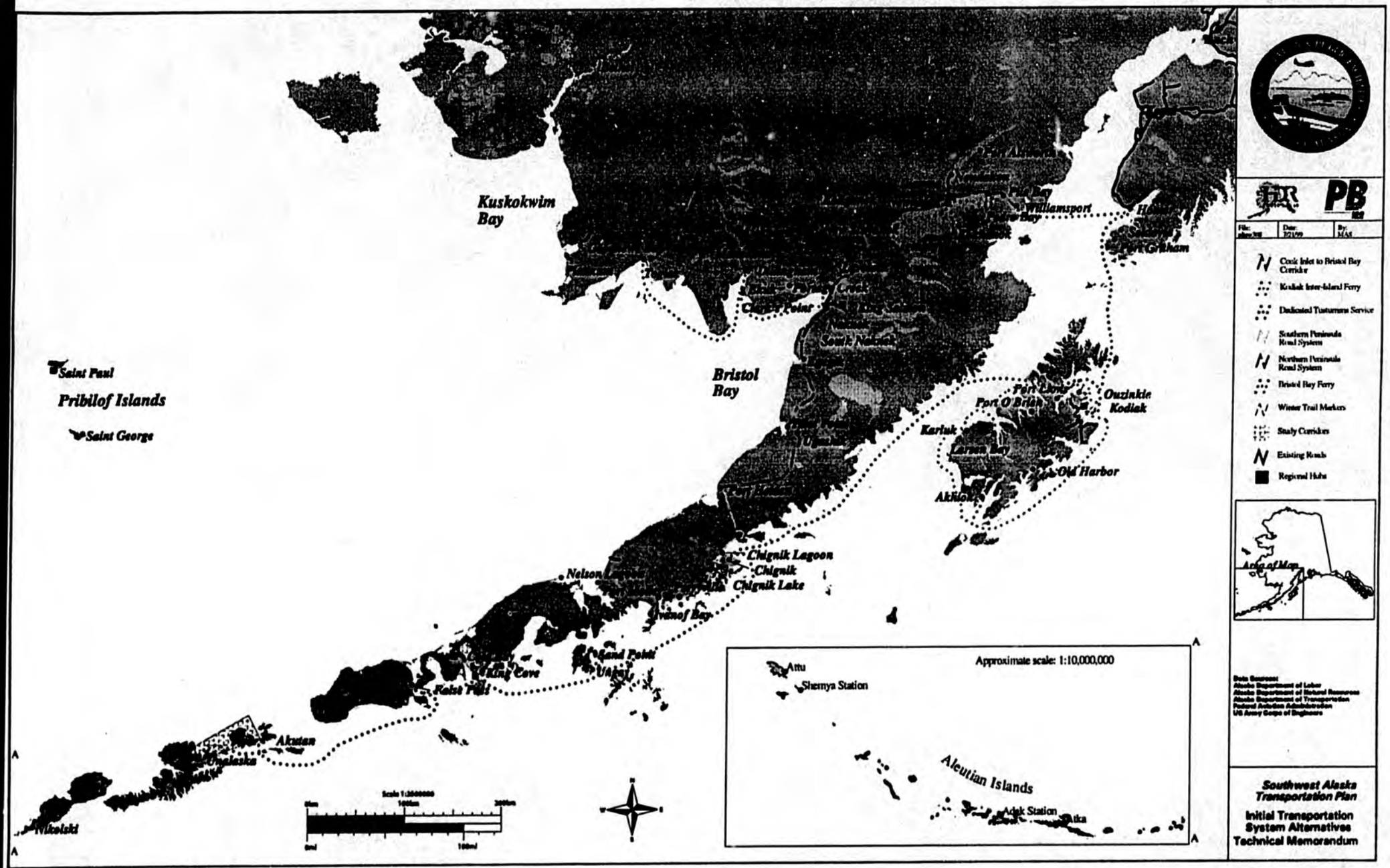
2. COOK INLET TO BRISTOL BAY CORRIDOR ALTERNATIVE, OVERLAND

This alternative would provide a surface transportation link between Cook Inlet and Bristol Bay. In so doing, this alternative would improve mobility and access for many communities in the study area, including Pedro Bay, Nondalton, Iliamna, Newhalen, Igiugig, Levelock, Naknek and King Salmon – providing them for the first time a well developed surface transportation link to the Kenai Peninsula, Anchorage, and the state's primary roadway network. This alternative also has significant potential for improving the efficiency of regional freight movement and economic development.

Explored in this alternative are four separate options for traversing the roughly 250 miles between Homer and Bristol Bay (Table 10). Two of the options provide an uninterrupted set of roadway links – one via King Salmon, the other via Naknek. Meanwhile, the other two options provide a roadway connection until Iliamna, but then traverse the rest of the distance by either a shallow-draft landing vessel, or hovercraft.

Table 10
Cook Inlet to Bristol Bay Corridor Alternative
Four Options

OVERLAND OPTIONS		COMBINATION OVERLAND/MARINE OPTION	
Via King Salmon	Via Naknek	Via Shallow-Draft Landing Vessel	Via Hovercraft
• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Pile Bay to Iliamna Roadway Link • Iliamna to Igiugig Roadway • Igiugig to King Salmon Roadway Link	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Pile Bay to Iliamna Roadway Link • Iliamna to Igiugig Roadway • Igiugig to Levelock Roadway Link • Igiugig to Naknek Roadway Link	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Lake Iliamna–Kvichak River Service via Shallow-Draft Landing Vessel	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Lake Iliamna–Kvichak River Service via Hovercraft


Kuskokwim Bay
Bristol Bay
Saint Paul
Pribilof Islands
Saint George
Port Heiden
Chignik Lagoon
Chignik
Chignik Lake
Nelson
Ivanof Bay
Sand Point
King Cove
Cold Bay
Akutan
Unalaska
Nikolski
Port Lions
Port O'Brien
Ouzinkie
Kodiak
Karluk
Larsen Bay
Old Harbor
Akhiok
Attu
Shemya Station
Aleutian Islands
Adak Station
Atka
Approximate scale: 1:10,000,000
Area of Map
Cook Inlet to Bristol Bay Corridor
Kodiak Inter-Island Ferry
Dedicated Tsunamm Service
Southern Peninsula Road System
Northern Peninsula Road System
Bristol Bay Ferry
Winter Trail Markers
Study Corridors
Existing Roads
Regional Hubs
Data Sources
Alaska Department of Labor
Alaska Department of Natural Resources
Alaska Department of Transportation
National Aviation Administration
US Army Corps of Engineers
Southwest Alaska Transportation Plan
Initial Transportation System Alternatives Technical Memorandum

This alternative would provide several benefits to the region and to the communities along the proposed corridor, including the following:

- It would open up a shorter, less dangerous, less expensive freight route from Cook Inlet to Bristol Bay. A continuous surface route across the top of the Alaska Peninsula would mean that it would no longer be necessary to transport goods by barge all the way around the Alaska Peninsula.
- By making scenic wilderness areas, businesses, and lodges along the corridor more accessible to visitors, this alternative would support tourism in the region.
- This alternative would provide the communities of interior Southwest Alaska with greater connectivity to one another, which would promote their economic development.
- This alternative would provide communities along the corridor with a modal alternative to reaching major activity centers such as Anchorage and Kodiak by air.
- Insofar as this alternative is based in large part on the existing road from Williamsport to Pile Bay, it provides a cost-effective means of expanding the core highway system because the right-of-way for this link is already established and owned by DOT&PF.
- The project would promote the economic development of Bristol Bay fisheries. Boat repair and storage facilities are limited in Bristol Bay, requiring many boat owners to bring their boats to Homer. The overland route avoids the time-consuming and hazardous open ocean voyage around the Alaska Peninsula, thereby saving money and increasing safety. The route also saves deterioration of fishing boats not designed for extensive open ocean travel.

Baseline

A key baseline improvement programmed within the proposed corridor is completion of the Iliamna–Nondalton Road, a $9.75 million project which will complete the roadway connection between Iliamna and Nondalton by bridging the Newhalen River and constructing three final miles of roadway on the Nondalton side of the river. This baseline improvement would integrate Nondalton, a community with a 2020 base population forecast of 317 into the rest of the proposed corridor. The other baseline improvement relevant to this proposed alternative is DOT&PF's Winter Trail Marking project, which will mark 314 miles of trails – from Goodnews Bay all the way to Levelock and Naknek, communities served directly by the proposed corridor.

Element 1. Homer-Seldovia-Williamsport Marine Service

Proposed in this alternative is new marine service linking Seldovia and Homer, on the Kenai Peninsula, with Williamsport, which lies on the western shores of Cook Inlet, just off Iliamna Bay. This link would provide the first element of a surface transportation corridor linking Alaska's overland transportation system and population concentrations with the communities of the Lake and Peninsula and Bristol Bay Boroughs.

As envisioned, this marine service would not only provide a new link between Williamsport and Homer, but it would also continue to serve the linkage between Homer and Seldovia now provided by current AMHS service. In fact, as configured for planning purposes, it could provide an equal or greater level of service frequency and capacity compared to the current service provided by the *Tustumena*.

THE VESSEL

A separate alternative proposed in this document is a reconfiguration of AMHS service that would result in the dedication of the *Tustumena* to ports in the Southwest Alaska Study Area (along with connections to the Kenai Peninsula). As such, a new vessel was explored to provide the proposed service between Homer, Seldovia, and Williamsport. Given the run across lower Cook Inlet, an area noted for steep seas, strong currents, and winter ice floes, the vessel providing this service would have to be capable of navigating in high winds, seas, spray icing conditions, and sea ice.

For planning purposes, a basis vessel was chosen to illustrate this alternative. The basis vessel selected, the *M/V Nunaiq*, is a 150'-6" long, with a 47' beam, an 8' depth, a 3'-9" to 6'0" draft and a cruising speed of 9 knots. Although the basis vessel and others of this type have extensive operation experience in Alaska waters, some design enhancements, including minimum ice strengthening, expandable passenger capacity, and increased freeboard and bulwark height should be considered. The capital cost of such a vessel is estimated at $2.75 million.

SCHEDULE AND FREQUENCY OF SERVICE

Physical laws regarding the resistance of displacement vessels limit conventional monohull ferries with length on the order of 150' to speeds between 9 and 12 knots. Even at 12 knots, the 152 nautical mile trip between Homer and Williamsport would take more than 12 hours for running time alone (without allowance for port time, startup, or shutdown). Another factor in scheduling this service hinges on the shallow water and dredged channel at Williamsport, which would make it prudent to time trips to match the tide at Williamsport. As such, one round trip between Homer and Williamsport could be scheduled in any 24-hour period, but the timing of departures and arrivals would vary from day-to-day based on tides. Based on a 9-knot service speed (and allowing one half hour for morning startup and one-half hour for evening shutdown) the service day for a Homer–Williamsport round trip would be about 18 hours, which would allow six hours in any 24-hour day to adjust for the tide.

One way, the trip from Homer to Seldovia can be made in two hours, and two round trips per day, during daylight hours, are easily feasible. According to the schedule developed for this planning effort, the vessel could service Williamsport on seven days in a two-week period, and Seldovia on the other seven days.

In a 44-week service year (with ten weeks provided for annual maintenance), the vessel would call at Williamsport and Homer 154 times apiece, and at Seldovia 308 times. The proposed service concept would provide much more frequent service to Homer and Seldovia, which received 58 port calls apiece in 1997, according to the "AMHS 1997 Annual Traffic Volume Report." As configured for planning purposes, the service proposed would provide an annual passenger capacity of 15,092, compared to the *Tustumena's* 12,760.

Table 11
Seldovia Service Comparison

SELDOVIA			
	Tustumena	New Vessel	Historical Demand
Annual Trips	58	308	
Annual Passenger Capacity	12,760	15,092	2,303
Annual Vehicle Capacity	3,132	6,160	878
WILLIAMSPORT			
Annual Trips	NA	154	
Annual Passenger Capacity	NA	7,546	NA
Annual Vehicle Capacity	NA	3,080	NA

Note: Annual capacities and historical demand are stated on a one-way basis. Two-way capacities are exactly twice the one-way capacities. One-way historical demand is the larger of the historical demand values from either the Homer–Seldovia or the Seldovia–Homer trip directions.

Operating costs for the Homer–Williamsport–Seldovia marine service element of this alternative are summarized in Table 12.

Table 12
Homer–Seldovia–Williamsport Ferry Service
Operating Costs

	Minimum	Maximum
Shoreside Maintenance	$185,000	$185,000
Hull Maintenance & Pass. Services Maint.	$36,000	$44,000
Machinery Maintenance	$128,000	$156.000
Crew	$698,932	$833,152
Fuel	$159,000	$194,000
Lubricating Oil	$3,600	$4,400
Ports and Terminals O.H.	$223,176	$223,176
Management O.H.	$366,741	$366,741
Shoreside O.H.	$69	$69
Insurance	$19,000	$23,000
TOTAL: (Estimated Annual Operating Cost)	$1,819,518	$1,873,694

OPERATIONAL ISSUES

Williamsport would require substantial navigational improvements in order to accommodate AMHS service. Williamsport is located at the head of tide flats that go dry at low water. In addition, large boulders dot the shoal water approaches to Williamsport. Although shallow-draft vessels could presumably call briefly at high tide, dredging the channel would be required to service other types of vessels, including the basis vessel envisioned to provide the marine service in this alternative.

The U.S. Army Corps of Engineers (COE) completed a study exploring the feasibility of a dredging project at Williamsport in 1995. That report recommended excavation of a 2,700-meter long channel, ending at Williamsport, in Iliamna Bay. The channel bottom would be 30 meters wide at 0.5 below Mean Lower Low Water. The channel would end with a turning basin 5 meters long and 55 meters wide. The turning basin would provide access to a sheet-pile bulkhead dock and an adjacent paved, 8-meter wide launch. Capital costs for the project were estimated at $3,822,000, of which federal funding in the amount of $1,691,400 was identified as available, leaving $2,130,600 to non-federal sources. Annual M&O costs for the project were estimated at $185,000.[5]

The COE study conducted a rigorous benefit-cost analysis for the project, which determined that benefits would exceed costs at a 3.1:1.0 ratio. While the COE study determined that dredging a channel to Williamsport would be a worthwhile project, the lack of a local sponsor terminated further work on the project. However, it was noted that the project could proceed if a local sponsor, such as the State of Alaska, were secured.

Element 2. Williamsport to Pile Bay Roadway Link

Although a roadway currently exists between Williamsport and Pile Bay, it is quite primitive and in poor repair. The existing road is 15.5 miles long, consisting of one graded and drained earthen travel lane with no shoulder. In poor condition, the road is maintained only during the summer when a maintenance contractor is available. Portions of the road do not meet minimum width standards and are too narrow for current use. One of four bridges along the project corridor has washed out, and the others, all of which have sufficiency ratings below 50, are narrow and cannot accommodate oversized traffic. The major limitation restricting boat-haul traffic is the existing metal bridge across the Iliamna River, whose interior dimension of only 12 feet, is too narrow for the typical gillnet boat.

The project proposed in this link would reconstruct and widen the existing road to design standards applicable to a rural major collector traveled by 250 vehicles or less per day. The road's four bridges would be repaired, replaced, or widened, as appropriate. The road would be maintained year-round.

The road climbs 850 feet through the Chigmit Mountains in the first two miles benched on steep rock slopes. The road through this section is narrow and subject to avalanche hazards. As such, winter maintenance through this stretch would likely be difficult and expensive.

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[5] This maintenance cost includes annual grading of the dock, ramp, and staging area; annual surveys the first 4 years, then every 5 years; maintenance dredging every 5 years; replacement of fender piles, ramp concrete, and sheet-pile cathodic protection every 10 years; and replacement of the sheet pile after 30 years.

Total capital costs for this project are estimated at $14,857,500 for a paved surface, and $12,300,000 for a gravel surface. Annual M&O costs are estimated at $209,250 and $232,500 respectively. Demand as part of the full alternative is estimated at 4,200 person trips per year (Tables 19 and 21).

Element 3. Pile Bay to Iliamna Roadway Link

This roadway would complete a link from Williamsport through to Iliamna, allowing travel from Cook Inlet into the interior of the Lake and Peninsula Borough at least as far as Iliamna. The road would connect as far as Nondalton, given that Iliamna–Nondalton link has been programmed and is part of the baseline. This roadway link would provide Pile Bay and Pedro Bay access to the airport at Iliamna and would allow for a tourism circuit from Cook Inlet and potential access to Lake Clark National Park. The project would also provide the potential for interconnection of the electric power of the Tazimina Hydroelectric project.

This project would build 38 miles of new roadway between Iliamna and Pile Bay, passing through Pedro Bay. Although no road yet exists from Iliamna to Pile Bay, a 46-mile trail from Iliamna to Pedro Bay does exist, as does a 12-mile trail from to Pedro Bay to Pile Bay, denoted by the Alaska Department of Natural Resources as a RS2477 route. A likely corridor would follow the RS2477 trail route, traveling about half a mile inland from the northern shore of Lake Iliamna. As proposed, this road would cross about 15 creeks, which would require culvert placements or short-span bridges at these junctions. Like the other roadway links proposed in this regional plan, the road would be constructed to meet AASHTO design standards for a rural major collector with daily travel of under 250 vehicles per day.

The corridor envisioned consists of relatively easy terrain with numerous stream crossings. Construction would include typical fill construction techniques. No unusual construction or design issues are anticipated. Normal annual maintenance would be required for roadway upkeep. Because the area receives just over 60 inches of snow per year, plowing would probably account for the bulk of annual maintenance costs.

Total capital costs for this project are estimated at $51,870,000 for a paved surface, and $45,600,00 for a gravel surface. Annual M&O costs are estimated at $513,000 and $570,000, respectively. Demand for this roadway link is estimated at 17,900 person trips per year as an independent project and 32,400 person trips per year as a component of the alternative (Tables 19 and 21).

Element 4. Iliamna to Igiugig Roadway Link

The 56-mile road link proposed to connect the communities of Iliamna and Igiugig, which lie along the northern shores of Lake Iliamna, would cross lowlands dotted with many lakes, streams, and rivers. Bridges would be required to cross the Newhalen River, the Kvichak River, and many smaller rivers along the coast of Lake Iliamna. The 56-mile road would be built according to AASHTO design standards for a rural major collector serving 250 vehicle or less per day.

This project's major construction issues pertain to the development of bridges over the Newhalen and Kvichak Rivers. Construction materials would have to be barged in via the Kvichak River, and landings would have to be developed for staging. Permitting and land use concerns would also be an issue given the increase in traffic and the presence of structures

that may affect the fishing industry and other traditional area uses. Normal annual maintenance would be required for the bridge and roadway upkeep. Because total precipitation is 20 inches annually, including 45 inches of snowfall, snow removal would constitute the primary maintenance cost.

Total capital costs for this project have been estimated at $78,940,000 for a paved surface and $69,700,000 for a gravel surface. Annual M&O costs have been estimated at $756,000 and $840,000, respectively. Demand for this roadway link is estimated at 16,100 person trips per year as an independent project, 92,300 person trips per year as a component of the alternative, King Salmon option, and 106,100 person trips per year as a component of the alternative, Naknek Option (Tables 19 and 21).

Element 5a. Igiugig to Naknek Roadway Link

Constructing a 75-mile road between Igiugig and Naknek would provide one means of completing the proposed corridor from the Kenai Peninsula to Bristol Bay. This link would provide interior Southwest Alaska communities with ground access to the regional hub of King Salmon, where many goods and services are available.

The terrain between Igiugig and Naknek consists of coastlands and wetlands, with scattered lakes and ponds. The southwesterly route proposed along the Kvichak River would have to avoid numerous wetlands and lakes. Culverts to provide fish passage would be required at creek crossings, including Pecks Creek and Ole Creek. With the Kvichak River's turn to the south, the road alignment would parallel connecting into Hallersville from the north. The road would then be directed east and around the large mouth of the Wild and Scenic Alagnak River to an easier crossing of the river upstream. The crossing would take place approximately three miles east of Hallersville and then turn southwest toward the Kvichak River mouth. Once reaching Cape Horn, the road alignment would follow the pioneer route[6], which runs along the coast through Kvichak, Koggiung, and Libbyville before ending on the north side of Naknek.

Normal annual maintenance would be required for bridge and roadway upkeep. With total precipitation amounting to 20 inches annually, with 45 inches of snowfall, snow removal would require the bulk of the maintenance expenditure.

Total capital costs for this project have been estimated at $102,375,000 for a paved surface and $90,000,000 for a gravel surface. Annual M&O costs are estimated at $1,012,500 and $1,125,000, respectively.

Demand for this roadway link is estimated at 24,100 person trips per year as an independent project and 110,000 person trips per year as a component of the alternative (Table 21).

Element 5b. Igiugig to King Salmon Roadway Link (Alternative Route)

A 56-mile roadway between Igiugig and King Salmon would provide an alternative route to finish the overland crossing of the Alaska Peninsula connecting the Kenai Peninsula with

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[6] This pioneer route is still used to access setnet sites along the coast.

Bristol Bay. Currently, passengers and freight are moved between Igiugig and King Salmon by aircraft or by boat along the Kvichak River with a transfer by road to King Salmon. The eastern portion of the terrain between these communities is characterized by large mountains and foothills to the north of Naknek Lake. The western portion of the area comprises coastlands and wetlands with scattered inland lakes and ponds.

Beginning in the village of Igiugig, the proposed roadway alignment would travel to the south-southwest, crossing Pecks Creek and Ole Creek along with many other small crossings. Continuing south-southwest, the alignment would require crossing the Alagnak River (a Wild and Scenic River) and would navigate along the foothills of the mountains north of Naknek Lake, outside of Katmai National Park and Preserve. The roadway would be routed to the southwest, crossing many branches of Pauls Creek and take a southerly bearing toward King Salmon Creek. Once the road alignment had crossed King Salmon Creek, it would travel along the banks until it connected into the pioneer road system, built by the U.S. Air Force north of King Salmon. After following the pioneer road southwest, the road would terminate on the northwest side of King Salmon at the Alaska Peninsula Highway.

Large river crossings, each of which would require fish passage culverts, are the primary construction issue for this link. With 20 inches of total precipitation annually, including 45 inches of snowfall, snow removal would account for the bulk of maintenance costs.

Total capital costs for this project have been estimated at $76,440,000 for a paved surface and $67,200,000 for a gravel surface. Annual M&O costs have been estimated at $756,000 and $840,000, respectively. Demand for this roadway link is estimated at 24,100 person trips per year as an independent project and 95,100 person trips per year as a component of the alternative (Table 19).

Element 6. Levelock Link to the Igiugig–Naknek Roadway

Building a connection between Levelock and the Igiugig–Naknek roadway link would integrate Levelock, which lies on the north shore of the Kvichak River, to the rest of the surface transportation corridor proposed in this alternative. This would permit the village of Levelock, (2020 base population forecast = 139) access to the larger communities of King Salmon and Naknek. This link could also serve as the beginning of a future route connecting the southwestern peninsula with communities further west, such as Dillingham.

The proposed 19-mile route, which would stem from the proposed link connecting Igiugig and Naknek, would require a 400-foot bridge across the Kvichak River. In addition, the proposed alignment would encounter several creeks, including Yellow Creek and Levelock Creek.

The terrain to be crossed in this proposed link is relatively flat, with occasional creek crossings that would require accommodation of fish passage. The bridge and roadway would require normal annual maintenance, most of which would be devoted to snow removal, insofar as the area receives about 20 inches of precipitation annual, including 45 inches of snowfall.

Total capital costs for this project have been estimated at $27,435,000 for a paved surface and $24,300,000 for a gravel surface. Annual M&O costs have been estimated at $256,500 and $285,000, respectively.

Demand for this roadway link is estimated at 15,000 person trips per year as an independent project and 39,600 person trips per year as a component of the alternative (Table 21).

Marine Options

Each of the four options for linking the Kenai Peninsula with Bristol Bay is the same as far west as Iliamna, at which point they diverge into two overland and two marine options. Discussed below are the two marine options for completing the stretch from Iliamna to Bristol Bay. Initially, the consultant team explored use of a shallow-draft landing vessel to provide service from Iliamna west to Bristol Bay along Lake Iliamna and the Kvichak River. However, initial analysis revealed that such service would be constrained by two factors: (1) winter ice; and (2) seasonally low water, which, combined, would restrict the navigable season from May to October. For this reason, Hovercraft service, which can negotiate both ice and shallow water, was also explored. The results of both sets of analysis are summarized below.

Element 7. Iliamna to Naknek Via Shallow-Draft Landing Vessel

Private and commercial vessels, including barges, are already in use on this waterway system. This option proposes ferry service along Lake Iliamna and the Kvichak River. Iliamna Lake is navigable between May 1 through October 31. While the lower reaches of the Kvichak River are navigable during the ice-free season, the upper reaches of the river are subject to seasonal low water that could impact navigability for some conventional vessels.

The vessel envisioned to provide this service is a shallow-draft landing vessel about 50 feet long, with a 16-foot beam, and with a running draft of approximately 14 inches. The vessel explored for planning purposes can accommodate two loaded full-sized pickup trucks and up to six passengers. The six-passenger threshold is highly desirable because this capacity would allow, according to USCG regulations, the service to operate with just two crew, each holding a USCG boat operator's license, a relatively easily acquired credential.

It would be possible, given the distances between ports served, to operate this service on a "dayboat" concept, which provides substantial operating cost savings, insofar as operations require no more than a single crew for no more than 12 hours per day of service. This would be feasible, providing that the vessel employed is capable of traveling comfortably in excess of the peak river current by a sufficient margin to make the transit in under 12 hours. For planning purposes, we currently believe that a 15-knot vessel could provide round trip service from the western terminus on a three-day turnaround basis (with two 12-hour layovers enroute). A 25-knot vessel could provide the same service on a two-day turnaround basis (with one 12-hour layover enroute). The schedule proposed for planning purposes would have Naknek, at the route's southern terminus, as its "home" port. Table 13 shows a model high-speed, shallow-draft, landing craft schedule for a typical voyage originating in Naknek and returning to Naknek at the end of the second day. Note that one 12-hour minimum layover is required on Iliamna Lake for crew rest.

Table 13
Model Schedule
High-Speed (25 knot), Shallow-Draft Landing Craft

	Arrival		Departure		Port Time	Sailing Time
	Day	Time	Day	Time	Duration	Duration
Naknek			Monday	6:00		1:16
Levelock	Monday	7:16	Monday	7:46	0:30	4:56
Igiugig	Monday	12:42	Monday	13:12	0:30	1:36
Newhalen	Monday	14:48	Monday	15:18	0:30	0:14
Iliamna	Monday	15:32	Monday	16:02	0:30	0:55
Pedro Bay	Monday	16:57	Monday	17:27	0:30	0:22
Pile Bay	Monday	17:49	Tuesday	5:49	12:00	1:36
Kokhanok	Tuesday	7:25	Tuesday	7:55	0:30	0:41
Newhalen	Tuesday	8:36	Tuesday	9:06	0:30	0:41
Kokhanok	Tuesday	9:47	Tuesday	10:17	0:30	0:41
Newhalen	Tuesday	10:58	Tuesday	11:28	0:30	1:36
Igiugig	Tuesday	13:04	Tuesday	13:34	0:30	1:59
Levelock	Tuesday	15:33	Tuesday	16:03	0:30	1:04
Naknek	Tuesday	17:07				

Although accommodating the vessel envisioned to provide service on this link would not require extensive or particularly expensive shoreside infrastructure, some minor landing area upgrades, such as road extensions and gravel or concrete pads, would be needed. Accordingly, the costs of such improvements have been estimated at $25,000 at each of eight ports proposed for service, for a total of $200,000. In addition, navigation aids needed on the Kvichak River itself have been estimated at a cost of $50,000. Combined M&O costs for all shoreside improvements have been estimated at $6,250 annually.

In addition to the shoreside improvements just mentioned, of course a new vessel would have to be acquired – at an estimated cost of $526,000. Vessel-related M&O costs, which include crew, fuel, insurance and overhead, are estimated at $318,300. The total cost breakdown for this project is provided in Table 14.

Table 14
Capital and M&O Costs for Proposed Lake Iliamna/Kvichak River Marine Link (Shallow-Draft Landing Vessel Option)

Vessel Acquisition Cost	$481,000 F.O.B. Seattle $45,000 Delivery by barge	
Subtotal: (Acquisition Cost)	$526,000	
	Minimum	**Maximum**
Hull Maintenance	$1,500	$2,000
Machinery Maintenance	$4,000	$5,500
Crew	$144,000	$223,000
Fuel	$90,000	$110,000
Lubricating Oil	$1,200	$1,400
Berthing	$3,000	$4,000
Insurance	$22,000	$25,000
Subtotal: (Annual Operating Cost)	$265,700	$370,900

Table 15
Capital and M&O Costs Shoreside Improvements

Landing area upgrades (road extensions, gravel or concrete pads, etc.) at eight (8) communities (Allowance: 8x$25,000)	$200,000	
Aids to navigation on Kvichak River	$50,000	
Subtotal: (Acquisition Cost)	$250,000	
	Minimum	**Maximum**
Annual Maintenance	$5,500	$7,000
Subtotal: (Annual Operating Cost)	$5,500	$7,000

Demand for this service link is estimated at 3,600 person trips per year.

Element 8. Iliamna to Egegik Marine Service via Hovercraft

Hovercraft, which can operate at speeds over 40 knots over land, ice cover, seas with up to four-foot waves, beaches, and shallow water, were also explored as a means of linking the western portion of the Kenai Peninsula to Bristol Bay corridor. Two models of hovercraft with extensive Alaskan operating experience were explored in analyzing this option: the turbine-powered LACV-30 type hovercraft and the conventionally-powered AP.1-88. Of the two, the

AP.1-88 was found to be more suitable for Lake Iliamna–Kvichak River service, due to its smaller size, lower operating costs, and lower noise impacts.[7] Like the shallow-draft landing vessel option described above, crew costs for hovercraft operations would be relatively low. It is possible that the AP.1-88 could be operated with a crew of two: a master, who would have to have a USCG hovercraft endorsement,[8] and a mate to crew the aft compartment.[9]

Using a hovercraft rather than a shallow-draft landing vessel to connect the communities along Lake Iliamna and the Kvichak River would have several advantages over the use of a shallow-draft landing vessel:

- **Longer service period**. Hovercraft operation would offer the advantage of a year-round, as opposed to May through October service season. Unlike a shallow-draft vessel, the Hovercraft would be able to operate over the winter ice of Lake Iliamna, and probably over the Kvichak River's ice. However, the Hovercraft would likely be out of service for about 20 days each for the periods of winter freezeup and spring thaw, which could be scheduled for annual maintenance. In any case, the total service period of the Hovercraft would be approximately 46 weeks compared to 26 weeks for the shallow-draft vessel.
- **Fewer shoreside improvements required**. The AP.1-88 is able to utilize an unimproved or minimally improved loading/unloading facility, unlike a shallow-draft landing vessel, which would require landing pads.
- **Freight-carrying flexibility**. The version of the AP.1-88 currently operating in Alaska is configured for 24 passengers with adjustable interior bulkhead to accommodate freight. The aft superstructure doors are wide enough to pas a full size pallet.

Some disadvantages associated with hovercraft operations have also been identified:

- **Noise**. Although the diesel-powered AP.1-88 is not as noisy as the turbine-powered LACV-30, it is relatively noisy compared to the conventional hull option. In any case, current hovercraft operations in Bethel, Alaska, on behalf of the U.S. Postal Service will provide an opportunity to assess noise impacts firsthand.
- **Limited payload**. Although the AP.1-88's 16,000-pound cargo capacity slightly exceeds that of the shallow-draft landing vessel, its deadweight capacity is modest. However, given early, planning-level demand estimates, it is thought to be sufficient.
- **Relatively high maintenance costs**. Although maintenance costs for Hovercraft are not well established, they are presumed to be higher than those for conventional hull craft, due to two factors: (1) their higher level of mechanical sophistication; and (2) wear and tear on the craft's rubber skirt. In addition, it would be necessary to wash the craft down when operating over brackish water near Naknek in order to prevent salt water damage to the air screws and other machinery.

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[7] Although other hovercraft are commercially available, most are much smaller and would not meet the projects freight and passenger load requirements envisioned in this option. In addition, two existing AP.1-88 vessels, although built in Canada, have unrestricted Jones Act waivers allowing their use in the United States.

[8] A hovercraft endorsement from the USCG can be earned upon completion of 36 hours of classroom study and 36 hours of operating time.

[9] Although the mate need not be fully qualified, he or she must have a radar rating.

MODEL SCHEDULE

The AP.1-88 hovercraft is fast enough that the highly desirable result of 12-hour dayboat operation would be achievable. In fact, Table 17 shows a model schedule based on the following operating speeds: 40 knots per hour on the lower Kvichak River, 30 knots on the upper Kvichak River, and 50 knots on Lake Iliamna. In order to maintain 12-hour service days, port calls are limited to 20 minutes. This model schedule accomplishes the daily round trip in 11 hours, allowing a half hour in the morning for startup and a half hour in the evening for shutdown. For the purposes of illustrating this schedule, Naknek serves as homeport.

The acquisition cost for an AP.1-88 hovercraft is estimated in the range of $5 to $6 million, depending on classification and regulatory requirements, outfitting, delivery costs, and acquisition scheme. A summary of estimated Hovercraft operating costs is provided in Table 18.

Table 16
AP.1-88 Hovercraft

Annual Operating Costs	
Maintenance	$1,408,000
Crew	237,250
Fuel	14,608
Lubricating oil	2,282
Subtotal	$1,662,140
Miscellaneous (4%)	66,460
Total	**$1,728,600**

The operating cost summary contained in Table 18 assumes that hovercraft service is provided five days a week except during break-up and freeze-up, for which 20 days apiece are allocated and assumed to be used for annual maintenance.

Demand for this service link is estimated at 6,900 passenger trips.

Table 17
Model Schedule
(40 kt lower river; 30 kt upper river; 50 kt lake)

	Arrival		Departure		Port Time	Sailing Time
	Day	Time	Day	Time	Duration	Duration
Naknek			Same Day	6:30		0:45
Levelock	Same Day	7:15	Same Day	7:35	0:20	1:30
Igiugig	Same Day	9:05	Same Day	9:25	0:20	0.50
Newhalen	Same Day	10:15	Same Day	10:35	0:20	0:10
Iliamna	Same Day	10:45	Same Day	11:05	0:20	0:30
Pedro Bay	Same Day	11:35	Same Day	11:55	0:20	0:15
Pile Bay	Same Day	12:10	Same Day	12:30	0:20	0:50
Kokhanok	Same Day	13:20	Same Day	13:40	0:20	0:50
Igiugig	Same Day	14:30	Same Day	14:50	0:20	1:30
Levelock	Same Day	16:20	Same Day	16:40	0:20	0:45
Naknek	Same Day	17:25				

Table 18
Cost Synopsis
Cook Inlet to Bristol Bay Overland
King Salmon Option

	Annual O&M Cost	Total Capital Cost	Annualized Cap Cost @ 7% Interest	Annualized Capital plus O&M costs
Marine Elements				
Homer–Williamsport–Seldovia Marine	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–W–S shoreside	$185,000	$3,822,000	$360,770	$545,770
Roadway Elements				
Williamsport to Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
Pedro Bay to Pile Bay to Iliamna				
Paved	$513,000	$51,870,000	$4,896,161	$5,409,161
Unpaved	$570,000	$45,600,000	$4,304,317	$4,874,317
Iliamna to Igiugig				
Paved	$756,000	$78,940,000	$7,451,378	$8,207,378
Unpaved	$840,000	$69,700,000	$6,579,187	$7,419,187
Igiugig to King Salmon				
Paved	$756,000	$76,440,000	$7,215,395	$7,971,395
Unpaved	$840,000	$67,200,000	$6,343,205	$7,183,205
TOTAL				
Paved Option	$4,778,856	$228,679,500	$21,585,727	$25,666,583
Unpaved Option	$5,084,106	$201,372,000	$19,008,092	$23,337,198

Table 19
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Overland
King Salmon Option

	Independent*	Alternative**	System***
Marine Elements			
Homer–Seldovia		4,000	
Homer–Williamsport		4,200	
Roadway Elements			
Williamsport to Pile Bay to Pedro Bay		4,200	
Pedro Bay to Iliamna	17,900	32,400	33,700
Iliamna to Igiugig	16,100	92,300	101,300
Igiugig to King Salmon	24,100	95,100	108,300

* Demand on the link as an independent element.

** Demand on the link as part of the alternative.

*** Demand on the link assuming implementation of a Cook Inlet to Bristol Bay to Alaska Peninsula roadway system.

Table 20
Cost Synopsis
Cook Inlet to Bristol Bay, Overland
Naknek Option

	Annual O&M Cost	Total Capital Cost	Annualized Cap Cost @ 7% Interest	Annualized cap cost plus O&M Cost
Marine Elements				
Homer–Williamsport–Seldovia	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–W–S Shoreside	$185,000	$3,822,000	$360,770	$545,770
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
Iliamna–Pedro Bay–Pile Bay				
Paved	$513,000	$51,870,000	$4,896,161	$5,409,161
Unpaved	$570,000	$45,600,000	$4,304,317	$4,874,317
Iliamna to Igiugig				
Paved	$756,000	$78,940,000	$7,451,378	$8,207,378
Unpaved	$840,000	$69,700,000	$6,579,187	$7,419,187
Igiugig to Naknek				
Paved	$1,012,500	$102,375,000	$9,663,476	$10,675,976
Unpaved	$1,125,000	$90,000,000	$8,495,363	$9,620,363
Igiugig to Levelock				
Paved	$256,500	$27,435,000	$2,589,670	$2,846,170
Unpaved	$285,000	$24,300,000	$2,293,748	$2,578,748
TOTAL				
Paved Option	$4,778,856	$282,049,500	$26,623,478	$31,217,334
Unpaved Option	$5,084,106	$248,472,000	$23,453,999	$28,353,105

Table 21
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Overland
Naknek Option

	Independent*	Alternative**	System***
Marine Elements			
Homer–Seldovia		4,000	
Homer–Williamsport		4,200	
Roadway Elements			
Williamsport to Pile Bay		4,200	
Pile Bay to Pedro Bay to Iliamna	17,900	32,400	33,700
Iliamna to Igiugig	16,100	106,100	115,100
Igiugig to Naknek	24,100	110,000	123,200
Igiugig to Levelock	15,000	39,600	43,800

* Demand on the link as an independent element.

** Demand on the link as part of the alternative.

*** Demand on the link assuming implementation of a Cook Inlet to Bristol Bay to Alaska Peninsula roadway system.

Table 22
Cost Synopsis
Cook Inlet to Bristol Bay Marine
Hovercraft Option

	Annual O&M Cost	Total Capital Cost	Annualized Capital Cost @ 7% Interest	Annual Capital plus O&M costs
Marine Elements				
Homer–Williamsport-Seldovia	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–Williamsport Shoreside	$185,000	$3,822,000	$360,770	$545,770
Lake Iliamna (Hovercraft)	$1,728,600	$5,500,000	$519,161	$2,247,761
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
TOTAL				
Paved Option	$3,969,456	$26,929,500	$2,541,954	$6,326,410
Unpaved Option	$3,992,706	$24,372,000	$2,300,544	$6,108,250

Table 23
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Marine
Hovercraft Option

	Travel Demand
Marine Elements	
Homer–Seldovia	4,000
Homer–Williamsport	4,200
Lake Iliamna Hovercraft Service	6,900
Roadway Elements	
Williamsport to Pedro Bay	4,200
Pedro Bay to Iliamna	22,100

Table 24
Cost Synopsis
Cook Inlet to Bristol Bay Marine
Shallow-Draft Landing Vessel Option

	Annual O&M Cost	Total Capital Cost	Annualized Capital Cost @7% Interest	Annual Capital plus O&M costs
Marine Elements				
Homer–Williamsport–Seldovia*	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer, Williamsport Shoreside	$185,000	$3,822,000	$360,770	$545,770
Lake Iliamna (Shallow-Draft Vessel)**	$318,300	$526,000	$49,651	$367,951
Lake Iliamna Shoreside	$6,250	$250,000	$23,598	$29,848
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
TOTAL				
Paved Option	$2,565,406	$22,205,500	$2,096,042	$4,476,448
Unpaved Option	$2,588,656	$19,648,000	$1,854,632	$4,258,288

*Vehicle demand for this element of the alternative was estimated at 2,800 vehicles/year.
**Vehicle demand for this element of the alternative was estimated at 770 vehicles/year.

Table 25
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay
Shallow-Draft Landing Vessel Option

	Travel Demand
Marine Elements	
Homer–Seldovia	4,000
Homer–Williamsport	4,200
Lake Iliamna Marine Service (S.D.)	3,600
Roadway Elements	
Williamsport to Pedro Bay	4,200
Pedro Bay to Iliamna	22,100

ALASKA STATE LEGISLATURE
House of Representatives

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LEGISLATIVE COUNCIL, MEMBER
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SPECIAL COMMITTEE ON ECONOMIC DEVELOPMENT & TOURISM, MEMBER

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Representative Norman Rokeberg

MEMORANDUM

TO: **The Honorable Gail Phillips, Chair**
Economic Development & Tourism Committee

FROM: **Rep. Norman Rokeberg**

DATE: **January 26, 2000**

RE: **Pogo**

Attached are several articles I collected over the summer concerning the Pogo project.

1. **October 27, 1998 press release from Teck Corporation and Sumitomo regarding 1998 drill program at Pogo.**
2. **Teck Corporation internet page "Pogo Project"**
3. **Internet Information on Teck Corporation including 1999 Third Quarter Report with information on Pogo**
4. **March 8, 1999, Teck Corporation Internet site, "Underground Exploration Permits Received for Pogo Project, Alaska"**
5. **May 17, 1999, *Alaska Journal of Commerce*, "Teck begins tunnel work on Pogo Ridge gold deposit near Delta"**
6. **July 1999, *Business News Alaska*, "Alaska mining news summary: Industry still hurt by declining metals prices, reduced exploration funding"**
7. **August 1999, *Busines News Alaska,* "Alaska mining news summary: Tundra telegraph lines relatively quiet this month, companies busy with their summer field programs", and "Soil-sampling, mapping begun near Pogo"**
8. **October 1999, *Business News Alaska,* "Low gold prices continue to batter Alaska's miners: Pogo still hot spot" and "Mining companies try to extract field data against ticking clock of remaining season"**

9. October 17, 1999, *Fairbanks Daily News-Miner*, "Teck weighs Pogo Mine route options"
10. October 31, 1999, *Alaska Miners Convention,* Mining moves forward in spite of low metal prices"
11. November 1999, *Business News Alaska,* "Alaska mining news summary: Gold prices rise put hedgers to shame", and "Teck weighs financial, environmental impacts of Pogo route"
12. November 1999, *Alaska Business Monthly,* "The Pogo Land Rush"

Karl Hanneman, Alaska Regional Manager, Teck Resources. Inc., has advised my office as follows:

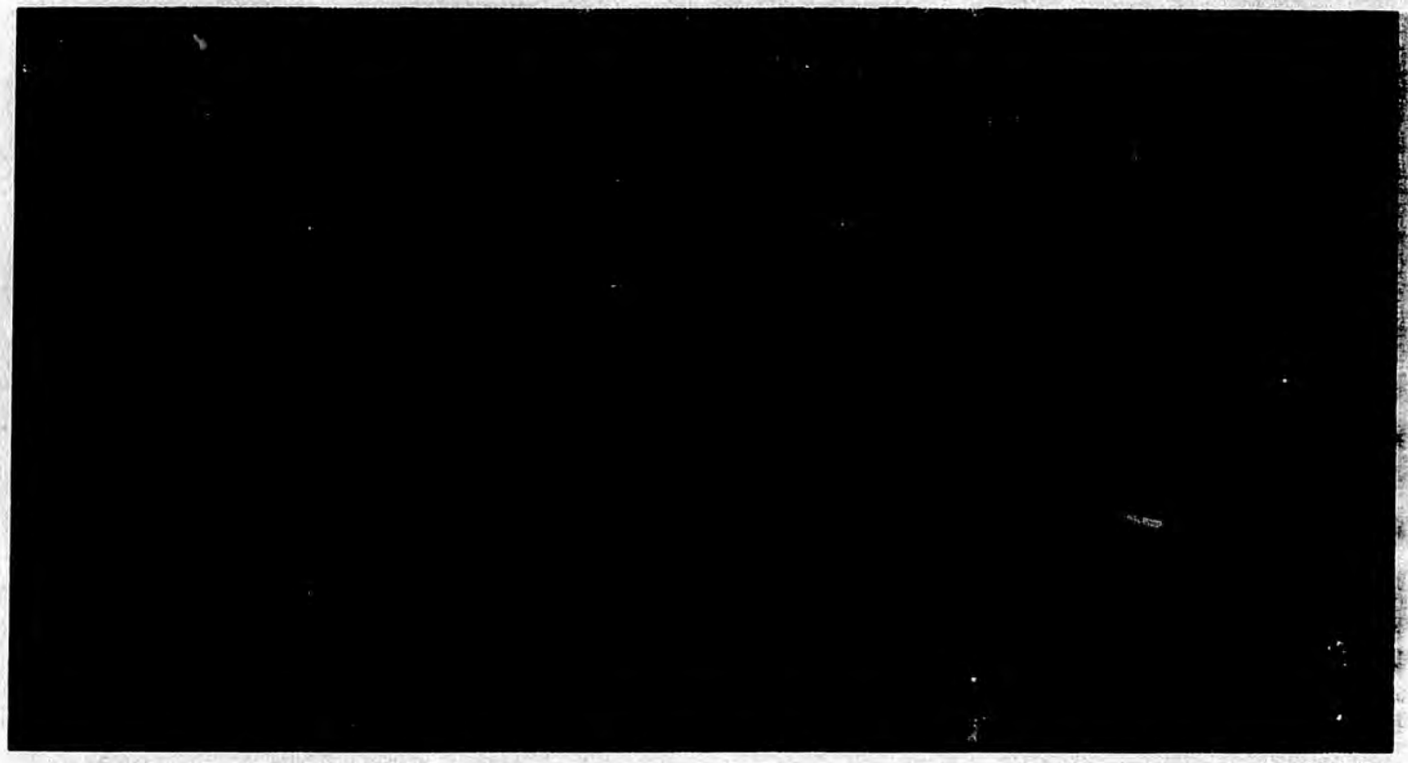
1. MINE: Are accomplishing underground exploration. Have not yet reached the mineralized zone.
2. ACCESS: Feasibility and environmental assessment stage during which access consideration are as follows:
    a. Air
    b. Winter Road
    c. All Season Road

    They are still trying to evaluate each alternative to assess which would be best for the community and the project.

Mr. Hanneman indicated that he would be willing to provide further information to the committee.

The Pogo Land Rush

Among the largest of land rushes in Alaska's rich and varied mining history, it seems that the Pogo area play has been appropriately nicknamed the "Goldpaster," even though that name was first coined as a typographical mistake in a newspaper headline.



Patricia Jones

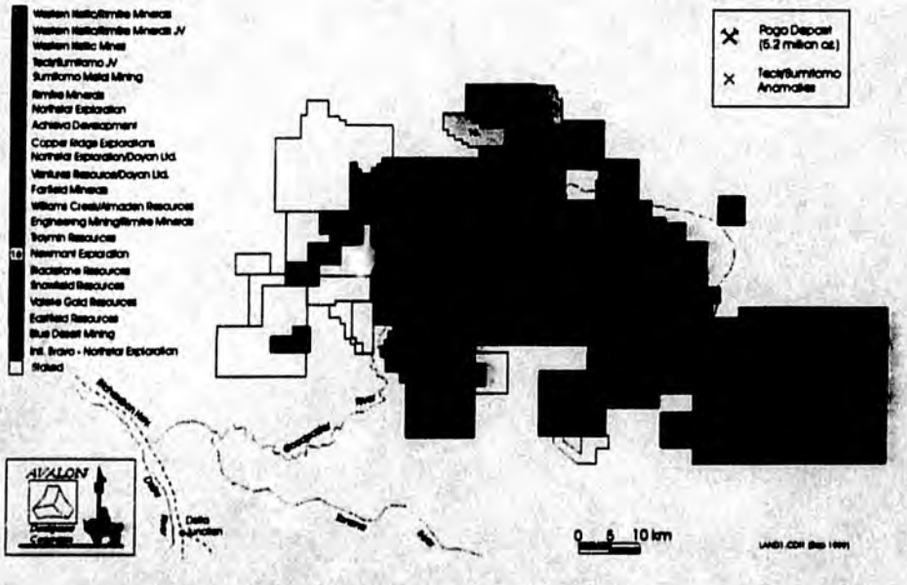
Tom Howard, left, and Ron Hanson, drillers working for Tonto Drilling, take diamond core samples in July 1998 at the Badlands hole at the Pogo prospect. Such drilling work helped spark a land rush in the upper Goodpaster River Valley.

BY PATRICIA JONES

Less than three years ago, the upper Goodpaster River valley was considered mineral-poor moose pasture by most gold prospectors. Only a handful of old-timers working placer claims and a Japanese-financed hard-rock exploration team considered the area as a prospective mining district.

But one single discovery–a 5 million ounce-plus gold deposit called Pogo–has dramatically changed geological opinion of the rolling, spruce-covered hills and river valley located about 40 miles northeast of Delta Junction in Alaska's Interior.

Now, it's the hottest place in Alaska to prospect for gold and interest in the area has sparked a virtual land rush. More than a half million acres of state



LAND STATUS OF THE GOODPASTER MINING DISTRICT

land was staked the last 18 months by prospectors hoping to find another Pogo, according to Erik Hansen, a land status consultant based in Fairbanks.

"Some Canadian junior mining companies decided to go in and stake all around Pogo," Hansen said. "That caused other people to wake up and smell the coffee."

Sumitomo Metal Mining Co., which holds the claims to the 72-square-mile claim block called Pogo, also has some surrounding and nearby land staked, compiling a considerable property package. And North Star Exploration, which signed an exploration property deal to work on Doyon Ltd. land in the area, also staked a sizeable position in the Goodpaster area.

In all, more than 700,000 acres–equal to about 1,100 square miles of land in the Goodpaster area–has been claimed for mineral exploration and development by gold prospectors.

"They've pretty much saturated the whole country with claims, so the Pogo land rush is coming to an end," Hansen said. "Next will be to see who keeps the claims and who drops them."

Prospectors are now looking at potential sites both to the northwest and the southeast of Pogo, he said. On a weekly basis, Hansen tracks claim filings and has produced a land status map of the Goodpaster mining district.

Staking the Goodpaster

During the Pogo area play, prospectors used both existing geologic data for the Goodpaster as well as the theory of closeness to make their land selections.

"It was a combination," Hansen said. "Anything in proximity of Pogo is fair game for the staking, but a lot of companies used existing public geological data to delineate targets for their staking."

Copper Ridge Explorations Inc., a recently formed junior exploration company, used both theories to select its 24,000-acre claim block located just north of the Pogo deposit, according to company president Gerald Carlson.

"By the time we decided to look for ground in the area, most of the prospective ground on the east-west trend had been taken up," he said.

Prior geological surveys conducted by the U.S. Geological Survey and

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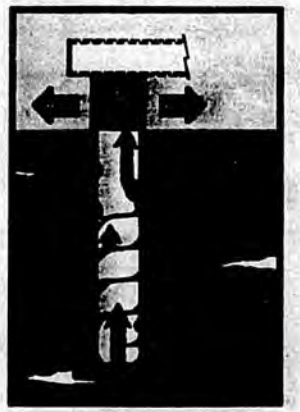

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recent stream sedimentation samples that produced trends similar to Pogo-style mineralization caused the company to select its property, called Ogopogo, he said.

"I think it is also quite significant that we were able to acquire this ground within only a few miles of the Pogo deposit itself–the 'closeology' factor," Carlson said.

Most agree that news about Pogo created this land rush. But the relatively unexplored land of the Goodpaster also made the district attractive, said Curt Freeman, a Fairbanks-based consulting geologist.

"Part of it was the fact that Pogo was unknown ... in a district that had absolutely nothing else going for it during the last 100 years. It was a dope-slap for geologists, telling us that we really don't understand what we think we do," said Freeman.

The land rush, which peaked about a year ago, was so great that junior-sized exploration firms were looking to hire claim-stakers to work on Christmas Day. Freeman was one who turned down such holiday pay.

"I don't think I could have hired a (helicopter) pilot then," he said. "The first real bunch of claim-staking started in June and July last year; then it ramped up to complete madness."

Because of the rough terrain and lack of road access, most of the land rush occurred with the help of helicopters, which were used to drop off claim-staking crews. That increased the initial land acquisition costs, as well as the first stage of exploration work conducted this past summer.

Exploration Spending

Two years ago, only Sumitomo and Teck Exploration (Sumitomo's joint venture partner on the Pogo project), were spending time and money in the Goodpaster area.

Now, about 20 companies are actively exploring the area, according to Richard Swainbank, the state's mineral development specialist headquartered in Fairbanks.

"There's a lot of interest around Pogo, but not a lot of money," Swainbank said. "If the price of gold was in the $330 to $380 (per ounce) range, the amount of activity in the Pogo area would

be double or triple. It's very, very hard to fund exploration programs right now."

When gold prices dropped to the $250 per ounce range this summer, exploration crews found that funding also decreased. No matter what prospectors turned up on their properties, exploration firms couldn't seem to escape the financial drag of the slumping gold market.

"The fall in the price of gold couldn't have come at a worse time for the state of Alaska," Swainbank said. (Note: Gold prices rose in late September.)

Freeman, who has several clients holding claims in the Goodpaster area, estimates that $3 million to $5 million was spent during the 1999 summer season by prospectors working around Pogo.

That number does not include about $15 million in developmental expenses incurred by Teck Exploration to start construction of a mile-long tunnel th t will access the Pogo deposit.

"If you would have asked me in March how much would be spent in the area, I would have estimated two to three times that which was spent," said Freeman. "With the drop off in interest in gold, money for the high-risk stuff has been that much harder to come."

There's one small consolation for such tight exploration funding, Swainbank said. Less money means that prospecting work has been more carefully planned and paced, rather than a willy-nilly process that can often accompany the start of such an exciting exploration area.

"Claims will get looked at more generally, instead of bringing in drill rigs prematurely," Swainbank said. "Nothing can kill a project quicker than a dry drill hole."

"Goldpaster" District's Future

Most in the industry expect to see in upcoming months some changes in land status surrounding Pogo. Temporary prospecting sites will be converted into more tangible mining claims while less prospective land will be dropped.

"A whole bunch (of prospecting sites) are being converted and some land has been windrowed out," Freeman said. "There's a sifting process going on right now and by the end of the year, the Hansen map will look different with checkerboard holes where land has been dropped."

In addition to land changes, Swainbank expects to see continued partnerships and consolidation of efforts between junior exploration firms and major mining companies that have money to invest in prospecting and development.

"Major companies that have cash on hand will be shopping in the bargain basement because even the cost of maintaining the claim rent on those properties has to be a pretty good-sized burden on some of the juniors," he said.

Finally, some companies are pressing on with exploration on their properties after a successful start with their ground exploration efforts earlier this summer.

"We will be soil sampling and prospecting in the area of the anomalous gold results to try to localize the bedrock source of the gold," Carlson said in early September, about his company's Ogopogo property. "We are very excited by the results of the program so far." ❑

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IT CORPORATION

Teck begins tunnel work on Pogo Ridge gold deposit near Delta

By Tim Bradner
Journal Reporter

MINING

Teck Resources crews are busy digging into Pogo Ridge at the company's big Pogo gold prospect 35 miles northeast of Delta.

The company also has initiated prefeasibility studies of development of a mine that, if positive, will be followed by environmental studies and the start of a long permitting process, Karl Hanneman, Teck's Alaska Regional Manager, told the Resource Development Council May 5.

More than 50 feet of a planned 5,500-feet underground exploration access tunnel is completed, he said. Tunnel work will pause 200 feet into the mountain to allow installation of a treatment facility to process drainage water and then resume, he said.

Teck received final clearance on permits from state agencies March 1 and federal agencies March 4. Work on a 2,000-foot road began the same day from the present camp near the Goodpaster River, 200 feet up the side of Pogo Ridge to the portal, or entrance, to the tunnel.

Tunnel work began after heavy equipment was moved up the road. The tunnel is being built at a 15-degree downslope and upslope to come up under the ore body.

Configuration of the tunnel allows water to drain to the low point in the tunnel for treatment, with no chance of draining out with a risk of contamination of the Goodpaster River.

Teck now has about 45 people at work on the project, Hanneman said. About 30 will be employed over the next 12 to 18 months on the tunnel and test work.

Teck also plans an additional 50 test holes drilled from the surface in 1999 and a similar number in 2000 and 2001. These are mainly "in-fill" holes to obtain ore samples between the holes drilled earlier, which are at 50-foot intervals.

Once the tunnel is completed, drilling also will be done from underground to test suspected ore deposits that are too deep to reach from the surface.

Teck has about 45 people at work on the project. About 30 will be employed over the next 12 to 18 months.

Pogo has an identified gold resource of 5.5 million ounces in 10 million tons of ore grading an average of 0.5 ounce per ton, Hanneman told the RDC.

By way of comparison, Hanneman said, at this early stage of exploration, the Fort Knox Mine near Fairbanks had about 4 million ounces of identified gold resource in a lower-grade ore body.

Pogo is a higher grade gold deposit and will be mined with a smaller, more compact underground project than the type of larger, open-pit mine used at Fort Knox, he said.

Over the next 12 to 18 months Teck will do additional exploration drilling, both from surface and from the underground tunnel, to further define the ore body.

The company will also carry out tests on strength of the rock, gain information on potential water drainage problems, and mine bulk ore samples to test underground mining methods and procedures to extract gold from the ore.

The flat-lying orientation of the gold deposit poses a serious engineering challenge to the mining — how to "hold up the roof" — and the tests of rock strength are particularly important. About 30 people will be employed through this phase of exploration, Hanneman said.

The presence of the Pogo gold deposit was first detected in 1981 during a regional mineral reconnaissance. It wasn't until 1991 that Sumitomo Metal Mining Arizona Inc., a subsidiary of Japanese-owned Sumitomo Metals, staked claims on state lands in the area and began serious exploration.

Teck, a long-established U.S. minerals company, bought 40 percent of the project and became its operator. The discovery was announced in 1997.

Teck has become active in Alaska in recent years, but the company owns 35 percent of Cominco, which operates the big Red Dog Mine in Northwest Alaska, and 15 percent of Abacus Minerals, which is exploring, with Teck as a partner, the Niblack base metals prospect in Southeast Alaska.

Teck, which operates mines in the U.S., Canada, Chile and Australia, had $713 million in revenues and $193 million in profits last year. Sumitomo Metals is a subsidiary of Japan's Sumitomo Corp., a 300-year-old company that, among all subsidiaries, had $95 billion in revenues last year.

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TECK CORPORATION

COMPANY OPERATIONS NEWS FINANCIALS SHAREHOLDERS

October 27, 1998

Teck and Sumitomo Announce Results of 1998 Drill Program at Pogo

Teck Corporation, Sumitomo Metal Mining and Sumitomo Corporation today announced an updated geological resource on their joint venture Pogo project in Alaska. Teck is the operator of the Pogo project and can earn a 40% interest by expending (U.S) $28 million to produce a feasibility study by December 31, 2000 and contributing the first (U.S.) $33 million of development and construction costs.

The 1998 and 1997 resource calculations using a 0.1 oz/T cutoff grade are given below:

	1998			1997		
	Short Tons (millions)	Assay oz/T. Au	Contained oz. Au (millions)	Short Tons (millions)	Assay oz/T. Au	Contained oz. Au (millions)
Main Liese	7.25	0.53	3.84	8.84	0.40	3.52
Lower Liese	2.73	0.50	1.37	2.13	0.46	0.97
Total	9.98	0.52	5.21	10.97	0.41	4.49

The increased drill density in the core of the deposit confirmed the continuity of the two flat-lying lenses, and step out drilling extended the veins, particularly to the southeast.

The updated resource calculation is a result of the 1998 exploration drill program which consisted of 97 diamond drill holes totaling over 91,000 feet, the majority of which was infill drilling. In addition, the current more detailed and selective geological model of the Main Liese vein dropped some minor veins and stockwork mineralization from the earlier resource calculation, resulting in a lower tonnage but a higher average grade. The net effect including the 1998 drill results is an increase in the geological resource to 5.2 million ounces, and average grade to 0.52 ounces per ton (using the kriging method).

The deposit is still open to the southeast and the northwest. In addition, two deep drill holes have indicated a possible third zone 400 feet below the Lower Liese. Hole 98-124, which was 200 feet southeast of 97-71 (42.7 feet at 0.58 oz/T), intersected 19.2 feet at 0.75 oz/T.

In addition to further infill and step out drilling, the planned 1999 exploration program calls for an underground adit to obtain geotechnical data, test the continuity of the veins for mining, and obtain a bulk sample for metallurgical testing. Engineering and environmental studies to support a feasibility study will also be conducted.

Dr. Moira Smith, Teck's Exploration Manager for the project, said: "It is encouraging that we were able to increase the total number of ounces of gold contained in the resource by approximately 16%, even though the majority of the 1998 program was devoted to infill drilling. However, the 27% increase in the average grade should prove to be even more important, since it will have a direct impact on operating costs".

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Senior Geologist
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TECK CORPORATION

Pogo Project

The gold deposit occurs in two shallow-dipping quartz vein systems, which are generally 4 to 12 meters in thickness and are named the "L1" and "L2" lenses. Two deep drill holes have indicated the possibility of a third lense below the "L2" zone.

Drilling to the end of 1998 indicates a resource of 9.9 million tons averaging 0.52 ounces of gold per ton, or 5.2 million contained ounces.

The 1998 program also included geotechnical and other engineering and environmental studies, which are essential to the feasibility study that will begin in 1999.

The 1999 exploration program will consist of further surface drilling as well as an excavation of an underground adit to intercept the quartz veins to gather additional data.

Exploration drilling on site.

3D Ore Body

Lower engineering camp with upper exploration camp in background. Current airstrip is adjacent to the Goodpaster river. Access to the upper camp is by helicopter.

Upper exploration camp with Goodpaster river in valley below. The camp is designed for 50 people and is surrounded by a 3000 foot electrified bear fence.

What's
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TECK CORPORATION

COMPANY OPERATIONS NEWS FINANCIALS SHAREHOLDERS

Founded on a gold mine 85 years ago, Teck now produces copper, zinc, niobium and coal as well as gold, from 11 mines in Canada, Chile and Australia.

As a diversified mining company, Teck offers strong financial capacity, engineering capabilities in both underground and open pit mining and processing expertise in a variety of products.

Construction started on the world-class Antamina copper zinc joint venture in Peru in 1998 and, with a new base metal discovery in Mexico and an expanding gold deposit in Alaska on the drawing boards, Teck is well positioned to continue growing into the future.

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This site is optimized for Netscape Navigator and Internet Explorer (versions 4.x and higher).

Interim Report for TeckGold, a wholly-owned business unit of Teck Corporation.

Operations

Total gold production in the third quarter was 132,235 ounces, an increase of 12% over the previous corresponding quarter in 1998. The increase was attributable to the above-budget performance of the Hemlo mines, and to the record production result contributed by the Tarmoola mine in Australia. The average cash operating cost for the quarter was US$181 per ounce, down 8% from the previous quarter.

Williams & David Bell (Ontario, Canada)

Production from the Williams and David Bell mines was an above-budget 75,817 ounces, up 3% from the corresponding quarter in 1998. Cash operating costs were below budget at US$180 per ounce, down 7% on the previous corresponding quarter. The results for the quarter reflected the benefit of the first stage of the operations optimization program at Williams and David Bell, under which the David Bell ore is now treated at the Williams mill.

Tarmoola (Western Australia)

Production from Tarmoola was a record 56,418 ounces, up 26% from the corresponding quarter in 1998. Cash operating costs at Tarmoola were reduced a further 7% from the previous quarter to US$182 per ounce. This is the ninth consecutive quarter in which production has increased and cash operating costs have decreased.

During the quarter, the Tarmoola reserve was upgraded to over 2.0 million ounces, representing a 72% increase over the previous 1998 reserve estimate after accounting for production. The grade of the primary mill feed increased to 2.4g/t from the previous 2.0g/t. Subsequent drilling results suggest that an extensive sheet of mineralization is present along the northern part of the Eastern Flank zone and that it contains localized thickenings that form continuous high-grade shoots.

Development and Exploration

At the Pogo project in Alaska, driving of an adit for underground drilling and evaluation continued to 1,600 feet, with a further 1,200 feet to go before reaching the Liese vein systems. An underground water treatment plant was constructed during the quarter and is now treating water generated from the workings. Geotechnical work on potential tailing disposal sites was carried out as well as environmental sampling to establish baseline data.

Drilling during the recent field season was primarily devoted to in-fill drilling of the L1 and L2 zones, and an updated reserve calculation will be announced later in the year. Drilling also confirmed the presence of at least two new east-dipping shear-hosted quartz veins in the North zone, and regional surface prospecting and soil sampling has identified several new anomalous areas in the southeast part of the Pogo claims.

At the Carosue Dam project in Australia, work continued on the bankable feasibility study and further in-fill drilling has identified a series of enriched high-grade near-surface mineralized zones. Due to their relatively higher grades, these zones could potentially have a positive impact on the economics of the overall project.

TeckGold is continuing to explore at various early stage and advanced exploration projects in Hemlo (Ontario), Great Basin (Nevada), Morelos Reserve (Mexico) and in Yukon, Alaska and Peru.

Financial

This is the first quarter for which TeckGold, while consolidated by Teck, is being reported as a separate business unit. The operating financial statistics of TeckGold are set out in the following page.

For the quarter, TeckGold achieved a mine operating profit before depreciation of $24.5 million, up 10% on the previous corresponding quarter. Mine operating profit after depreciation was $15.7 million. The average realized gold price during the quarter (including hedging gains) was US$313 per ounce, substantially above the average spot gold price for the period of US$259 per ounce.

TeckGold's hedging program is set out on page 8. TeckGold maintains a conservative hedging policy where all contracts, including sold call options, are consistent with forecast production and can be satisfied by ultimate delivery. All sold call options have been priced at levels where, if exercised, TeckGold's operations are positive in cash flow and profit terms. TeckGold does not have any hedge positions which are subject to margin calls. TeckGold manages its gold lease cost exposure in a risk-averse manner with a large part of the existing hedge book locked into low lease rates maturing through to mid-2000. The hedge book has a built-in gold lease rate allowance of 2%, and actual lease costs incurred to date have been below this allowance.

"Steven G. Dean"

Steven G. Dean
Senior Vice President, Teck Corporation
President and CEO, TeckGold Limited

Teck Home

TECK CORPORATION

COMPANY OPERATIONS NEWS FINANCIALS SHAREHOLDERS

March 8, 1999

Underground Exploration Permits Received for Pogo Project, Alaska

Sumitomo Metal Mining, Sumitomo Corporation and Teck Corporation are pleased to announce that all necessary permits have been received to conduct an underground exploration program for the Pogo Project in the State of Alaska.

The program will consist of driving an adit 5200 feet under Pogo Ridge to intersect the Liese (L-1) orebody in order to obtain geotechnical data for mining method determination, confirm the continuity of the orebody for mining, and obtain a bulk sample for metallurgical testing. Underground drilling will be conducted to try to confirm a possible third zone (L-3), 400 feet below the Lower Liese zone (L-2), which has been intersected in two drill holes from surface.

The program will begin immediately with the mobilization of men and construction materials. A 3,000 foot long winter airstrip has been built to permit the use of larger aircraft.

The program will be conducted in two phases with Phase 1 to intersect the Upper Liese zone (L-1) to be completed by the Fall of 1999. A surface drilling program to further define the Upper and Lower Liese zones will be conducted in conjunction with the underground program.

A pre-feasibility study will be conducted by the fall of 1999, and a final feasibility study for the Pogo Mine Development will be completed by the end of 2000 based on results of 1999 and 2000 exploration program and engineering studies.

Contact:

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Dr. K.M. Zeitler	Senior Vice President	(604) 687-1117

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MINERALS

FAIRBANKS

State moves toward takeover of financially troubled Illinois Creek mine

The state announced in June that it was planning a July 1 takeover of financially troubled Illinois Creek Mine, 60 miles southwest of Galena — marking the state's first attempt to bring a producing hard-rock mine under its control.

Bob Loeffler, director of the Division of Mining and Water Management with the state Department of Natural Resources, outlined plans to cancel the lease.

"We believe the mine is an economic asset," he said June 21.

The state will seek bids from companies interested in resuming mining at the site, which is accessible only by air. If there are no bids, state officials will use a $1.61 million bond set aside for closure of the site. A contractor would be sought to reclaim the property.

Illinois Creek shut down in 1997 when its owner, Denver-based Dakota Mining and subsidiary USMX, could not pay an equipment contractor.

Dakota eventually filed for bankruptcy protection. The mine's largest creditor, the Denver-based N.M. Rothschild & Sons bank, began foreclosure proceedings to recover $9.2 million borrowed to build the mine.

Loeffler said a dispute about the mine's bill with equipment contractor D.H. Blattner & Sons kept the bank from finding a new company to operate Illinois Creek.

— The Associated Press

Gold-mining company lays off 15 employees, blames low prices

The lowest gold prices in 20 years have prompted a gold-mining company with prospects around the state to lay off 15 employees in Alaska.

Placer Dome Inc. is cutting exploration spending by as much as $33 million and eliminating 200 jobs.

Two of the company's Alaska ventures, Donlin Creek in the western Interior and the Richardson project south of Fairbanks, were spared cuts.

Stan Foo, Alaska manager for Placer Dome North America, said a seven-person crew will continue identifying drill targets on the Richardson project, a 12-person crew will maintain a operation base at the Donlin Creek site, and interest in its Stuyahok prospect.

STATEWIDE

Alaska mining news summary: Industry still hurt by declining metals prices, reduced exploration funding

The 1999 field season is already proving to be exciting and challenging in ways inconceivable only a few years ago; industry must somehow convince the world it is part of the "dot com" global economy

By Curtis J. Freeman, CPG #6901
BNA Minerals Writer

The Alaska exploration season is in full swing with drills turning and helicopters buzzing from Nome to the Canadian border.

The industry continues to be hurt by declining metals prices, reduced exploration funding and our own inability to somehow convince the world that we are part of the "dot com" global economy.

Despite these fundamental difficulties, the 1999 field season is already proving to be exciting and challenging in ways we could not conceive of only a few years ago. As my translator told me in China "be fluid, be flexible!"

Western Alaska

Due to low metals prices and cessation of financial support from its largest shareholder, **Real Del Monte** announced the suspension of operations at its Nixon Fork copper-gold mine near McGrath. The mine will remain on a care and maintenance basis for the foreseeable future.

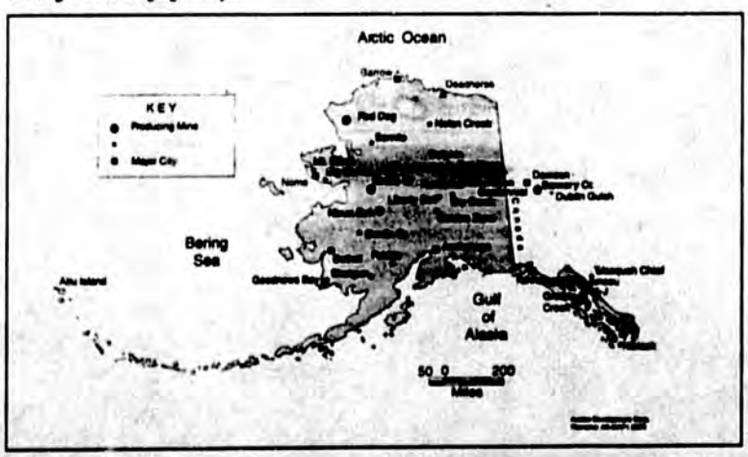
The waters remained murky (figuratively) at **Dakota Mining Corp.'s** Illinois Creek heap leach gold mine. The jury is still out as to how final mining and closure of the property will proceed.

Assay results still are pending at **Consolidated Aston Resources'** Fred Creek prospect, at its **Mount** Distin gold project near Nome.

Eastern Interior

Kinross Gold continued diamond-core and reverse-circulation drilling on its Ryan Lode deposit in the Fairbanks District.

see FREEMAN page B15



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continued from page B15

FREEMAN

Engineering and feasibility studies are continuing at Ryan Lode. True North and the Gil prospects while pencils are sharpened at its flagship Fort Knox Mine.

The surface and underground exploration programs at **Teck Corp.** and partner **Sumitomo Metal Mining's** Pogo deposit in the Goodpaster District continued with exploration crews conducting surface diamond drilling while underground adit advancement to the L1 zone continued.

Kinross Gold announced the acquisition of the Northern Cross prospect from **Copper Ridge Explorations**. The Northern Cross prospect lies 2 miles north of the Pogo deposit and is host to bismuth and tungsten pan concentrate anomalies in streams underlain by rocks similar to those which host the Pogo deposit. **Kinross** has the right to earn up to 55-percent interest in the property by expending $1 million on the property over 4 years. **Kinross** can earn a further 20-percent inter ing an additional $2 millio operty development.

Judy Patrick

Cur

Ventures Resou and equity partner **Teck Resources** announced the start-up of diamond drilling on their Veta property in the Goodpaster district. Extensive soil sampling will augment the companys' 8,000-foot diamond drilling program at the Carrie Creek prospect.

Tri-Valley Corp. announced its Russian consultants, **TsNIGRI**, will return to the company's Richardson project to continue evaluation of a mineralized dike system, where previous sampling returned anomalous gold and pathfinder metals. The company also reported that Placer Dome field crews were continuing evaluation of 36 square miles of the Richardson project under option from Tri-Valley.

Copper Ridge Explorations announced it had renegotiated some of its cash and work commitments terms on its Discovery Gulch property in the Circle District. The company also announced it had acquired the right to earn 100 percent of the nearby McKenzie claim block for cash payments of $150,000 and work expenditures of $400,000 over 9 years. Soil auger sampling is planned on two significant gold in soil anomalies on the Discovery Gulch property while reconnaissance sampling will be conducted on the McKenzie claim block.

North Star Exploration announced owners have agreed to acquire controlling interest in **Hawks Industries**, NASDAQ-listed public company whose main assets are in the environmental services and testing sector. The acquisition will require cash payments of $5 million to **Hawks** and involve equity purchase by **North Star** valued at $10 million. The deal will give **North Star** its long-awaited access to the public marketplace. **North Star** indicated it will focus efforts on its 7-million-acre mineral property base in Alaska and on sustainable industrial technologies related to energy, tools and the Internet.

Pacific Bay Minerals reported receiving a geological report which recommended Phase 1 expenditures of $145,000 on its Ladue River area mineral property near the Alaska-Yukon border. Specifics of this recommended program have not been made public.

Alaska Range

Atna Resources announced it has acquired an option to earn a 51-percent interest in **Grayd Resources'** Dry Creek and Anderson Mountain volcanogenic massive sulfide deposits in the Bonnifield District. **Atna** must complete 10,000 feet of diamond drilling in 1999 and expend $5 million over 5 years to earn its 51-percent interest. Initial drilling is planned to commence on the Dry Creek deposit in July. Inferred resources at Dry Creek total 2.9 million metric tons grading 4.4 percent zinc, 1.9 percent lead, 0.2 percent copper, 0.55 grams per metric ton gold

see FREEMAN page B1

Curt Freeman's news update was prepared for Business News • Alaska on June 21, 1999. If you have any news or news leads, please contact

continued from page B16

FREEMAN

and 93.6 grams per metric ton silver. The majority of these resources are located in the Fosters Creek and Discovery zones, which remain open to expansion. Exploration plans for 1999 include continued drilling in the DC North and DC South horizons and evaluation of other anomalous areas between DC North and the WTF resource area to the north.

Camnor Resources announced plans were well advanced for a diamond drilling program on its Cirque volcanogenic massive sulfide deposit in the Bonnifield District. The $125,000 program is being funded under an option agreement by **Oromin Exploration Ltd.**, a company that can earn a 36-percent interest in the project by expending $375,000 on work commitments on the property and making cash payments of $175,000 over 3 years. **Oromin** can increase its interest to 51 percent by making a $500,000 cash payment to the underlying property vendor and issuing **Camnor** 500,000 shares of **Oromin** stock. Drilling at Cirque is scheduled to begin in July.

Other news

Barramundi Gold Ltd. announced start-up of a 60-hole, large-diameter core drilling program at its Longline property in the Yukon Territory. Initial drill results of the 20-meter by 20-meter shallow hole program are expected in late June.

In not-so-good news, **B.Y.G. Natural Resources** was fined $300,000 for three violations of its water license at the recently closed Mount Nansen gold mine north of Carmacks, Yukon Territory. Site clean-up is estimated to cost $4 million to $8 million.

Madrona Mining Ltd. announced the signing of a letter agreement with **Kennecott Canada Exploration** on Madrona's Poker Creek property along the Alaska border in the Yukon Territory. **Kennecott** can earn a 51-percent interest in the project by expending $1 million on work commitments on the property and making cash payments of $150,000 over 3 years. **Kennecott** can increase its interest to 60 percent by expending an additional $1 million on work commitments on the property and making additional cash payments of $150,000. **Kennecott** has commenced initial field work on the Poker Creek prospect.◆

MINERALS

BRITISH COLUMBIA

Soil-sampling, mapping begun near Pogo

Camnor Resources Ltd. and Oromin Resources Ltd. have begun a $50,000 program of soil sampling, mapping and prospecting on the South Salcha property located 26 miles northwest of Teck and Sumitomo's 5.5-million-ounce Pogo deposit.

About 70 percent of the property will be covered by 45-line-kilometers of soil sampling with 200-meter spaced lines and 60-meter spaced sample intervals for a total of approximately 750 samples.

If assay results expected by mid-August justify it, a follow-up drill program could be carried out before winter freeze-up.

The 6-square-mile property was staked based on favorable geology, gold in stream sediment anomalies, airborne geophysics anomalies and gold pathfinder stream geochemistry.

For more information, contact James D. Romano at (604) 687-7545.

KETCHIKAN

Abacus raises $2.5 million from Ketchikan

Abacus Minerals Corp. has received a $2.5 million long-term, non-convertible, low-interest loan from the Economic and Development Assistance Fund in Ketchikan. To meet the criteria set forth in the loan agreement, Abacus has initiated negotiations to secure the remaining $2.2 million required to fund the next stage of development at the Niblack project.

These funds will be committed to a $4.7 million exploration and development program at Abacus' Niblack volcanogenic massive sulfide project on Prince of Wales Island.

The exploration program at Niblack will allow for 1,700 meters of underground exploration and 5,000-6,500 meters of underground diamond drilling. Permits are in place to conduct the program.

Its objectives are to double the presently indicated resource, and demonstrate continuity prior to feasibility. The drill-indicated resource at the Niblack project is presently 2.53 million metric tons grading 3.04 grams per metric ton of gold, 38.99 grams per metric ton of silver, 1.71 percent copper, and 3.22 percent zinc.

Teck Corp. is Abacus' largest shareholder and has the right to earn a 51-percent interest in the Niblack project by placing the property into commercial production once a positive pre-feasibility study has been delivered.

Collateral on the loan will be backed with the timber rights on the patented claims at the Niblack property. The company is considering the negotiation of the early harvest and sale of select areas of timber, thereby generating cash flow and supporting the loan's pay-back process.

For more information, contact Steve L. Todoruk, at (604) 682-0301.

ALBERTA

Madrona Mining signs on Yukon property

Madrona Mining Ltd. has signed a letter of agreement with Kennecott Canada Exploration Inc. covering Madrona's 100-percent-owned Poker Creek property, a 139-claim mineral property along the Alaska border in Yukon Territory.

Kennecott has the option to spend a total of $1 million over the next 3 years and make payments of $150,000 to earn 51 percent. A further 9 percent may be earned over the next 2 years by expending an additional $1 million and making payments of $150,000. Once Kennecott has earned its 60-percent interest, the parties will form a joint venture and fund ongoing exploration/development programs on a pro-rata basis.

Kennecott Canada Exploration Inc., a RioTinto Company, has already commenced exploration on the Poker Creek property.

For more information, contact Gordon M. Steane at (403) 205-4666

■ STATEWIDE

Alaska mining news summary: Tundra telegraph lines relatively quiet this month, companies busy with their summer field programs

Most data from summer field programs is not yet available; depressed metals prices continue to take their toll but several new property acquisitions have been funded and Alaska has one more new player

By Curtis J. Freeman, CPG #6901
BNA Minerals Writer

The tundra telegraph lines are relatively quiet this month, primarily due to the fact that everyone is in the midst of their summer field programs and data from many of those programs are not yet available.

The depressed metals prices continue to take their toll but several new property acquisitions have been funded and at least one new company has acquired mineral properties in Alaska. As data returns we expect to see a surge in follow-up activity.

Western Alaska

Alaska newcomer **Poseidon Minerals Ltd.** announced it has acquired lease rights to earn a 100-percent interest in the Ganes Creek property in the Ophir District by making cash payments to the property owners totaling $1.435 million over 10 years.

Curtis J. Freeman

The company will conduct a mobile metal ion soil survey in 1999.

Exploration expenditures of $30,000 are required in 1999 followed by $100,000 in 2000, after which yearly expenditures will increase to $200,000.

The owner retains a 2-percent net smelter returns production royalty which can be purchased by **Poseidon** for $7 million total. **Welcome to Alaska Poseidon!**

Poseidon Minerals Ltd. also announced it has acquired lease rights to earn a 100-percent interest in the Colorado Creek property in the Cripple Creek District by making cash payments to the property owners totaling $20,000 in 1999, followed by $1.6 million over the following 20 years.

The company will conduct a mobile metal ion soil survey in 1999. Exploration expenditures of $100,000 are required in 2000 after which yearly expenditures will increase to $200,000. The owner retains a gold-price-dependent net smelter returns production royalty which can be purchased in part by **Poseidon.**

Poseidon's efforts will be directed by Richard Duncan, an experienced Alaskan geologist formerly with **Placer Dome.** Welcome back to Alaska Richard!

Placer Dome continues its drilling and related pre-feasibility work on its Donlin Creek gold deposit. Exploration budgets were not seriously affected by **Placer Dome's** recent company-wide cutbacks.

Resi Del Monte's Nixon Fork copper-gold mine near McGrath remains on a care and maintenance basis. The company is actively searching for a third party interested in acquiring the property.

Assay results still are pending at **Consolidated Aston Resources'** Fred Creek prospect at its Mt. Distin gold project near Nome.

Eastern Interior

Kinross Gold continued mining at its Fort Knox Mine while engineering and feasibility studies are carried out at Ryan Lode, True North and the Gil prospects.

The surface and underground exploration programs at **Teck Corp.** and partner **Sumitomo Metal Mining's** Pogo deposit in the Goodpaster District continued with exploration crews conducting surface diamond drilling while underground adit advancement to the L1 zone continued.

Copper Ridge Explorations announced that first-phase stream sediment, pan concentrate and rock sampling had begun on its Goodpaster, Glacier Creek and Indian prospects in the Goodpaster District. Work is scheduled to be completed in late July. Assays are pending.

Western Keltic Mines and equity funding partner **Barrick Gold** announced commencement of their $500,000 1999 exploration programs on the California, Surf, Big Bend, Boogie and Central Creek properties in the Goodpaster District. The companies' program includes stream silt and soil sampling, prospecting, geologic mapping and 1,000 line kilometers of airborne geophysical surveys.

Results of this initial program are expected shortly.

Ventures Resource and equity partner **Teck Resources** continued diamond drilling on their Veta property in the Goodpaster district.

Placer Dome continued evaluation of the Richardson project under option from Tri-Valley. Like the Donlin Creek project, the Richardson project was spared during recent company-wide cutbacks.

Alaska Range

Atna Resources began a $2-million, 10,000-foot diamond core drilling program on its Dry Creek volcanogenic massive sulfide deposit optioned from **Grayd Resources** in the Bonnifield District. Exploration plans for 1999 will focus on evaluating the down-dip extent of mineralization in the DC North horizon.

Cumnor Resources began work on its diamond drilling program at the Cirque volcanogenic massive sulfide prospect in the Bonnifield District. Drilling at Cirque was scheduled to begin in July.

Atna Resources announced

see FREEMAN page B14

continued from page B13

FREEMAN

commencement of mapping, geochemical sampling, geophysics and diamond drilling on its Caribou Dome stratiform copper project in the Valdez Creek district.

Southeast Alaska

Coeur d'Alene Mines announced a series of major cost-cutting programs to cope with low metals prices. Spending at its Kensington gold project in Berner's Bay will be limited and restricted to obtaining a revised operating permit and researching cost reduction methods for the planned operation.

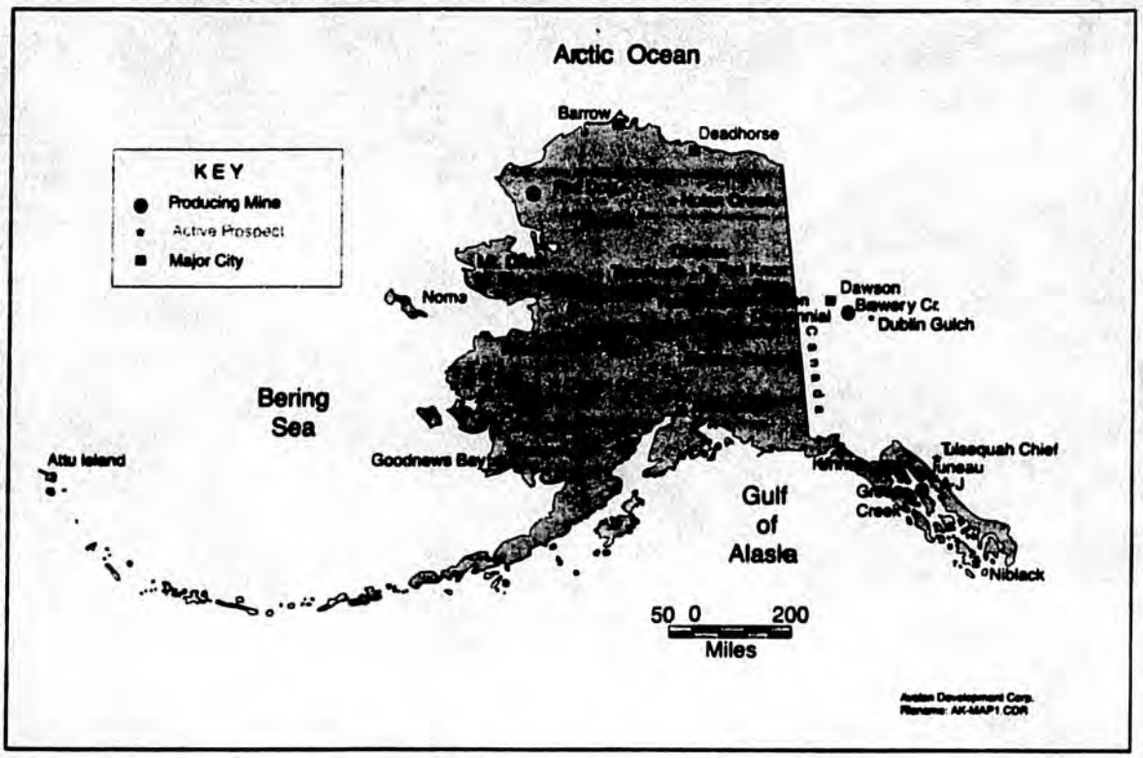
Abacus Minerals announced it has received a $2.5-million, long-term, low-interest loan from the **Ketchikan Economic and Development Assistance Fund.** The funds will be part of a $4.7-million underground exploration program designed to double the reserves at the company's Niblack massive sulfide deposit on Prince of Wales Island.

Current drill-indicated resources on the property stand at 2.53 million metric tons grading 3.04 grams per metric ton of gold, 38.99 grams per metric ton of silver, 1.71 percent copper and 3.22 percent zinc.

Exploration will consist of 1,700 meters of underground drifting and up to 6,500 meters of underground diamond drilling.

The EDAF loan is backed by the timber rights on Niblack's patented claims and is set at an interest rate of prime plus 1 percent until **Abacus** can demonstrate expenditures of $7.5 million, after which the interest rate decreases to 3 percent.

Rubicon Minerals announced that drilling has commenced at its Palmer volcanogenic massive sulfide project near Haines. Drilling will be directed at three previously discovered prospects: the MHC, Lower Jarvis and Cap prospects.



Other News

Barramundi Gold Ltd. announced results from its trenching and large-diameter core drilling program at its Longline property in the Yukon Territory.

Initial drill results indicate good continuity of veins in the Swede's Pit area, with the best result being 0.66 meters grading 386.6 grams per ton of gold (11.28 ounces per ton). Similar thin, high-grade intercepts were encountered in trenching.

High-grade material also was noted in wallrocks enveloping the veins, the first such documentation of wallrock-hosted mineralization on the property. Mineralization remains open along strike and down-dip.

The company also announced completion of a 54-line-kilometer REAL section IP geophysical survey over a 3,000-meter by 1,500-meter area of Swede's Pit. Several resistivity and chargeability anomalies have been identified by the geophysical surveys and will be drill tested after evaluation of the data.

Viceroy Gold announced that as a result of repurchasing its hedge position, it has realized net gains of $23 million and retired $7 million in debt assigned to the Brewery Creek mine in the Yukon Territory. Operations continue at the Yukon's only heap leach operation.

Engineer Mining Corp. announced that despite depressed gold prices, it is proceeding with listing of the company on the Vancouver Stock Exchange. The company's principal asset is the past-producing **Engineer** gold mine in the Yukon Territory. The company also owns an option on a property in the Goodpaster District in Alaska.

Yukon newcomer **Aurora Gold Corp.** announced the formation of **Deltango Gold Ltd.**, a wholly owned subsidiary that has acquired 100-percent interest in five promising gold properties in the Tintina Gold belt in the Yukon Territory.

The properties — covering some 1,055 square kilometers — include the Carlisle Creek, Independence Creek, Livingstone North, White River and Sonora West properties.

The properties were acquired after identification of anomalous gold and pathfinder geochemistry — As, Sb, W, Bi, Hg — were noted in geologic terrains similar to those which host gold mineralization in Alaska.

Fairbanks-based **Avalon Development Corp.** has been retained as **Deltango's** prime geological consultant. **Deltango** has mobilized an exploration team to conduct preliminary geochemical sampling and geologic mapping in order to prioritize these properties for further exploration. Welcome to the Yukon Aurora Gold!

If you think people have lost interest in gold, ask Gordon Brown, Chancellor of the Exchequer for Great Britain.

Following a World Gold Council advertisement in selected British newspapers, thousands of angry British citizens called a free telephone number to register their disapproval with Mr. Brown of Britain's gold sales on the open market.

At one point the phone system was answering more than 1,000 calls per hour and eventually crashed due to the logjam of calls.

It seems average British citizens are better informed than their government about the fundamental value of gold reserves!◆

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BUSINESS NEWS

MINERALS

JUNEAU

Juneau gold mine cleanup going well, contractor says

An 11-member crew doing reclamation work at the Alaska-Juneau gold mine is on schedule to have the project completed by next summer as scheduled, according to the firm overseeing the work.

About 170 million gallons of water have been pumped out of a series of mine caverns below sea level, and monitoring shows that poisonous elements in the water are at lower levels than occur naturally, said Paul Hilbelink, project manager for Kvaerner Environmental.

Kvaerner, hired by Echo Bay Alaska to seal up the mine, is discharging the mine water into Gold Creek downstream of the intake point for Juneau city water.

Kvaerner's crew also is sealing up openings to the mine and removing electrical equipment, air compressors and pumps from beneath the surface. Many surface structures have already been removed, while the fate of some remaining buildings with potential historic interest hasn't been determined, Hilbelink said.

The work does not of itself foreclose the possibility of reopening the mine, he said. Rather, Kvaerner is "bringing the mine up to Year 2000 regulatory status," he said.

But Juneau City Manager Dave Palmer said that with the price of gold at depressed levels, it's hard to foresee any mining. He noted Echo Bay spent several years and $100 million on the project to reopen the mine before abandoning it in early 1997, due to low gold prices.

—The Associated Press

GALENA

Bankrupt Interior gold mine leased to Alaska subsidiary of Canadian

The bankrupt Illinois Creek gold mine has been leased to the Alaska subsidiary of a Canadian mining company.

Viceroy Alaska, a subsidiary of Viceroy Resources Corporation, will take over operation of the mine, which is located about 60 miles southwest of Galena.

The mine was taken over by the state Department of Natural Resources July 1 when the previous owner, Denver-based Dakota mining, declared bankruptcy.

The mine is located on state land and DNR wanted to ensure that the mine remained in compliance with environmental laws while the agency searched for a new operator.

Viceroy owns and operates the Brewery Creek gold mine in the Yukon Territory.

Under the agreement, Viceroy has been granted a lease for the property for up to 10 years.

The company plans to complete drilling to assess the remaining reserves and to complete preparation of a reclamation plan by the end of January. At that time, Viceroy has the option of completing full reclamation and resuming mining at the site.

—The Associated Press

ANCHORAGE

AMA's annual convention slated for Nov. 1-6

The Alaska Miners Association's annual convention and trade show is scheduled for Nov. 1-6 at the Sheraton Anchorage Hotel in Anchorage.

This year's theme is "The New Rush to Alaska's Riches." In addition to several short courses and technical sessions, this year's convention and trade show features a "History Night," at which attendees get together to hear talks about Alaska mining history. One of the talks this year will be on early mining in Southeast Alaska.

For more information call AMA at (907) 563-9229 or email ama@alaskaminers.org. The organization's web site is www.alaskaminers.org.

■ STATEWIDE

Low gold prices continue to batter Alaska's miners; Pogo still hot spot

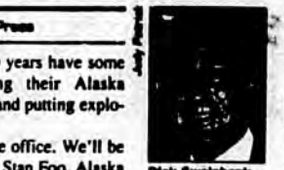
By The Associated Press

The lowest gold prices in 20 years have some mining companies closing their Alaska offices, laying off workers and putting exploration effort son hold.

"We've closed our Anchorage office. We'll be working out of our homes," said Stan Foo, Alaska manager for Placer Dome, a Vancouver, British Columbia, mining company.

This summer Placer Dome abandoned its feasibility study for Donlin Creek, a gold mining project along the Kuskokwim River is Southwest Alaska and put the permitting process on hold.

When work at Donlin Creek began four years ago, gold prices ranged at between $380 and $400 per ounce, Foo said. Since then the price has steadily dropped. The price of gold in London closed Friday at $254 an ounce, down from $254.50 on Thursday.



Judy Patrick

Dick Swainbank, a state of Alaska mining expert, predicts gold production in Alaska will fall 20 percent this year from last year's estimated 580,000 ounces.

The low prices have formed Placer Dome and its partner, the Bethel-area regional Native corporation Calista Corp., to rein in the project.

Judy Patrick

Many mom-and-pop placer miners stayed home this summer because it wasn't worth it financially to mine, said Steve Borell.

Placer Dome still exploring

But Placer Dome continues to explore two other Alaska prospects, Stuyahok and Richardson. Stuyahok is about 100 miles northeast of Donlin Creek, near the Yukon River. The Richardson prospect is east of Fairbanks near Delta Junction.

The Fort Knox gold mine near Fairbanks also is feeling the price pinch. Fort Knox, the state's largest gold mine by far, lost $10 million in the first half of this year, said general manager Steve Land. Although the mine is operated at a profit, it loses money after up front development costs are added in. Fort Knox has no plans to lay off workers or scale back production, currently at 1,000 ounces of gold a day, Lang said.

The hottest spot for exploration continues to be in the Goodpaster District near Delta Junction. Successful surface exploration programs have been completed at the Pogo deposit by partners Teck Corp. and Sumitomo Metal Mining. Pogo is considered one of the richest gold deposits in the world.

Nearby, a number of other mining companies — including several newcomers to Alaska — are exploring deposits that they hope will prove as promising as Pogo.

Kensington cuts staff

But low prices are hurting the Kensington gold mine 45 miles north of Juneau. Coeur Alaska, the company trying to develop the mine, has reduced its staff by eight, restructured the project to cut

see POGO page B24

■ STATEWIDE

Mining companies try to extract field data against ticking clock of remaining season

Properties all over Alaska are changing hands faster than leaves are falling as new field discoveries are made

By Curtis J. Freeman, CPG #8901
BNA Columnist

The dam has finally broken and news has come in from all over the state regarding the good, the bad and the ugly results from the 1999 summer field season. Properties are changing hands faster than the leaves are falling and the Tundra Telegraph says that several new discoveries have been made. As the termination dust makes its ominous and inevitable reappearance, a final charge to the field is on by a number of junior and major mining companies trying to extract the maximum amount of field data from the little time remaining this season.

Western Alaska

Cominco announced that exploration drilling six miles north of its Red Dog mine intersected high grade zinc and lead mineralization at depths of about 2,300 [illegible]

three holes returned 53 feet grading 30 percent zinc and 6 percent lead, 15 feet grading 20 percent zinc and 5 percent lead and 160 feet grading 18 percent zinc and 5 percent lead. The as-yet unnamed prospect appears to be flat and open to expansion to the north, west and south. Drilling should have continued into September, weather permitting.

NovaGold Resources announced that it had signed a deal with Viceroy Resources on NovaGold's 50-square-mile Rock Creek project near Nome. Viceroy can earn a 65 percent interest in the project by expending $8 million on property exploration, paying $2 million in cash and completing a pre-feasibility study.

The primary target area encompasses the 720,000-ounce Rock Creek deposit. Minimal work will be completed by

page B23

continued from page B21

FREEMAN

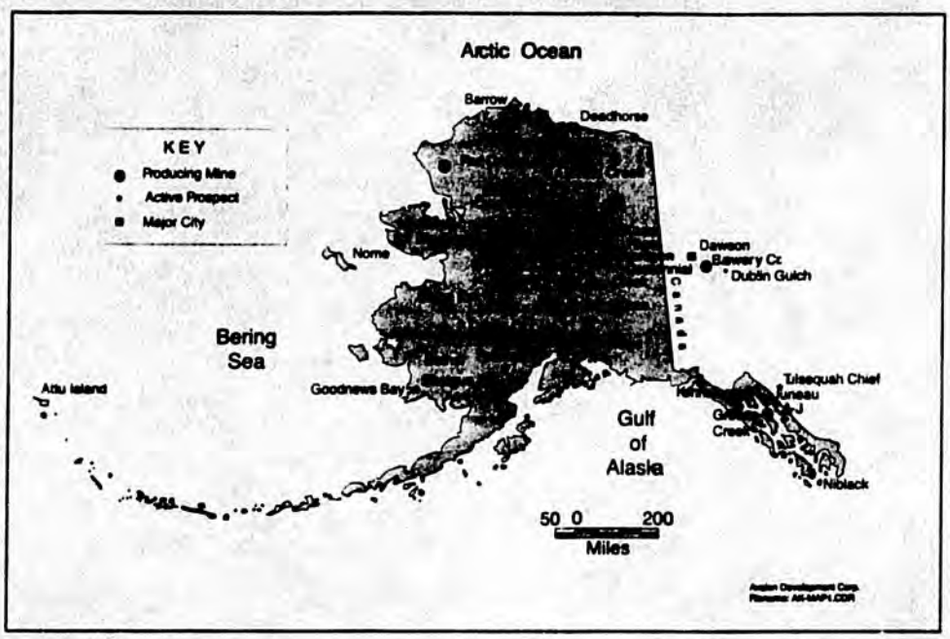
Viceroy this year with NovaGold acting as operator until Viceroy has expended $5 million on the project.

This marks Viceroy's first venture into Alaska and the return of longtime Alaskan explorer and Viceroy President Clynt Nauman. Welcome to Alaska Viceroy and welcome back Clynt!

Placer Dome has completed summer drilling on its 11.5 million-ounce Donlin Creek gold deposit. The company states it has confirmed the grade of the deposit but that no high grade "surprises" were indicated.

Rubicon Minerals announced discovery of a new massive sulfide showing at its Palmer volcanogenic massive sulfide project near Haines.

Rumors are rampant on the Tundra Telegraph that the state of Alaska has found a responsible party to complete mining and decommissioning of the troublesome Illinois Creek heap leach gold mine. With any luck, a new operator should be in place by sometime this month.



Eastern Interior

Kinross Gold continued mining at its Fort Knox Mine and its engineering and pre-feasibility studies at Ryan Lode and True North.

The surface exploration programs have been completed at Teck Corp. and partner Sumitomo Metal Mining's Pogo deposit in the Goodpaster District while underground adit advancement to the L1 zone continues. Drilling was completed at the Sonora Creek prospect southeast of the main deposit, where several hundred strike feet of east-west trending quartz veins have returned some values in excess of 1 ounce per ton gold. A soil grid in this area is reported to be substantially better than the original Liese soil anomaly.

Curtis J. Freeman

Western Keltic Mines and joint owner Rimfire Minerals, along with Western Keltic's equity funding partner, Barrick Gold, announced that first pass evaluations covering 71 square miles in the Goodpaster District have indicated significant gold and pathfinder anomalies on the Boundary, Southeast Surf and Beverly Creek prospects.

The Boundary prospect is comprised of a 700-meter-long soil anomaly generated while following up a rock float sample that returned 22.5 grams per ton in gold. Gold in soils ranges from 10 to 40 ppb and is associated with anomalous arsenic, bismuth, tellurium, antimony and tungsten. The Southeast Surf soil anomaly extends over 4.5 kilometers in a northwest/southeast direction and contains gold values up to 70 ppb with associated anomalous arsenic, bismuth, antimony and tungsten. Quartz vein material from the area has returned values up to 1.02 grams per ton in gold.

The Beverly Creek prospect contains anomalous stream sediment samples with gold values up to 890 ppb. The company also reported anomalous gold and pathfinder values from rocks and stream sediments at its Big Bend prospect.

Follow-up field work is underway on the Boundary and Southeast Surf prospects where more rigorous grid soil sampling and geologic mapping has begun.

Western Keltic and Rimfire also announced that Western Keltic has been granted an option to increase its ownership from 50 percent to 80 percent on the California, Surf, Ger, Central Creek and Big Bend properties by completing property exploration expenditures of $2.5 million and issuing Rimfire up to 300,000 shares of common stock.

Hyder Gold announced that it has delineated a 5-kilometer-long zone of anomalous soils on its Eagle prospect with widths ranging from 200 to 1,000 meters. Gold values up to 310 ppb are associated with anomalous bismuth, arsenic, tungsten and antimony. The anomaly is associated with a Cretaceous age intrusive and is supported by anomalous stream sediment and rock geochemistry. In addition, the company indicated that the Bou prospect returned gold up to 910 ppb in intrusive hosted quartz veins, which may be related to a 500-meter-long, gold-in-soil anomaly to the northeast. Follow-up field work was planned to start last month.

Best wishes to Grayd Resources president, John McCluskey, who was struck by a car while crossing a street in downtown Vancouver.

Placer Dome completed is first full season on its Richardson project under-optioned from Tri-Valley. Results are pending.

The state of Alaska Division of Geological and Geophysical Surveys completed its planned airborne geophysical program over about 950 square miles of the Salcha and Goodpaster mining districts. These surveys are scheduled to be released to the public in early 2000.

Alaska Range

Atna Resources announced that its 10,000-foot diamond core drilling program on its Dry Creek volcanogenic massive sulfide deposit was to be completed in early September. The property is optioned from Grayd Resources. Results of this drilling will be released when all assays are compiled. On a more personal note, best wishes to Grayd's president, John McCluskey, who was struck by a car while crossing a street in downtown Vancouver.

Camnor Resources and partner Oromin Resources announced the results of their diamond-drilling program at the Cirque volcanogenic massive sulfide prospect in the Bonnifield District. Drilling on the Discovery zone intercepted 5.5 meters grading 2.84 grams-per-ton gold, 74.5 grams per-ton silver, and 8.08 percent zinc, 2.11 percent lead and 1.36 percent copper. The Discovery zone has been traced for 700 meters along strike to the west to the JA prospect and remains open along strike and down dip to the north. Additional lower grade mineralization was intercepted at the Dol zone located 500 meters north of the Discovery zone and 250 meters lower in elevation.

NovaGold Resources announced a deal with Viceroy Resources for Rock Creek project near Nome. It's the first Alaska venture for Viceroy and the return of longtime Alaskan explorer and Viceroy President Clynt Nauman.

Atna Resources also announced that diamond drilling was continuing on its Caribou Dome stratiform copper project in the Valdez Creek district. Results of this drilling will be released when all assays are compiled.

Southeast Alaska

Kennecott (70.3 percent) and Hecla (29.7 percent) continued production from the Greens Creek mine. No word yet on whether Kennecott has found a buyer for its interest in the mine.

Rubicon Minerals announced discovery of a new massive sulfide showing at its Palmer volcanogenic massive sulfide project near Haines. The new RW zone is 600 feet from the Lower Jarvis zone and 1,600 feet from the Upper Main Zone along the same stratigraphic horizon. Four core holes drilled into the RW zone have extended it over 680 feet up dip on sections 170 feet apart. Mineralization is open in all directions. The drill results include 8.3 feet grading 5.85 percent zinc, 1.89 percent copper and 1 ounce per ton silver. Additional drilling is planned to test the strike potential of the RW zone.

Northern Alaska

Silverado Gold Mines announced that it had recovered 344 ounces of gold from gravels grading 0.09 ounces per ton at its Nolan Creek underground placer mine in the southern Brooks Range. The largest nugget recovered from this clean-up was 14 troy ounces.

Other News

Barramundi Gold Ltd. announced that it has optioned it Longline project in the Moosehorn Range in the western Yukon Territory to Newmont Exploration. Newmont reportedly started a 3,000-meter diamond drilling program on the property in mid-September. Newmont can earn a 51 percent interest in the property by acquiring $1 million worth of Barramundi stock and spending $4 million on exploration prior to the end of 2004. Newmont can earn an additional 29 percent interest by expending an additional $15 million or completing a bankable feasibility study by 2010. ◆

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D.C.

to encourage e creation of uments

the House this week opposing the bill, saying that if it passed, Clinton's senior advisors would recommend a veto. The memo said the measure "would undermine the president's authority to move decisively to protect and preserve the nation's treasures for future generations."

"It's the best we could get," said Rep. Greg Walden, R-Ore., a bill co-sponsor.

"I think it is outrageous that they oppose this legislation at a time they are supposedly advocating for public participation in these processes," said Walden, who opposes a proposal to create a national monument in southeastern Oregon to protect Steens Mountain.◆

continued from page B21

...ction, said spokeswoman Margaret Dowling. Will Gold ...

...ficially to mine, said Steve Borell, executive director of the Alaska Miner...

...ation, Inc., are mining the giant USMX of Alaska Inc.'s Red Dog ...

...operations, including the ... Golden Zone mine, ... west of Delta, and Nixon Fork, near McGrath. Both were ... company said ... efficient mines over the past years, Borell said. The bankruptcies were driven by ... problems and compounded by ...

...predicts production ...

...Gold Co.'s Nome dredge shut down last fall after the company was bought out by NovaGold Resources Inc., said Dick Swainbank, a state of Alaska mining expert.

Swainbank predicted gold production in Alaska will fall 20 percent this year ...

Gold mining employment in Alaska dipped by 7 percent in the past year, shedding about 130 jobs, said state labor economist Neal Fried.

Those figures don't reflect the whole picture, Fried said, because a lot of gold mining in Alaska is small-scale and family-oriented and because wages aren't involved.◆

Mining moves forward in spite of low metal prices

By Steve Borell

Even though we have had low prices for both base and precious metals, "The New Rush to Alaska's Riches" is an accurate theme for the 1999 Alaska Miners Association Convention and Trade Show. Alaska continues to be the destination of choice for many large and junior mining companies.

In times of low prices, exploration dollars are scarce and companies are very cautious with the limited funds at their disposal. They focus on states and countries having the highest geologic potential which also have political and tax stability. State and Native Corporation lands in Alaska fit these criteria and continue to be of interest to the industry.

Alaska has the geologic potential and is known both historically and currently for some of the best deposits in the world. In their day, the Alaska-Juneau, Treadwell, Kennecott, and Alaska placer mines were world-renowned. Today Greens Creek is the largest silver mine in the U.S. and Red Dog is the largest zinc mine in the world. Furthermore, when comxpared with other states and countries, Alaska is essentially unexplored...so the potential for new discoveries is tremendous.

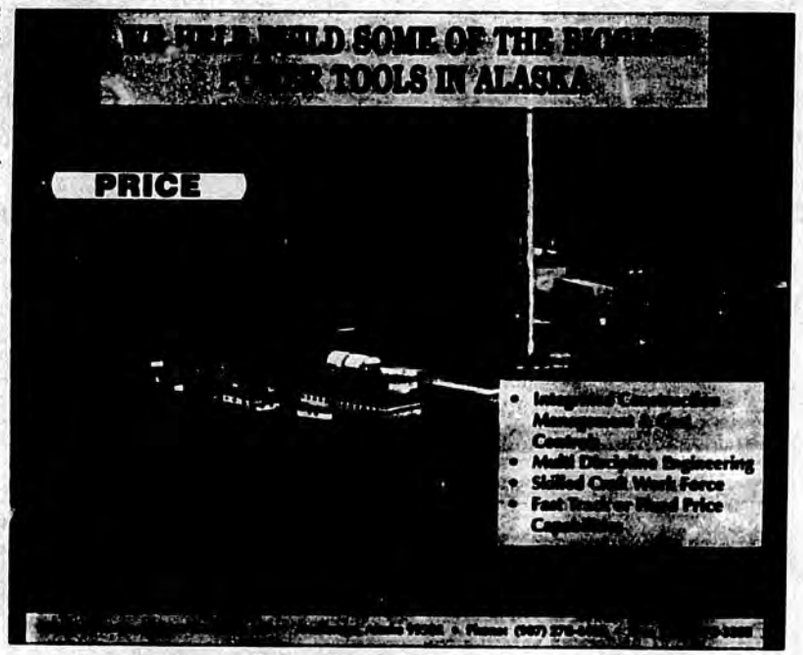
Regarding political stability Alaska also receives good marks. Recent Legislatures and Governors have been supportive of mining and have sought to encourage mineral investment and reduce the uncertainty of doing business in the state. Several relatively small but important changes have been made to statutes and regulations and these have continued to improve the business climate while maintaining stability.

For the past dozen years there has also been tax stability. Mining can never provide the level of direct tax and royalty revenues to the State that Prudhoe Bay has...nothing can. But mining can provide jobs and economic opportunities for all areas of the state. This was shown dramatically by a February 1999 McDowell Group study titled "Economic Impact of the Fort Knox Mine on the Fairbanks North Star Borough" prepared for the Borough. Even though low gold prices mean that Fort Knox is not making a profit, it is providing 260 of the best jobs in the area. Fort Knox also spends over $35 million annually on local goods and services, generates $4.4 million annually in mine-related revenues to the North Star Borough ($16,900 per job created), and since coming on-line has resulted in a 7% decrease in electric rates for the residents of the Borough.

Another important factor that contributes to the interest in Alaska is land ownership. The State's land entitlement is about 104 million acres (out of the total state area of 365 million acres) and most of that has now been transferred to State ownership and management. Also, the Native Corporations are entitled to about 44 million acres and most of that has been transferred to Native ownership. The stability of the State mining law and the straight-forward business approach of the Native Corporations have given companies confidence to explore and invest here. This is in contrast to the extreme uncertainty that has arisen during the past few years of the Clinton Administration for operating on federal lands managed by the Bureau of Land Management and the U.S. Forest Service. Rules and regulations have been, and are being, changed administratively which make exploring and operating on these federal lands terribly difficult and in some instances impossible.

Exploration successes also encourage companies to explore, and the excitement over Alaska continues. The area around the Pogo Project northeast of Delta Junction (on State land) is one of the hottest areas in the world. Even though low metal prices make it extremely difficult to raise exploration money, companies with land positions in that area are able to raise some of the money needed and are actively exploring. The work by Placer Dome at Donlin Creek (on Calista land) has identified a resource of 11.5 million ounces of gold. It is not yet known if this can be mined economically but anywhere in the world that is a

Continued on Page 6



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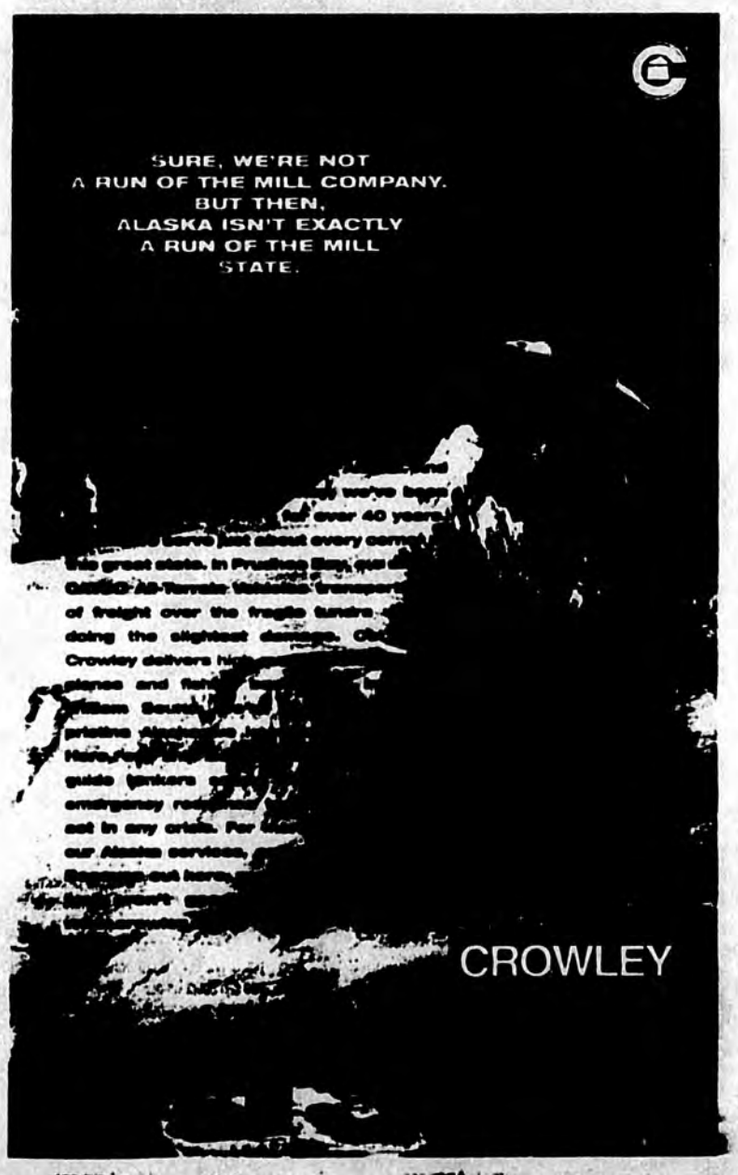
Mining still financially viable pursuit

Continued from Page 5

huge deposit of gold. At Red Dog the excitement continues on both State and NANA lands as new finds almost every year are making the world's largest zinc mine into the world's largest zinc province.

A climate of tax and regulatory stability combined with these successes are central to the Alaska Miners Association 1999 Convention and are why "The New Rush to Alaska's Riches" continues in spite of low metal prices.

[Steven C. Borell is the executive director of the Alaska Miners Association. He is a registered professional engineer in Alaska, Colorado and North Dakota and has more than 25 years experience in coal and metals mining in Alaska, the Lower 48, Canada, and South America.]



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Member Registration	$ 85.00	_____
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Student Registration	20.00	_____
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SPECIAL EVENTS

Wednesday, November 3

Luncheon	$19.00	_____

Thursday, November 4

Mining District Breakfast	$15.00	_____
Luncheon	$19.00	_____

Friday, November 5

UAF School of Mines Breakfast	$15.00	_____
Luncheon	19.00	_____
Banquet	40.00	_____

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"Sedex Deposits: Genesis and Exploration"

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"Remote Sensing Technology for Mining Applications"

(Includes Lunch)	140.00	_____

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MINERALS

WASHINGTON, D.C.

Mining regulations fine, but have 'gaps,' says panel

Environmental regulations governing mining on federal land are generally effective, but are applied unevenly and inexpertly, the National Research Council concluded in a long-awaited report.

A council committee identified "several gaps in existing regulations that need to be filled," such as tracking mining better, regulating smaller mines and giving more enforcement power to the Bureau of Land Management and Forest Service.

Congress asked the NRC to review existing rules to determine how well to protect the environment. The council was not asked to critique a set of new regulations that Interior Secretary Bruce Babbitt has been pushing for since January 1997.

But Babbitt said the report endorses the stiff new rules he wants for hardrock mining, including new restrictions on open pits and requirements that even small mining operations post bonds guaranteeing their ability to pay for environmental reclamation.

But mining industry lobbyists, as well as the federal lawmakers who requested the study, said the report shows a regulatory overhaul is unnecessary.

"I think that is a vindication," said Sen. Richard Bryan, a Nevada Democrat. "I think the report is very strong evidence that we don't need a whole new tier or level of regulations."

—The Associated Press

FAIRBANKS

Fort Knox manager heading for Chile

Steve Lang, general manager of the Fort Knox Gold Mine, is leaving his job to work in Chile.

Lang is moving to Santiago, Chile, to serve as vice president of engineering and development for Rio Algom Mining, a Toronto-based company operating a copper mine in Santiago.

"I don't think you can move much further before you start coming back," Lang joked Oct. 17.

Tom Irwin, Fort Knox's operations manager, will take over as interim general manager until a replacement for Lang is named. Lang said he didn't know when Toronto-based Kinross Gold, which owns the mine, would name a successor. He said the company was in no hurry.

Lang described his move as a great career opportunity, and said the Fort Knox mine is a solid operation.

—The Associated Press

■ STATEWIDE

Alaska mining news summary: Gold prices rise put hedgers to shame

Gold stormed back in late September, trading as high as $339 an ounce before settling back to the $315- to $320-an ounce range

By Curtis J. Freeman, CPG #6801
BNA Contributing Columnist

As the first snow flakes settle over Alaska, the mineral exploration industry got a much needed shot in the arm from the rapidly rising gold prices.

Although the rise was too late to affect the 1999 field season, it has put a spring in the step of most of the industry and promises to bolster operations and exploration budgets next year. Additional exploration results continued from a number of regions of Alaska although new resource estimates are not yet available.

Western Alaska

Cominco Alaska Inc. announced it has investigated expanding the Red Dog Mine port facilities on the Chukchi Sea. In order to eliminate costly and time consuming barge transfers at the current facility, Cominco has proposed dredging a 50-foot-deep channel to a point about one mile off shore.

The facility could then be used not only to expand production from the Red Dog mine but to reduce the cost of importing fuel for neighboring communities. The expanded port facility becomes even more attractive with **Kores Zinc Co.** indicating it may expand its Townsville, Australia smelter where 400,000 tons per year of Red Dog zinc concentrate already are bound.

Viceroy Alaska, a subsidiary of **Viceroy Resources Corp.,** has reached an agreement with the state of Alaska to take over mining and decommissioning of the Illinois Creek heap leach gold mine.

see FREEMAN page B11

■ FAIRBANKS

Teck weighs financial, environmental impacts of Pogo route options

Mine project manager Karl Hanneman talks about access choices in a presentation to the Fairbanks Chamber's transportation committee

By Al Slavin
BNA Contributing Writer

One route is by air. Another combines a little flying and a winter trail.

A third scenario involves building an all-season road in the Goodpaster River Valley. All three lead to a remote parcel of land that is about to become Pogo Mine, a lucrative gold deposit located 40 miles from Delta Junction.

The choice is one of the more delicate ones from both a financial and environmental standpoint. It will define the permanent access through a relatively undeveloped section of wilderness to a deposit containing 5.2 million ounces of gold.

Looking for the smallest footprint

"We've got to come to grips with what's best for the project, what's best for the community and what we can get permitted," said Karl Hanneman, the Pogo project manager for the joint venture between Teck Resources and Sumitomo Metal Mining.

Hanneman spelled out the options in mid-October to the Greater Fairbanks Chamber of Commerce's transportation committee. Some consideration is being given to a fly-in operation, which would leave the smallest footprint but bring a noise problem.

Equipment and supplies could be flown to the mine from a staging area at Fort Greely's

see TECK page B13

continued from page B11

FREEMAN

The two-phase program outlined by Viceroy includes confirmation drilling of the existing reserve base followed by mining and reclamation plans to be submitted by January 31. Viceroy personnel have been on-site since late September. Our hats should be doffed to Bob Loeffler and his staff at the state **Division of Mining, Land and Water Management** for shepherding this deal through and for making a $75,000 profit during the two months it operated the recovery facilities at the mine!

Eastern Interior

Kinross Gold announced its third quarter operating results that showed Fort Knox production increased 6 percent over second quarter results with mine costs at $182 per ounce. The mine produced 97,256 ounces of gold in the third quarter and 265,685 ounces of gold through the first nine months of 1999.

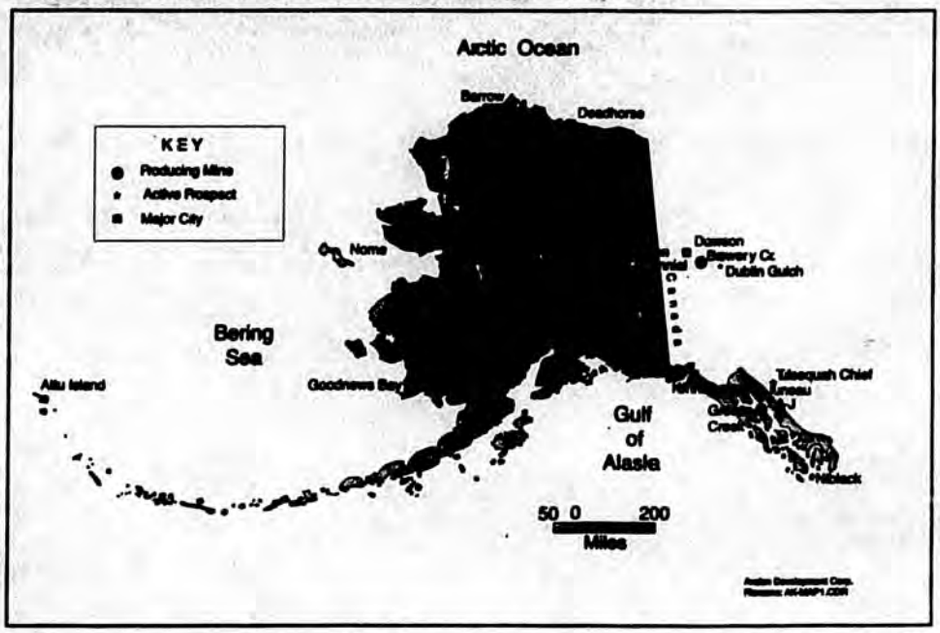
Congratulations are in order to the mine and its employees who announced that in late September Fort Knox had produced its one millionth ounce of gold since start-up. To put this into perspective, it took three years for Fort Knox to reach the one million ounce milestone. This production amount is nearly double the lode gold production from the Fairbanks District for the previous 90 years!

With the good came the bad: Fort Knox General Manager Steve Lang announced he is leaving the company to take up a challenging position as vice president of engineering and development for Rio Algom in Chile. Tom Irwin, currently operations manager at the mine, will assume Steve's duties while the company searches for a new mine manager.

I would like to personally thank Steve for the numerous professional courtesies he extended to me during my all-too-frequent mine visits and am sure I speak for the Alaska mining industry in general in wishing Steve the best of good fortunes at his new job. Oh, by the way Steve, could I arrange a mine tour down in Chile for next month?

Kinross Gold informed Ester area residents that preliminary work at the Ryan Lode deposit confirmed the previously estimated gold grades and tonnages and that current plans call for a six-year mine life operating 12 hours a day, six to seven days a week. Environmental work also continued at the site along with baseline air quality and noise monitoring. Baseline monitoring though the winter will be required before more substantive mine plans will be presented to the public.

Kinross Gold also announced it has entered into a joint venture agreement with **Teryl Resources Corp.** on Teryl's Westridge claims south of the True North deposit.



Kinross can earn a 70 percent interest in the deposit by expending $1.5 million on exploration and making cash payments to **Teryl** totaling $285,000 over five years. Minimal work was completed on the Westridge claims in 1999.

The state **Division of Mining, Land and Water Management** has begun investigation of water wells in the vicinity of the Yellow Eagle Gold mine in Ester after area residents suggested the mine's activities have adversely affected their domestic water wells.

Curtis J. Freeman

Unlike the mine operation, most of the residents who complained had not acquired water rights for their wells. To date, no direct cause-and-effect relationship has been shown between the mine and the drop in water wells.

Great American Minerals has joint-ventured its Uncle Sam properties in the Richardson District to **Kennecott Exploration.** **Kennecott** can earn a 51 percent interest in the project by expending $1.5 million on exploration and making cash payments of $260,000 over six years.

Kennecott can earn additional interest in the property through a series of optional cash payments and work expenditures. Preliminary work on the Uncle Sam prospect revealed gold in rock grab samples up to .16 ounces per ton and anomalous gold in soil samples up to 430 parts per billion. The northwest trend of mineralization on the Uncle Sam prospect is parallel to that of the nearby Pogo trend.

Cannar Resources and partner **Oremin Exploration** announced results from their initial work program on the South Salcha property in the Caribou District. Three east-west trending gold in soil anomalies were delineated by grid controlled soil sampling. These anomalies measure 200 meters wide and range from 600 meters to 1,400 meters long. Altered granite and intrusive rocks contain [illegible] to quartz veining with [illegible] disseminated pyrite and [illegible] mineralization is planned [illegible]

Teck Corp. and partner **Sumitomo Metal Mining** reported they are in the process of evaluating access routes and methods to their Pogo deposit in the Goodpaster District (see related story this section). Access options under consideration include an air-only route, an air- and winter-only surface route and an all-season surface road. On addition, the possibility of extending existing power grids to the mine site will greatly reduce the need for fuel haulage and will reduce emissions from the site. Completion of the evaluation is expected by year's end.

Western Keltic Mines and joint-owner, **Rimfire Minerals**, along with **Western Keltic's** equity funding partner, **Barrick Gold**, announced that phase-two rock and soil sampling have indicated significant gold and pathfinder anomalies on the Boundary and Southeast Surf prospects.

The Boundary prospect returned anomalous gold in 27 of 32 rock samples, including two samples containing .54 and .72 ounces of gold per ton. Anomalous gold is associated with bismuthinite and arsenopyrite. The results of 472 soil samples and an additional 22 rock samples are pending.

Work on the Southeast Surf consisted of collection of 349 soil and 42 rock samples. Results from 21 of the rock samples indicated anomalous gold in 20 samples with values ranging up to .13 ounces per ton gold. The results for soil samples and an additional 21 rock samples are pending.

Cominco Alaska Inc. announced it has investigated expanding the Red Dog Mine port facilities on the Chukchi Sea. ... Cominco has proposed dredging a 60-foot-deep channel to a point about one mile off shore.

Copper Ridge Exploration announced initiation of Phase 2 soil and rock sampling on its Goodpaster claims north of Pogo. Work was completed in late September and results are pending.

Alaskan Resources and **Williams Creek Exploration** reported that initial stream sediment sampling on their [illegible] claim block south of the Pogo deposit has outlined anomalous gold in [illegible] a crossover ridge to [illegible] of the property and anomalous gold in two other drainages on the property. Additional work is being planned for next season.

Ventures Resource Corp. and **Teck Corp.** announced preliminary results from their Veta property joint venture. Work completed in 1999 included 8,000 feet of core drilling in 10 holes on their North Veta and Serpentine prospects. Extensive stream sediment and pan concentrate sampling also returned anomalous gold values over a widespread area of the North Veta property. The best intercept from the five drill holes on which assays have been released was 23 feet grading .03 ounces per ton gold. Results are pending on the other drill holes.

Alaska Range

Atna Resources and **Grayd Resources** released results from their 10,260-foot, 14-hole diamond core drilling program on the Dry Creek volcanogenic massive sulfide deposit in the Bonnifield District.

Significant widths of massive to semi-massive sulfide mineralization were encountered. However, base metal grades were generally lower than drilling results in 1998. With the results from three holes still pending, the best intercept to date graded 3.37 percent zinc and 1.09 percent lead over 14 feet in hole DC99-66. The results prompted Atna to terminate its interest in the Dry Creek and Anderson Mountain projects.

Atna Resources also announced the results of its diamond drilling program on the Caribou Dome stratiform copper project in the Valdez Creek district. Three diamond drill holes totaling 2,442 feet were completed along with IP, mis-a-la-masse and ground magnetics geophysical surveys. Drilling results include 5 feet grading 5.9 percent copper and 5 feet grading 1.9 percent copper.

Geophysical surveys indicate the mineralized horizons extend for up to 700 feet west of the No. 2 Zone and also identified a 600-foot-long anomaly south of, and parallel to, the eastern mineralized zone. The company indicated that good potential exists on the property for additional mineralization.

Grayd Resources reported additional high-grade gold was discovered on its White Gold Trend on the Rumble Creek JV in the Delta District. Results included 44.4 grams per ton gold in a grab sample

Page B13

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continued from page B12

FREEMAN

at the Low Showing, 19.7 grams per ton from a pit sample near the Goldberg Saddle and 1.6 grams per ton over 15 meters in a hand trench on the Low Showing. Mineralization is associated with low-sulfide quartz — sericite alteration and is part of an 8-kilometer-long trend on the property.

Gold can now say what a famous pundit once said: "The reports of my demise are greatly exaggerated."

Fort Knox Gold Resources announced that it signed an agreement with **American Copper and Nickel Co.** (ACNC) to acquire 100 percent interest in **ACNC's** Nikolai property in the central Alaska Range.

Fort Knox intends to focus on the platinum and palladium potential of the property rather than the copper ñ nickel potential, which was the subject of previous field activities. Palladium values up to 1.8 grams per ton were recovered on the Canwell prospect while values up to 15.6 grams per ton Pt and 2.6 grams per ton Pd were collected on the Odie prospect. Additional work has been recommended on the project for 2000.

Usibelli Coal said it has received permits to excavate trenches and collect up to 250 tons of bulk samples from its Wishbone Hill coal deposit near Palmer. Although more difficult to mine than **Usibelli's** flagship Healy Coal mine, Wishbone Hill coal has a higher Btu value per ton and is being looked at as possible import-quality coal for Asian markets. Past production from the Wishbone Hill mine was over 6 million tons between 1916 and 1968.

Southeast Alaska

Rubicon Minerals announced additional results from its newly discovered RW massive sulfide showing at its Palmer volcanogenic massive sulfide project near Haines. Hole RMC99-13 returned 7.2 feet grading 13.48 percent zinc, .21 percent copper and .37 ounce-per-ton silver. This intersection extends mineralization 260 feet down dip below previous drilling. Assays are pending on hole RMC99-14, where a 156-foot interval of visible stringer sulfide mineralization was observed.

Kinross Gold ... has entered into a joint venture agreement with Teryl Resources Corp. on Teryl's Westridge claims south of the True North deposit.

Other News

Viceroy Resource Corp. released third quarter results from its Brewery Creek heap leach mine in the Yukon. The mine produced 18,038 ounces of gold in the third quarter and 34,682 ounces of gold for the first nine months of 1999. Cash costs were $254 per ounce with total costs of $352 per ounce.

Production was down significantly during the quarter due in part to longer-than-normal leaching times for sedimentary ore and lower-than-expected recoveries for intrusive ore. The mine is estimating total 1999 production at 55,000 ounces at a cash cost of $252 per ounce.

The Tundra Telegraph reported that **Newmont Exploration** and **Barrramundi Gold Ltd.** have completed their initial drilling program on the Longline project in the Mooseharn Range in the western Yukon Territory. Results are pending.

Copper Valley Exploration announced start-up of its drilling program at the Scheelite Dome project in the Mayo District. The 1,600-meter program is intended to evaluate the Aorta structure, where 1998 drilling intersected mineralization grading 3.67 grams-per-ton gold over 7.7 meters. Copper Ridge will have earned 100 percent interest in the project from **Kennecott Canada Exploration** before completion of this year's drilling program.

For all of those who declared gold dead a few months ago, I'd like to point out gold's recent $60-to $70-run up and ask them how much they lost as a result of their near sacrilegious eulogy on gold. Gold can now say what a famous pundit once said: "The reports of my demise are greatly exaggerated."

In case you hadn't noticed, in late September gold stormed back onto the financial markets and traded as high as $339 per ounce before settling back to the $315- to $320-per ounce range. This

breakout was prompted by the news that a coalition of European central banks agreed to limit total gold sales to 2,000 tons over the next five years. As a result, Great Britain's gold sale was more than eight times oversubscribed and those with short positions in the market were hit by unexpected calls that they are not prepared to pay.

In an ironic twist, several mining companies also were hurt by the unexpected surge, particularly those with hedge positions that are now below prevailing market prices. The hardest hit (of those that have admitted taking a beating) was **Ashanti Gold**, which is now looking at more than $270 million in debts as a result of its hedging positions.

The "I told you so" crowd includes

continued from page B11

TECK

business sector. But it won't be enough to stave off environmentalists and property owners who fear that the Goodpaster River Valley may get trampled along the way to development.

"A big project like this is going to include a lot of [illegible] kinds of impact," said [illegible] director of the Alaska Environmental Center. [illegible] concerns. [illegible] an eye on [illegible] River from [illegible] that's an absolute," she said. "We [illegible] to be protected."

She also [illegible] and will [illegible] stop on [illegible]

[illegible] sector as well.

Whether a power line will be cost effective [illegible] Valley [illegible] Electric [illegible]

Teck Resources [illegible] million [illegible] ten [illegible] Air Force.

There [illegible] back to the [illegible]

[illegible] construction project and 300 year-round jobs is enough to rally support from the

Homestake Mining, which until recently was considered old-fashioned and ultra-conservative in its policy of holding extremely limited hedge positions. Who's laughing now? ◆

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BUSINESS

Al Slavin, Business Editor; 459-7693 Sunday, October 17, 1999

Teck weighs Pogo Mine route options

By AL SLAVIN
Business Editor

One route is by air.

Another combines a little flying and a winter trail.

A third scenario involves building an all-season road in the Goodpaster River valley. All three lead to a remote parcel of land that is about to become Pogo Mine, a lucrative gold deposit located 40 miles from Delta Junction.

The choice is one of the more delicate ones from both a financial and environmental standpoint. It will define the permanent access through a relatively undeveloped section of wilderness to a deposit containing 5.2 million ounces of gold.

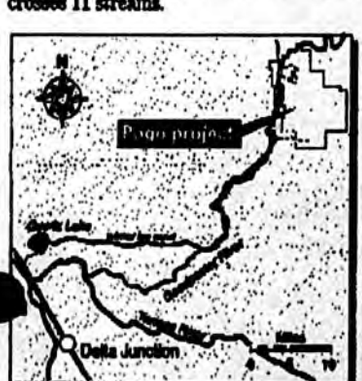
"We've got to come to grips with what's best for the project, what's best for the community and what we can get permitted," said Karl Hanneman, the Pogo project manager for the joint venture between Teck Resources and Sumitomo Metal Mining.

Hanneman spelled out the options last week to the Greater Fairbanks Chamber of Commerce's transportation committee. Some consideration is being given to a fly-in operation, which would leave the smallest footprint but bring a noise problem.

Equipment and supplies could be flown to the mine from a staging area at Fort Greely's airstrip, Hanneman said. But the flight path for the eight to 10 daily flights by DC-6s would be over Delta Junction.

The cost of a fly-in operation—$8 million to bolster the on-site airstrip and $12 million to $14 million in annual operating expenses—could also prove too much, Hanneman said.

A second option has fewer flights by adding a winter road. That option has three scenarios, one of which involves using the existing winter trail that crosses 11 streams.



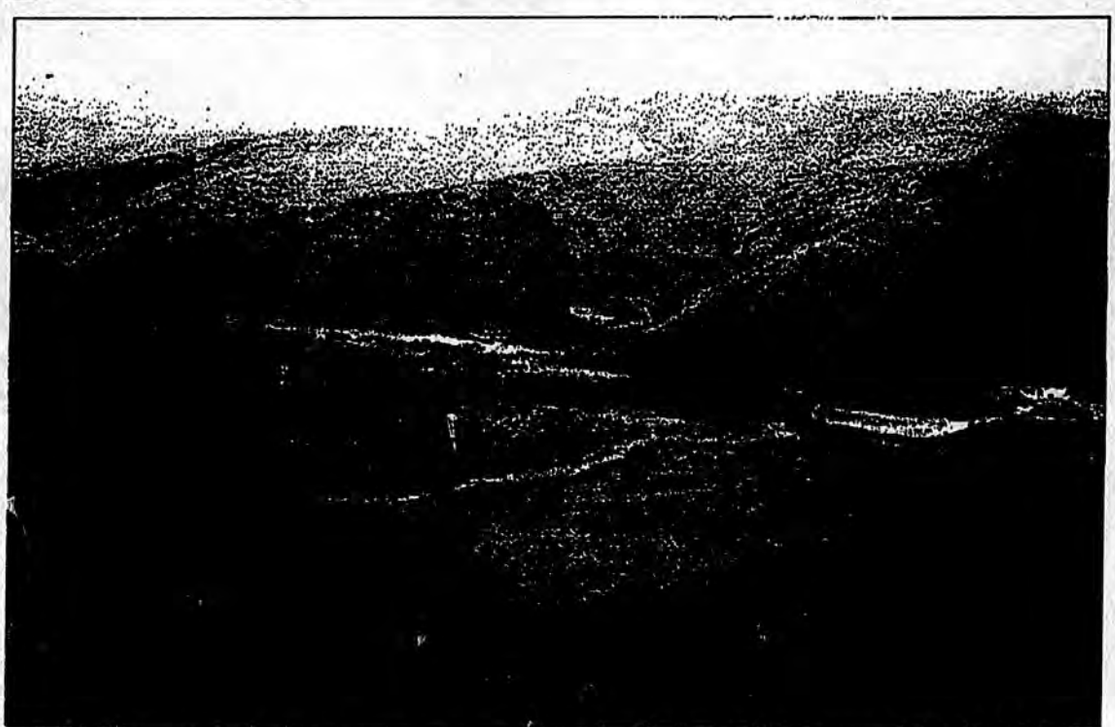


Photo courtesy of Teck Resources

POGO DEPOSIT—Teck Resources is currently mulling over the best way into the Pogo Deposit, a remote parcel of land in the Goodpaster River Valley containing 5.2 million ounces of gold. The possible scenarios include a fly-in operation, building a new winter trail or constructing an all-season road.

Two other trail routes have been identified, traversing the north or south border of the Shaw Creek Flats, Hanneman said. This would take the burden off a winter trail that already receives substantial recreational use.

A new trail would cost an estimated $15 million to build and $8 million to $9 million each year to operate and maintain.

The final option involves building a $35 million all-season road. Annual operating and maintenance costs could reach $6 million. An additional $3 million would be needed to remove the road at end of the mine's life, estimated at 10 to 12 years.

While the scenarios differ in approach, they all share one common thread: Each is certain to leave someone unhappy.

The promise of a $250 million construction project and 300 year-round jobs is certain to rally support from the business sector. But it won't be enough to stave off environmentalists and property owners who fear that the Goodpaster River valley may get trampled along the way to development.

"A big project like that is going to include a lot of change and a lot of impact," said Sylvia Ward, executive director of the Northern Alaska Environmental Center. "There's some concerns. Everybody is going to keep an eye on protecting the Goodpaster River from contamination."

"That's an absolute," she said. "The river's got to be protected."

She also worries that an all-season road will harm the Fortymile Caribou Herd.

"We'll be doing all we can to stop an all-season road," Ward said.

Hanneman has spelled out one option that may appease everyone, including environmentalists like Ward. It requires running a power line to the remote project. This would reduce the amount of fuel needed on site, reducing the amount of traffic on the selected path. It would also eliminate regulations concerning air emissions.

"It's a great example of doing something for the environment that turns out to be the right thing for the business sector as well," Ward said.

Whether a power line will be cost effective is unclear. Golden Valley Electric Association has informed Teck Resources that it would cost $12 million to upgrade GVEA's power system between North Pole and Eielson Air Force Base.

There would also be $15 million in expenses to run power from that point back to the project. Both of those costs, which are subject to negotiation, would fall to the project's developers if GVEA cannot find a wider customer base in the area.

Hanneman is still gathering information and hopes to complete this feasibility study within 2½ months. The analysis of underground exploration work is under way along with the environmental assessment.

This information will be used as a basis for a future permit application. But Hanneman is still awaiting one more component: comment from trappers, loggers, fish and game officers and anyone familiar with the section of backcountry.

"We want to tap into the knowledge of the community to help us make a good decision," Hanneman said.

TABLE 1
ESTIMATED COST

Alternative 1: No-Build	
Phase 2: Design	$ 0
Phase 3: Right-of-Way	$ 0
Phase 4: Construction	$ 0
Maintenance: Summer	$ 8,105
Maintenance: Winter	$ 0
TOTAL	$ 8,105
Alternative 2: Upgrade Existing Route	
Phase 2: Design	$ 300,000
Phase 3: Right-of-Way	$ 521,909
Phase 4: Construction	$4,054,334
Maintenance: Summer	$ 8,105
Maintenance: Winter	$ 390,184
TOTAL	$5,265,532
Alternative 3: Re-route road	
Phase 2: Design	$ 300,000
Phase 3: Right-of-Way	$ 159,770
Phase 4: Construction	$2,947,854
Maintenance: Summer	$ 4,053
Maintenance: Winter	$ 8,105
TOTAL	$3,419,782
Alternative 4: Re-route road	
Phase 2: Design	$ 400,000
Phase 3: Right-of-Way	$ 234,013
Phase 4: Construction	$4,866,526
Maintenance: Summer	$ 4,053
Maintenance: Winter	$ 130,061
TOTAL	$5,634,053

The Rock Creek Nome Area Road
January 27, 2000

The Rock Creek Road will help to encourage potential economic development of the hard rock mineral resources in the Nome area currently under investigation by a group of companies including Novagold, Alaska Gold, Sitnasuak, and the Bering Straights Corp.

The existing road is built along existing contours and is seasonal in nature. The road could not be used for transport of construction material during potential mine start-up due to it's windy nature, gradient and narrowness.

The new rerouted road would shorten the haul distance by two miles and be built across a flat plain that would make maintenance and use possible year round.

The City of Nome fully supports the road project for the potential economic benefit it could provide.

The City has recently lost 70 jobs due to the temporary shut down of mining operations in the Placer mining fields. The job loss is due to the current low prices of gold. Hard rock mining may still be viable at the current prices due to the higher tenor of the gold present. It must be remembered that the potential for sustained mining operations are speculative.

Currently, The rock creek gold deposit contains an estimated 500,000 ounces of gold.

GP:sp

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
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LOCATION:	DATE: 1-27-00
FROM: ANDREW NIEMIEC	TIME:

NUMBER OF PAGES INCLUDING THIS PAGE 9

RE: GLACIER CREEK RD.

Note: Alternative 3 is the Preferred Route.
THIS DOCUMENT WAS PREPARED IN 1995.

Total Document is ± 50pp

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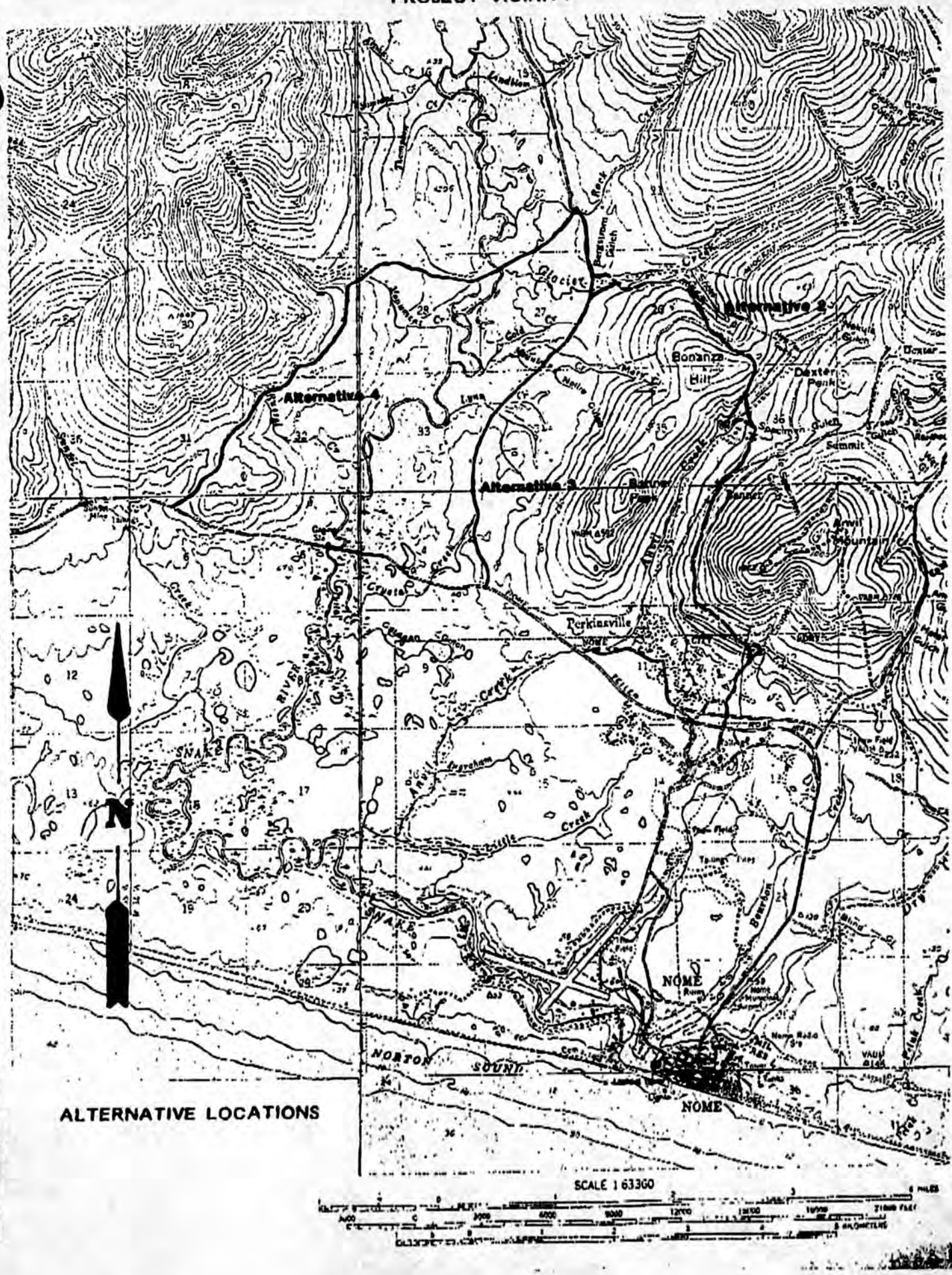
GLACIER CREEK ROAD
NOME, ALASKA

ENVIRONMENTAL ASSESSMENT

Glacier Creek

Alaska Department of Transportation
and Public Facilities
Northern Region- Western District
Division of Design and Construction
Environmental Section

PROJECT VICINITY



ALTERNATIVE LOCATIONS

SCALE 1:63360

CHAPTER I PURPOSE AND NEED

The Alaska Department of Transportation and Public Facilities (ADOT&PF) in cooperation with the Federal Highway Administration (FHWA) is proposing to either upgrade or reroute Glacier Creek Road in Nome Alaska. The proposed project's objective is to enhance economic development. Glacier Creek Road accesses numerous gold mining operations with new development and exploration expected during the next several years.

The proposed project would provide an all-season, year-round[1] access road to areas that are believed to contain large mineral deposits. The existing road was originally constructed as a sidehill cut for much of its length and is therefore susceptible to early and lengthy closure due to snow accumulation.

Glacier Creek Road has major deficiencies, especially for heavy equipment. Grades on the existing road are severe, and when combined with the many sharp curves sight distance becomes severely limited. The existing road is approximately 4.3 meters [14 feet] wide, is gravel surfaced, and without shoulders. There is very little room for maneuverability or passing. These aspects are a hinderance for drivers, especially when a vehicle breaks down, becoming more extreme when operating larger equipment.

Several large gold deposits have been identified in the vicinity of Glacier Creek Road by private sector exploration firms. Reports from both federal and state agencies have also documented the potential for economic lode gold deposits in this area. Additionally, there are several gold mines currently in production. However, the

[1] Currently, Glacier Creek Road is not maintained during the winter.

operation of these current mining ventures are sometimes hindered by the length of time the existing road is open to traffic.

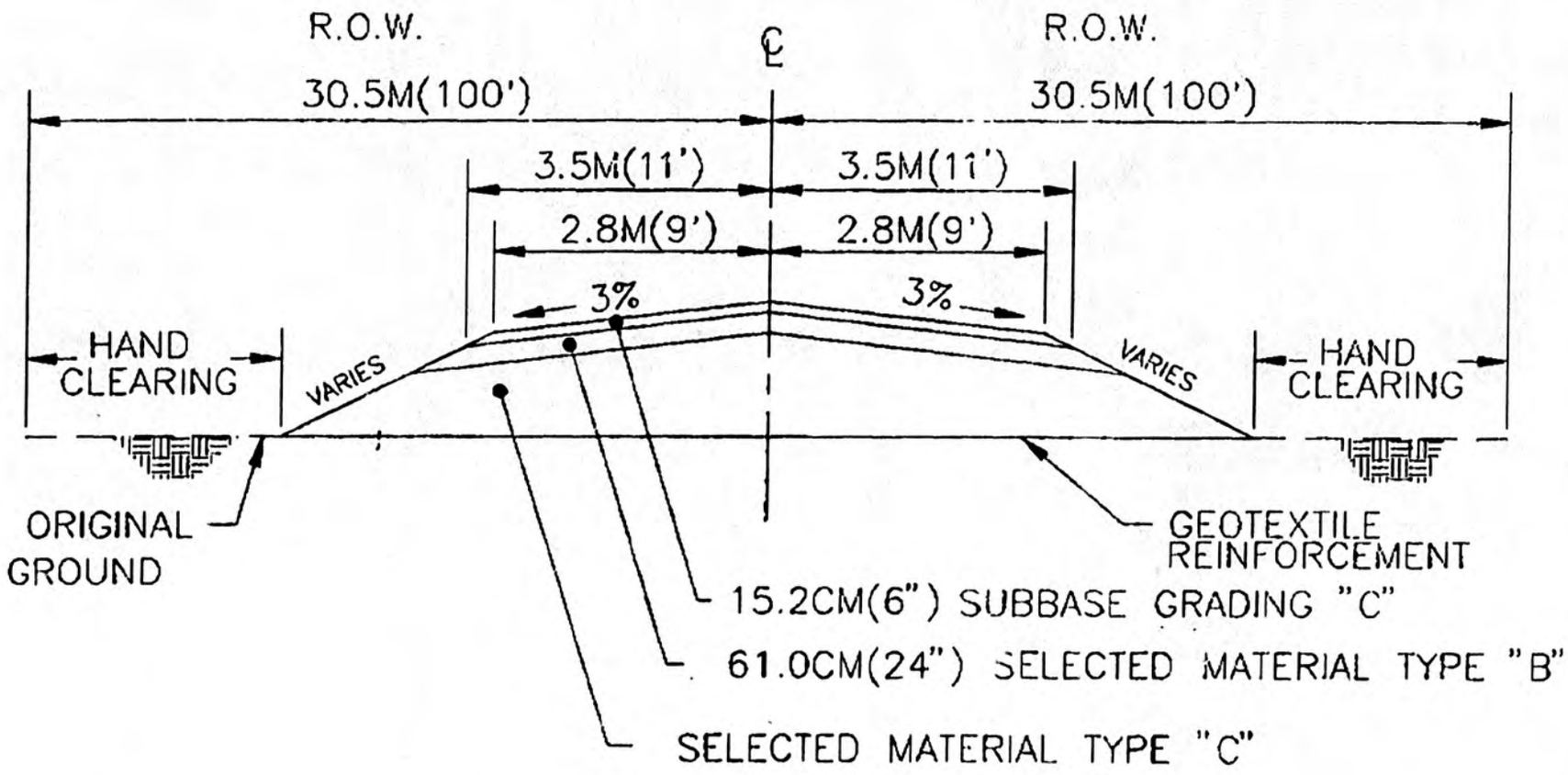
Currently, mining companies are in the process of defining the Rock Creek ore body, in the anticipation of bringing it into production. (Rock Creek crosses the existing Glacier Creek Road at about 1 kilometer [¾ mile]) beyond Glacier Creek. Exploration of the entire area is under the "Rock Creek" designation and encompasses nearly 13,760 hectares [34,000 acres]. An adjacent 14,165 hectares [35,000 acres] tract is also being explored. Until recently, these two tracks were being explored by separate companies. The Kennicott Mining Company has assumed Newmont Exploration's 13,760 hectare [34,000 acres] track.

It is estimated that between 100-200 jobs would be created if a new mine were to begin production. This is a significant economic boost to an area which has a labor force of about 3,000 and an unemployment rate typically near 10 percent.

CHAPTER II ALTERNATIVES

Four alternatives have been evaluated for this proposal. They are the no-action (or no-build), upgrade the existing roadway alignment, and two options to re-route the road.

All of the build alternatives would have a finished road width of 5.5 meters [eighteen feet] including shoulders. The typical section for the build alternatives would have foreslopes varing from 1:4 to 1:1½ [4:1 to 1½:1]. Design criteria recommended with all build versions would result in horizontal curves at or above the minimums. Other recommendations include flatter grades, and hand clearing alders and willows out of the right-of-way to help facilitate snow removal. The proposed facility would require additional right-of-way to establish a corridor width of approximately 30.5 meters [100 feet].



TYPICAL SECTION

Alternatives 3 & 4

Re-route Glacier Creek Road

Two locations were considered for realignment. An alternate route on the west side of the Snake River (Alternative 4) was investigated and discarded because of its longer length and higher cost; and a greater potential for environmental impacts, particularly with regard to crossing the Snake River. Because of its width, crossing the Snake would entail a bridge structure substantially increasing construction costs.

The recommended route, Alternative 3, starts on the east side of the Snake River, approximately 10 kilometers [6.3 miles] on the Bob Blodgett Nome-Teller Highway traversing into the Snake River valley and intersecting into the existing Glacier Creek Road near Kilometer 9 [Mile 5.6]. From this point, the existing Glacier Creek Road would be upgraded to Rock Creek. The approximate length would be 6 kilometers [3.6 miles].

A spur road connecting the new alignment with the existing Glacier Creek Road south of Glacier Creek is also proposed to access the area to eliminate the need for a new and additional crossing of Glacier Creek. This spur road would be about one-quarter mile long (approximately 400 meters). Two 3.7-meter [12-foot] culverts would replace the existing road crossing at Glacier Creek.

The topography along this alignment is flat, open terrain with sparse vegetation consisting of a combination of alpine tundra/barren ground system, with alders and willows lining the numerous drainage channels. Underlying soils are primarily undisturbed tundra consisting of fine material with a high moisture content that is interspersed with ice lenses.

The major advantage of this alternative is that it allows the desired all-season capability with minimal maintenance efforts. Another cost saving would be realized by incorporating an overlay throughout the proposed alignment and hand-clearing alders

and willows to the right-of-way limits. This in turn would reduce snow drift accumulation on the road's surface enhancing vehicle safety and minimizing maintenance costs.

A potential disadvantage with this alternative is possible differential settlement of the embankment placed over undisturbed tundra. Although eventually this type of problem generally reaches a point of equilibrium.

Right-of-way costs would be increased with this alternative. Land ownership along the proposed route is primarily native corporation lands.[2] This alternative's alignment would for the most part, avoid the numerous patented mining claims, except near the end of the project where the many claims cannot be avoided.

Alternative 3

Preferred Alternative

The department is recommending re-routing the road to the east of the Snake River, as described above. This alternative is preferred because it offers the best means to satisfy the purpose and need for the proposed project. It would provide users with a safe, all-season driving surface at minimum costs; and with minimal social, economic and physical environmental impacts.

[2]The Bering Straits Native Corporation has passed Resolution #2-4-94-2 granting a perpetual subsurface easement and restrictive covenant to the ADOT&PF to facilitate the Glacier Creek Road proposal. However, it is the village corporations who have been granted surface rights to the land.

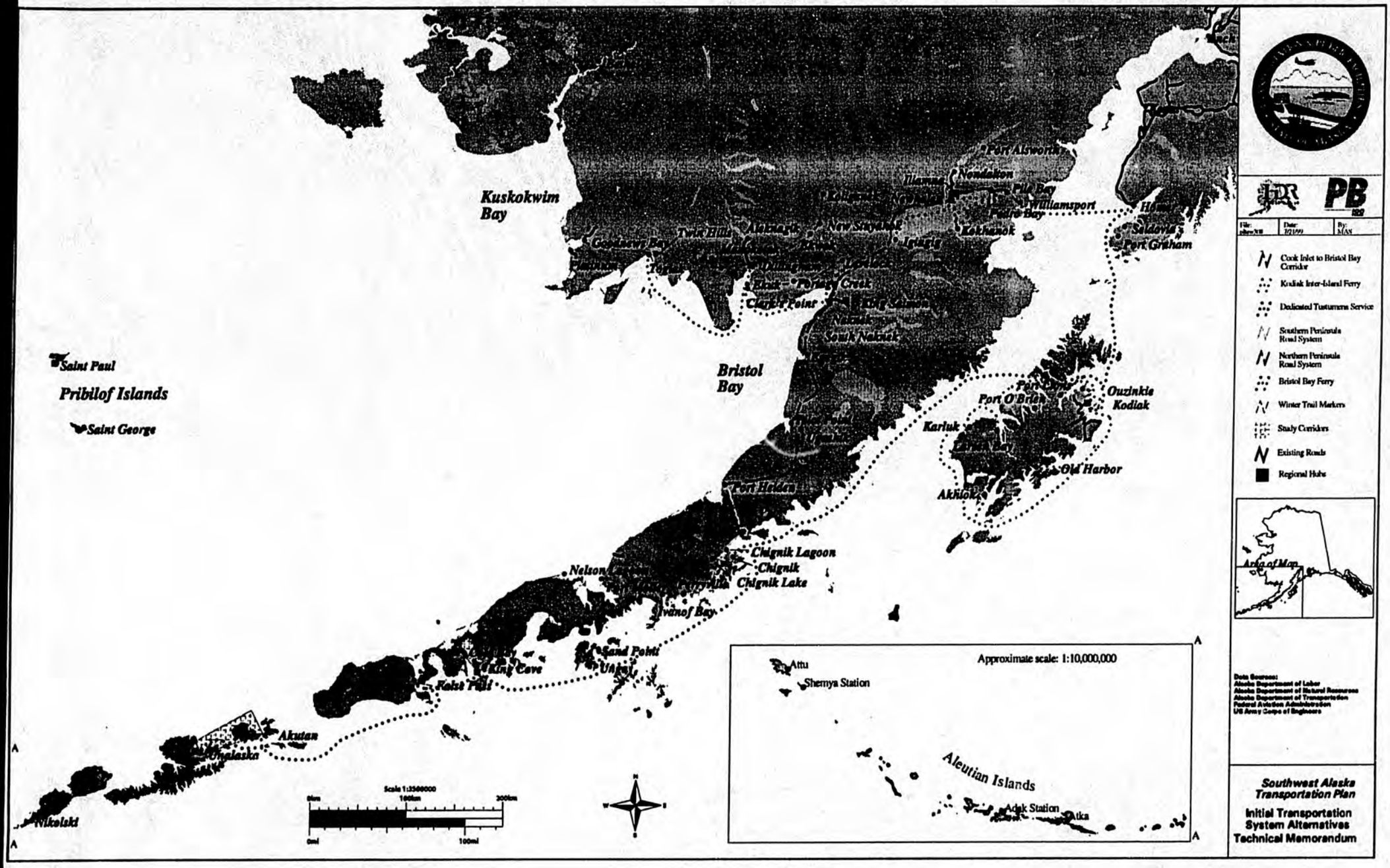
2. COOK INLET TO BRISTOL BAY CORRIDOR ALTERNATIVE, OVERLAND

This alternative would provide a surface transportation link between Cook Inlet and Bristol Bay. In so doing, this alternative would improve mobility and access for many communities in the study area, including Pedro Bay, Nondalton, Iliamna, Newhalen, Igiugig, Levelock, Naknek and King Salmon – providing them for the first time a well developed surface transportation link to the Kenai Peninsula, Anchorage, and the state's primary roadway network. This alternative also has significant potential for improving the efficiency of regional freight movement and economic development.

Explored in this alternative are four separate options for traversing the roughly 250 miles between Homer and Bristol Bay (Table 10). Two of the options provide an uninterrupted set of roadway links – one via King Salmon, the other via Naknek. Meanwhile, the other two options provide a roadway connection until Iliamna, but then traverse the rest of the distance by either a shallow-draft landing vessel, or hovercraft.

Table 10
Cook Inlet to Bristol Bay Corridor Alternative
Four Options

OVERLAND OPTIONS		COMBINATION OVERLAND/MARINE OPTION	
Via King Salmon	Via Naknek	Via Shallow-Draft Landing Vessel	Via Hovercraft
• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Pile Bay to Iliamna Roadway Link • Iliamna to Igiugig Roadway • Igiugig to King Salmon Roadway Link	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Pile Bay to Iliamna Roadway Link • Iliamna to Igiugig Roadway • Igiugig to Levelock Roadway Link • Igiugig to Naknek Roadway Link	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Lake Iliamna–Kvichak River Service via Shallow-Draft Landing Vessel	• Homer to Williamsport Marine Service • Williamsport to Pile Bay Roadway Link • Lake Iliamna–Kvichak River Service via Hovercraft


Kuskokwim Bay
Bristol Bay
Pribilof Islands
Saint Paul
Saint George
Port Alsworth
Nondalton
Pile Bay
Williamsport
Pedro Bay
Iliamna
Lake Clark
Kokhanok
Newhalen
Igiugig
Alaknagik
New Stuyahok
Twin Hills
Goodnews Bay
Clark's Point
Dillingham
Koliganek
Ekwok
Levelock
South Naknek
Naknek
Egegik
Port Heiden
Chignik Lagoon
Chignik
Chignik Lake
Nelson Lagoon
Ivanof Bay
Sand Point
Unalga
King Cove
False Pass
Akutan
Unalaska
Nikolski
Port Graham
Seldovia
Homer
Port Dick
Port O'Brien
Ouzinkie
Kodiak
Karluk
Old Harbor
Akhiok
Scale 1:3500000
0km
100km
300km
0mi
100mi
Approximate scale: 1:10,000,000
Attu
Shemya Station
Aleutian Islands
Adak Station
Atka
Area of Map
Cook Inlet to Bristol Bay Corridor
Kodiak Inter-Island Ferry
Dedicated Tustumena Service
Southern Peninsula Road System
Northern Peninsula Road System
Bristol Bay Ferry
Winter Trail Markers
Study Corridors
Existing Roads
Regional Hubs
Data Sources:
Alaska Department of Labor
Alaska Department of Natural Resources
Alaska Department of Transportation
Federal Aviation Administration
US Army Corps of Engineers
Southwest Alaska Transportation Plan
Initial Transportation System Alternatives
Technical Memorandum

This alternative would provide several benefits to the region and to the communities along the proposed corridor, including the following:

- It would open up a shorter, less dangerous, less expensive freight route from Cook Inlet to Bristol Bay. A continuous surface route across the top of the Alaska Peninsula would mean that it would no longer be necessary to transport goods by barge all the way around the Alaska Peninsula.
- By making scenic wilderness areas, businesses, and lodges along the corridor more accessible to visitors, this alternative would support tourism in the region.
- This alternative would provide the communities of interior Southwest Alaska with greater connectivity to one another, which would promote their economic development.
- This alternative would provide communities along the corridor with a modal alternative to reaching major activity centers such as Anchorage and Kodiak by air.
- Insofar as this alternative is based in large part on the existing road from Williamsport to Pile Bay, it provides a cost-effective means of expanding the core highway system because the right-of-way for this link is already established and owned by DOT&PF.
- The project would promote the economic development of Bristol Bay fisheries. Boat repair and storage facilities are limited in Bristol Bay, requiring many boat owners to bring their boats to Homer. The overland route avoids the time-consuming and hazardous open ocean voyage around the Alaska Peninsula, thereby saving money and increasing safety. The route also saves deterioration of fishing boats not designed for extensive open ocean travel.

Baseline

A key baseline improvement programmed within the proposed corridor is completion of the Iliamna–Nondalton Road, a $9.75 million project which will complete the roadway connection between Iliamna and Nondalton by bridging the Newhalen River and constructing three final miles of roadway on the Nondalton side of the river. This baseline improvement would integrate Nondalton, a community with a 2020 base population forecast of 317 into the rest of the proposed corridor. The other baseline improvement relevant to this proposed alternative is DOT&PF's Winter Trail Marking project, which will mark 314 miles of trails – from Goodnews Bay all the way to Levelock and Naknek, communities served directly by the proposed corridor.

Element 1. Homer-Seldovia-Williamsport Marine Service

Proposed in this alternative is new marine service linking Seldovia and Homer, on the Kenai Peninsula, with Williamsport, which lies on the western shores of Cook Inlet, just off Iliamna Bay. This link would provide the first element of a surface transportation corridor linking Alaska's overland transportation system and population concentrations with the communities of the Lake and Peninsula and Bristol Bay Boroughs.

As envisioned, this marine service would not only provide a new link between Williamsport and Homer, but it would also continue to serve the linkage between Homer and Seldovia now provided by current AMHS service. In fact, as configured for planning purposes, it could provide an equal or greater level of service frequency and capacity compared to the current service provided by the *Tustumena*.

THE VESSEL

A separate alternative proposed in this document is a reconfiguration of AMHS service that would result in the dedication of the *Tustumena* to ports in the Southwest Alaska Study Area (along with connections to the Kenai Peninsula). As such, a new vessel was explored to provide the proposed service between Homer, Seldovia, and Williamsport. Given the run across lower Cook Inlet, an area noted for steep seas, strong currents, and winter ice floes, the vessel providing this service would have to be capable of navigating in high winds, seas, spray icing conditions, and sea ice.

For planning purposes, a basis vessel was chosen to illustrate this alternative. The basis vessel selected, the *M/V Nunaiq*, is a 150'-6" long, with a 47' beam, an 8' depth, a 3'-9" to 6'0" draft and a cruising speed of 9 knots. Although the basis vessel and others of this type have extensive operation experience in Alaska waters, some design enhancements, including minimum ice strengthening, expandable passenger capacity, and increased freeboard and bulwark height should be considered. The capital cost of such a vessel is estimated at $2.75 million.

SCHEDULE AND FREQUENCY OF SERVICE

Physical laws regarding the resistance of displacement vessels limit conventional monohull ferries with length on the order of 150' to speeds between 9 and 12 knots. Even at 12 knots, the 152 nautical mile trip between Homer and Williamsport would take more than 12 hours for running time alone (without allowance for port time, startup, or shutdown). Another factor in scheduling this service hinges on the shallow water and dredged channel at Williamsport, which would make it prudent to time trips to match the tide at Williamsport. As such, one round trip between Homer and Williamsport could be scheduled in any 24-hour period, but the timing of departures and arrivals would vary from day-to-day based on tides. Based on a 9-knot service speed (and allowing one half hour for morning startup and one-half hour for evening shutdown) the service day for a Homer–Williamsport round trip would be about 18 hours, which would allow six hours in any 24-hour day to adjust for the tide.

One way, the trip from Homer to Seldovia can be made in two hours, and two round trips per day, during daylight hours, are easily feasible. According to the schedule developed for this planning effort, the vessel could service Williamsport on seven days in a two-week period, and Seldovia on the other seven days.

In a 44-week service year (with ten weeks provided for annual maintenance), the vessel would call at Williamsport and Homer 154 times apiece, and at Seldovia 308 times. The proposed service concept would provide much more frequent service to Homer and Seldovia, which received 58 port calls apiece in 1997, according to the "AMHS 1997 Annual Traffic Volume Report." As configured for planning purposes, the service proposed would provide an annual passenger capacity of 15,092, compared to the *Tustumena's* 12,760.

Table 11
Seldovia Service Comparison

SELDOVIA			
	Tustumena	New Vessel	Historical Demand
Annual Trips	58	308	
Annual Passenger Capacity	12,760	15,092	2,303
Annual Vehicle Capacity	3,132	6,160	878
WILLIAMSPORT			
Annual Trips	NA	154	
Annual Passenger Capacity	NA	7,546	NA
Annual Vehicle Capacity	NA	3,080	NA

Note: Annual capacities and historical demand are stated on a one-way basis. Two-way capacities are exactly twice the one-way capacities. One-way historical demand is the larger of the historical demand values from either the Homer–Seldovia or the Seldovia–Homer trip directions.

Operating costs for the Homer–Williamsport–Seldovia marine service element of this alternative are summarized in Table 12.

Table 12
Homer–Seldovia–Williamsport Ferry Service Operating Costs

	Minimum	Maximum
Shoreside Maintenance	$185,000	$185,000
Hull Maintenance & Pass. Services Maint.	$36,000	$44,000
Machinery Maintenance	$128,000	$156.000
Crew	$698,932	$833,152
Fuel	$159,000	$194,000
Lubricating Oil	$3,600	$4,400
Ports and Terminals O.H.	$223,176	$223,176
Management O.H.	$366,741	$366,741
Shoreside O.H.	$69	$69
Insurance	$19,000	$23,000
TOTAL: (Estimated Annual Operating Cost)	$1,819,518	$1,873,694

OPERATIONAL ISSUES

Williamsport would require substantial navigational improvements in order to accommodate AMHS service. Williamsport is located at the head of tide flats that go dry at low water. In addition, large boulders dot the shoal water approaches to Williamsport. Although shallow-draft vessels could presumably call briefly at high tide, dredging the channel would be required to service other types of vessels, including the basis vessel envisioned to provide the marine service in this alternative.

The U.S. Army Corps of Engineers (COE) completed a study exploring the feasibility of a dredging project at Williamsport in 1995. That report recommended excavation of a 2,700-meter long channel, ending at Williamsport, in Iliamna Bay. The channel bottom would be 30 meters wide at 0.5 below Mean Lower Low Water. The channel would end with a turning basin 5 meters long and 55 meters wide. The turning basin would provide access to a sheet-pile bulkhead dock and an adjacent paved, 8-meter wide launch. Capital costs for the project were estimated at $3,822,000, of which federal funding in the amount of $1,691,400 was identified as available, leaving $2,130,600 to non-federal sources. Annual M&O costs for the project were estimated at $185,000.[5]

The COE study conducted a rigorous benefit-cost analysis for the project, which determined that benefits would exceed costs at a 3.1:1.0 ratio. While the COE study determined that dredging a channel to Williamsport would be a worthwhile project, the lack of a local sponsor terminated further work on the project. However, it was noted that the project could proceed if a local sponsor, such as the State of Alaska, were secured.

Element 2. Williamsport to Pile Bay Roadway Link

Although a roadway currently exists between Williamsport and Pile Bay, it is quite primitive and in poor repair. The existing road is 15.5 miles long, consisting of one graded and drained earthen travel lane with no shoulder. In poor condition, the road is maintained only during the summer when a maintenance contractor is available. Portions of the road do not meet minimum width standards and are too narrow for current use. One of four bridges along the project corridor has washed out, and the others, all of which have sufficiency ratings below 50, are narrow and cannot accommodate oversized traffic. The major limitation restricting boat-haul traffic is the existing metal bridge across the Iliamna River, whose interior dimension of only 12 feet, is too narrow for the typical gillnet boat.

The project proposed in this link would reconstruct and widen the existing road to design standards applicable to a rural major collector traveled by 250 vehicles or less per day. The road's four bridges would be repaired, replaced, or widened, as appropriate. The road would be maintained year-round.

The road climbs 850 feet through the Chigmit Mountains in the first two miles benched on steep rock slopes. The road through this section is narrow and subject to avalanche hazards. As such, winter maintenance through this stretch would likely be difficult and expensive.

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[5] This maintenance cost includes annual grading of the dock, ramp, and staging area; annual surveys the first 4 years, then every 5 years; maintenance dredging every 5 years; replacement of fender piles, ramp concrete, and sheet-pile cathodic protection every 10 years; and replacement of the sheet pile after 30 years.

Total capital costs for this project are estimated at $14,857,500 for a paved surface, and $12,300,000 for a gravel surface. Annual M&O costs are estimated at $209,250 and $232,500 respectively. Demand as part of the full alternative is estimated at 4,200 person trips per year (Tables 19 and 21).

Element 3. Pile Bay to Iliamna Roadway Link

This roadway would complete a link from Williamsport through to Iliamna, allowing travel from Cook Inlet into the interior of the Lake and Peninsula Borough at least as far as Iliamna. The road would connect as far as Nondalton, given that Iliamna–Nondalton link has been programmed and is part of the baseline. This roadway link would provide Pile Bay and Pedro Bay access to the airport at Iliamna and would allow for a tourism circuit from Cook Inlet and potential access to Lake Clark National Park. The project would also provide the potential for interconnection of the electric power of the Tazimina Hydroelectric project.

This project would build 38 miles of new roadway between Iliamna and Pile Bay, passing through Pedro Bay. Although no road yet exists from Iliamna to Pile Bay, a 46-mile trail from Iliamna to Pedro Bay does exist, as does a 12-mile trail from to Pedro Bay to Pile Bay, denoted by the Alaska Department of Natural Resources as a RS2477 route. A likely corridor would follow the RS2477 trail route, traveling about half a mile inland from the northern shore of Lake Iliamna. As proposed, this road would cross about 15 creeks, which would require culvert placements or short-span bridges at these junctions. Like the other roadway links proposed in this regional plan, the road would be constructed to meet AASHTO design standards for a rural major collector with daily travel of under 250 vehicles per day.

The corridor envisioned consists of relatively easy terrain with numerous stream crossings. Construction would include typical fill construction techniques. No unusual construction or design issues are anticipated. Normal annual maintenance would be required for roadway upkeep. Because the area receives just over 60 inches of snow per year, plowing would probably account for the bulk of annual maintenance costs.

Total capital costs for this project are estimated at $51,870,000 for a paved surface, and $45,600,00 for a gravel surface. Annual M&O costs are estimated at $513,000 and $570,000, respectively. Demand for this roadway link is estimated at 17,900 person trips per year as an independent project and 32,400 person trips per year as a component of the alternative (Tables 19 and 21).

Element 4. Iliamna to Igiugig Roadway Link

The 56-mile road link proposed to connect the communities of Iliamna and Igiugig, which lie along the northern shores of Lake Iliamna, would cross lowlands dotted with many lakes, streams, and rivers. Bridges would be required to cross the Newhalen River, the Kvichak River, and many smaller rivers along the coast of Lake Iliamna. The 56-mile road would be built according to AASHTO design standards for a rural major collector serving 250 vehicle or less per day.

This project's major construction issues pertain to the development of bridges over the Newhalen and Kvichak Rivers. Construction materials would have to be barged in via the Kvichak River, and landings would have to be developed for staging. Permitting and land use concerns would also be an issue given the increase in traffic and the presence of structures

that may affect the fishing industry and other traditional area uses. Normal annual maintenance would be required for the bridge and roadway upkeep. Because total precipitation is 20 inches annually, including 45 inches of snowfall, snow removal would constitute the primary maintenance cost.

Total capital costs for this project have been estimated at $78,940,000 for a paved surface and $69,700,000 for a gravel surface. Annual M&O costs have been estimated at $756,000 and $840,000, respectively. Demand for this roadway link is estimated at 16,100 person trips per year as an independent project, 92,300 person trips per year as a component of the alternative, King Salmon option, and 106,100 person trips per year as a component of the alternative, Naknek Option (Tables 19 and 21).

Element 5a. Igiugig to Naknek Roadway Link

Constructing a 75-mile road between Igiugig and Naknek would provide one means of completing the proposed corridor from the Kenai Peninsula to Bristol Bay. This link would provide interior Southwest Alaska communities with ground access to the regional hub of King Salmon, where many goods and services are available.

The terrain between Igiugig and Naknek consists of coastlands and wetlands, with scattered lakes and ponds. The southwesterly route proposed along the Kvichak River would have to avoid numerous wetlands and lakes. Culverts to provide fish passage would be required at creek crossings, including Pecks Creek and Ole Creek. With the Kvichak River's turn to the south, the road alignment would parallel connecting into Hallersville from the north. The road would then be directed east and around the large mouth of the Wild and Scenic Alagnak River to an easier crossing of the river upstream. The crossing would take place approximately three miles east of Hallersville and then turn southwest toward the Kvichak River mouth. Once reaching Cape Horn, the road alignment would follow the pioneer route[6], which runs along the coast through Kvichak, Koggiung, and Libbyville before ending on the north side of Naknek.

Normal annual maintenance would be required for bridge and roadway upkeep. With total precipitation amounting to 20 inches annually, with 45 inches of snowfall, snow removal would require the bulk of the maintenance expenditure.

Total capital costs for this project have been estimated at $102,375,000 for a paved surface and $90,000,000 for a gravel surface. Annual M&O costs are estimated at $1,012,500 and $1,125,000, respectively.

Demand for this roadway link is estimated at 24,100 person trips per year as an independent project and 110,000 person trips per year as a component of the alternative (Table 21).

Element 5b. Igiugig to King Salmon Roadway Link (Alternative Route)

A 56-mile roadway between Igiugig and King Salmon would provide an alternative route to finish the overland crossing of the Alaska Peninsula connecting the Kenai Peninsula with

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[6] This pioneer route is still used to access setnet sites along the coast.

Bristol Bay. Currently, passengers and freight are moved between Igiugig and King Salmon by aircraft or by boat along the Kvichak River with a transfer by road to King Salmon. The eastern portion of the terrain between these communities is characterized by large mountains and foothills to the north of Naknek Lake. The western portion of the area comprises coastlands and wetlands with scattered inland lakes and ponds.

Beginning in the village of Igiugig, the proposed roadway alignment would travel to the south-southwest, crossing Pecks Creek and Ole Creek along with many other small crossings. Continuing south-southwest, the alignment would require crossing the Alagnak River (a Wild and Scenic River) and would navigate along the foothills of the mountains north of Naknek Lake, outside of Katmai National Park and Preserve. The roadway would be routed to the southwest, crossing many branches of Pauls Creek and take a southerly bearing toward King Salmon Creek. Once the road alignment had crossed King Salmon Creek, it would travel along the banks until it connected into the pioneer road system, built by the U.S. Air Force north of King Salmon. After following the pioneer road southwest, the road would terminate on the northwest side of King Salmon at the Alaska Peninsula Highway.

Large river crossings, each of which would require fish passage culverts, are the primary construction issue for this link. With 20 inches of total precipitation annually, including 45 inches of snowfall, snow removal would account for the bulk of maintenance costs.

Total capital costs for this project have been estimated at $76,440,000 for a paved surface and $67,200,000 for a gravel surface. Annual M&O costs have been estimated at $756,000 and $840,000, respectively. Demand for this roadway link is estimated at 24,100 person trips per year as an independent project and 95,100 person trips per year as a component of the alternative (Table 19).

Element 6. Levelock Link to the Igiugig–Naknek Roadway

Building a connection between Levelock and the Igiugig–Naknek roadway link would integrate Levelock, which lies on the north shore of the Kvichak River, to the rest of the surface transportation corridor proposed in this alternative. This would permit the village of Levelock, (2020 base population forecast = 139) access to the larger communities of King Salmon and Naknek. This link could also serve as the beginning of a future route connecting the southwestern peninsula with communities further west, such as Dillingham.

The proposed 19-mile route, which would stem from the proposed link connecting Igiugig and Naknek, would require a 400-foot bridge across the Kvichak River. In addition, the proposed alignment would encounter several creeks, including Yellow Creek and Levelock Creek.

The terrain to be crossed in this proposed link is relatively flat, with occasional creek crossings that would require accommodation of fish passage. The bridge and roadway would require normal annual maintenance, most of which would be devoted to snow removal, insofar as the area receives about 20 inches of precipitation annual, including 45 inches of snowfall.

Total capital costs for this project have been estimated at $27,435,000 for a paved surface and $24,300,000 for a gravel surface. Annual M&O costs have been estimated at $256,500 and $285,000, respectively.

Demand for this roadway link is estimated at 15,000 person trips per year as an independent project and 39,600 person trips per year as a component of the alternative (Table 21).

Marine Options

Each of the four options for linking the Kenai Peninsula with Bristol Bay is the same as far west as Iliamna, at which point they diverge into two overland and two marine options. Discussed below are the two marine options for completing the stretch from Iliamna to Bristol Bay. Initially, the consultant team explored use of a shallow-draft landing vessel to provide service from Iliamna west to Bristol Bay along Lake Iliamna and the Kvichak River. However, initial analysis revealed that such service would be constrained by two factors: (1) winter ice; and (2) seasonally low water, which, combined, would restrict the navigable season from May to October. For this reason, Hovercraft service, which can negotiate both ice and shallow water, was also explored. The results of both sets of analysis are summarized below.

Element 7. Iliamna to Naknek Via Shallow-Draft Landing Vessel

Private and commercial vessels, including barges, are already in use on this waterway system. This option proposes ferry service along Lake Iliamna and the Kvichak River. Iliamna Lake is navigable between May 1 through October 31. While the lower reaches of the Kvichak River are navigable during the ice-free season, the upper reaches of the river are subject to seasonal low water that could impact navigability for some conventional vessels.

The vessel envisioned to provide this service is a shallow-draft landing vessel about 50 feet long, with a 16-foot beam, and with a running draft of approximately 14 inches. The vessel explored for planning purposes can accommodate two loaded full-sized pickup trucks and up to six passengers. The six-passenger threshold is highly desirable because this capacity would allow, according to USCG regulations, the service to operate with just two crew, each holding a USCG boat operator's license, a relatively easily acquired credential.

It would be possible, given the distances between ports served, to operate this service on a "dayboat" concept, which provides substantial operating cost savings, insofar as operations require no more than a single crew for no more than 12 hours per day of service. This would be feasible, providing that the vessel employed is capable of traveling comfortably in excess of the peak river current by a sufficient margin to make the transit in under 12 hours. For planning purposes, we currently believe that a 15-knot vessel could provide round trip service from the western terminus on a three-day turnaround basis (with two 12-hour layovers enroute). A 25-knot vessel could provide the same service on a two-day turnaround basis (with one 12-hour layover enroute). The schedule proposed for planning purposes would have Naknek, at the route's southern terminus, as its "home" port. Table 13 shows a model high-speed, shallow-draft, landing craft schedule for a typical voyage originating in Naknek and returning to Naknek at the end of the second day. Note that one 12-hour minimum layover is required on Iliamna Lake for crew rest.

Table 13
Model Schedule
High-Speed (25 knot), Shallow-Draft Landing Craft

	Arrival		Departure		Port Time	Sailing Time
	Day	Time	Day	Time	Duration	Duration
Naknek			Monday	6:00		1:16
Levelock	Monday	7:16	Monday	7:46	0:30	4:56
Igiugig	Monday	12:42	Monday	13:12	0:30	1:36
Newhalen	Monday	14:48	Monday	15:18	0:30	0:14
Iliamna	Monday	15:32	Monday	16:02	0:30	0:55
Pedro Bay	Monday	16:57	Monday	17:27	0:30	0:22
Pile Bay	Monday	17:49	Tuesday	5:49	12:00	1:36
Kokhanok	Tuesday	7:25	Tuesday	7:55	0:30	0:41
Newhalen	Tuesday	8:36	Tuesday	9:06	0:30	0:41
Kokhanok	Tuesday	9:47	Tuesday	10:17	0:30	0:41
Newhalen	Tuesday	10:58	Tuesday	11:28	0:30	1:36
Igiugig	Tuesday	13:04	Tuesday	13:34	0:30	1:59
Levelock	Tuesday	15:33	Tuesday	16:03	0:30	1:04
Naknek	Tuesday	17:07				

Although accommodating the vessel envisioned to provide service on this link would not require extensive or particularly expensive shoreside infrastructure, some minor landing area upgrades, such as road extensions and gravel or concrete pads, would be needed. Accordingly, the costs of such improvements have been estimated at $25,000 at each of eight ports proposed for service, for a total of $200,000. In addition, navigation aids needed on the Kvichak River itself have been estimated at a cost of $50,000. Combined M&O costs for all shoreside improvements have been estimated at $6,250 annually.

In addition to the shoreside improvements just mentioned, of course a new vessel would have to be acquired – at an estimated cost of $526,000. Vessel-related M&O costs, which include crew, fuel, insurance and overhead, are estimated at $318,300. The total cost breakdown for this project is provided in Table 14.

Table 14
Capital and M&O Costs for Proposed Lake Iliamna/Kvichak River Marine Link (Shallow-Draft Landing Vessel Option)

Vessel Acquisition Cost	$481,000 F.O.B. Seattle $45,000 Delivery by barge	
Subtotal: (Acquisition Cost)	$526,000	
	Minimum	**Maximum**
Hull Maintenance	$1,500	$2,000
Machinery Maintenance	$4,000	$5,500
Crew	$144,000	$223,000
Fuel	$90,000	$110,000
Lubricating Oil	$1,200	$1,400
Berthing	$3,000	$4,000
Insurance	$22,000	$25,000
Subtotal: (Annual Operating Cost)	$265,700	$370,900

Table 15
Capital and M&O Costs Shoreside Improvements

Landing area upgrades (road extensions, gravel or concrete pads, etc.) at eight (8) communities (Allowance: 8x$25,000)	$200,000	
Aids to navigation on Kvichak River	$50,000	
Subtotal: (Acquisition Cost)	$250,000	
	Minimum	**Maximum**
Annual Maintenance	$5,500	$7,000
Subtotal: (Annual Operating Cost)	$5,500	$7,000

Demand for this service link is estimated at 3,600 person trips per year.

Element 8. Iliamna to Egegik Marine Service via Hovercraft

Hovercraft, which can operate at speeds over 40 knots over land, ice cover, seas with up to four-foot waves, beaches, and shallow water, were also explored as a means of linking the western portion of the Kenai Peninsula to Bristol Bay corridor. Two models of hovercraft with extensive Alaskan operating experience were explored in analyzing this option: the turbine-powered LACV-30 type hovercraft and the conventionally-powered AP.1-88. Of the two, the

AP.1-88 was found to be more suitable for Lake Iliamna–Kvichak River service, due to its smaller size, lower operating costs, and lower noise impacts.[7] Like the shallow-draft landing vessel option described above, crew costs for hovercraft operations would be relatively low. It is possible that the AP.1-88 could be operated with a crew of two: a master, who would have to have a USCG hovercraft endorsement,[8] and a mate to crew the aft compartment.[9]

Using a hovercraft rather than a shallow-draft landing vessel to connect the communities along Lake Iliamna and the Kvichak River would have several advantages over the use of a shallow-draft landing vessel:

- **Longer service period**. Hovercraft operation would offer the advantage of a year-round, as opposed to May through October service season. Unlike a shallow-draft vessel, the Hovercraft would be able to operate over the winter ice of Lake Iliamna, and probably over the Kvichak River's ice. However, the Hovercraft would likely be out of service for about 20 days each for the periods of winter freezeup and spring thaw, which could be scheduled for annual maintenance. In any case, the total service period of the Hovercraft would be approximately 46 weeks compared to 26 weeks for the shallow-draft vessel.
- **Fewer shoreside improvements required**. The AP.1-88 is able to utilize an unimproved or minimally improved loading/unloading facility, unlike a shallow-draft landing vessel, which would require landing pads.
- **Freight-carrying flexibility**. The version of the AP.1-88 currently operating in Alaska is configured for 24 passengers with adjustable interior bulkhead to accommodate freight. The aft superstructure doors are wide enough to pas a full size pallet.

Some disadvantages associated with hovercraft operations have also been identified:

- **Noise**. Although the diesel-powered AP.1-88 is not as noisy as the turbine-powered LACV-30, it is relatively noisy compared to the conventional hull option. In any case, current hovercraft operations in Bethel, Alaska, on behalf of the U.S. Postal Service will provide an opportunity to assess noise impacts firsthand.
- **Limited payload**. Although the AP.1-88's 16,000-pound cargo capacity slightly exceeds that of the shallow-draft landing vessel, its deadweight capacity is modest. However, given early, planning-level demand estimates, it is thought to be sufficient.
- **Relatively high maintenance costs**. Although maintenance costs for Hovercraft are not well established, they are presumed to be higher than those for conventional hull craft, due to two factors: (1) their higher level of mechanical sophistication; and (2) wear and tear on the craft's rubber skirt. In addition, it would be necessary to wash the craft down when operating over brackish water near Naknek in order to prevent salt water damage to the air screws and other machinery.

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[7] Although other hovercraft are commercially available, most are much smaller and would not meet the projects freight and passenger load requirements envisioned in this option. In addition, two existing AP.1-88 vessels, although built in Canada, have unrestricted Jones Act waivers allowing their use in the United States.

[8] A hovercraft endorsement from the USCG can be earned upon completion of 36 hours of classroom study and 36 hours of operating time.

[9] Although the mate need not be fully qualified, he or she must have a radar rating.

MODEL SCHEDULE

The AP.1-88 hovercraft is fast enough that the highly desirable result of 12-hour dayboat operation would be achievable. In fact, Table 17 shows a model schedule based on the following operating speeds: 40 knots per hour on the lower Kvichak River, 30 knots on the upper Kvichak River, and 50 knots on Lake Iliamna. In order to maintain 12-hour service days, port calls are limited to 20 minutes. This model schedule accomplishes the daily round trip in 11 hours, allowing a half hour in the morning for startup and a half hour in the evening for shutdown. For the purposes of illustrating this schedule, Naknek serves as homeport.

The acquisition cost for an AP.1-88 hovercraft is estimated in the range of $5 to $6 million, depending on classification and regulatory requirements, outfitting, delivery costs, and acquisition scheme. A summary of estimated Hovercraft operating costs is provided in Table 18.

Table 16
AP.1-88 Hovercraft

Annual Operating Costs	
Maintenance	$1,408,000
Crew	237,250
Fuel	14,608
Lubricating oil	2,282
Subtotal	$1,662,140
Miscellaneous (4%)	66,460
Total	**$1,728,600**

The operating cost summary contained in Table 18 assumes that hovercraft service is provided five days a week except during break-up and freeze-up, for which 20 days apiece are allocated and assumed to be used for annual maintenance.

Demand for this service link is estimated at 6,900 passenger trips.

Table 17
Model Schedule
(40 kt lower river; 30 kt upper river; 50 kt lake)

	Arrival		Departure		Port Time	Sailing Time
	Day	Time	Day	Time	Duration	Duration
Naknek			Same Day	6:30		0:45
Levelock	Same Day	7:15	Same Day	7:35	0:20	1:30
Igiugig	Same Day	9:05	Same Day	9:25	0:20	0:50
Newhalen	Same Day	10:15	Same Day	10:35	0:20	0:10
Iliamna	Same Day	10:45	Same Day	11:05	0:20	0:30
Pedro Bay	Same Day	11:35	Same Day	11:55	0:20	0:15
Pile Bay	Same Day	12:10	Same Day	12:30	0:20	0:50
Kokhanok	Same Day	13:20	Same Day	13:40	0:20	0:50
Igiugig	Same Day	14:30	Same Day	14:50	0:20	1:30
Levelock	Same Day	16:20	Same Day	16:40	0:20	0:45
Naknek	Same Day	17:25				

Table 18
Cost Synopsis
Cook Inlet to Bristol Bay Overland
King Salmon Option

	Annual O&M Cost	Total Capital Cost	Annualized Cap Cost @ 7% Interest	Annualized Capital plus O&M costs
Marine Elements				
Homer–Williamsport–Seldovia Marine	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–W–S shoreside	$185,000	$3,822,000	$360,770	$545,770
Roadway Elements				
Williamsport to Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
Pedro Bay to Pile Bay to Iliamna				
Paved	$513,000	$51,870,000	$4,896,161	$5,409,161
Unpaved	$570,000	$45,600,000	$4,304,317	$4,874,317
Iliamna to Igiugig				
Paved	$756,000	$78,940,000	$7,451,378	$8,207,378
Unpaved	$840,000	$69,700,000	$6,579,187	$7,419,187
Igiugig to King Salmon				
Paved	$756,000	$76,440,000	$7,215,395	$7,971,395
Unpaved	$840,000	$67,200,000	$6,343,205	$7,183,205
TOTAL				
Paved Option	$4,778,856	$228,679,500	$21,585,727	$25,666,583
Unpaved Option	$5,084,106	$201,372,000	$19,008,092	$23,337,198

Table 19
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Overland
King Salmon Option

	Independent*	Alternative**	System***
Marine Elements			
Homer–Seldovia		4,000	
Homer–Williamsport		4,200	
Roadway Elements			
Williamsport to Pile Bay to Pedro Bay		4,200	
Pedro Bay to Iliamna	17,900	32,400	33,700
Iliamna to Igiugig	16,100	92,300	101,300
Igiugig to King Salmon	24,100	95,100	108,300

* Demand on the link as an independent element.

** Demand on the link as part of the alternative.

*** Demand on the link assuming implementation of a Cook Inlet to Bristol Bay to Alaska Peninsula roadway system.

Table 20
Cost Synopsis
Cook Inlet to Bristol Bay, Overland
Naknek Option

	Annual O&M Cost	Total Capital Cost	Annualized Cap Cost @ 7% Interest	Annualized cap cost plus O&M Cost
Marine Elements				
Homer–Williamsport–Seldovia	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–W–S Shoreside	$185,000	$3,822,000	$360,770	$545,770
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
Iliamna–Pedro Bay–Pile Bay				
Paved	$513,000	$51,870,000	$4,896,161	$5,409,161
Unpaved	$570,000	$45,600,000	$4,304,317	$4,874,317
Iliamna to Igiugig				
Paved	$756,000	$78,940,000	$7,451,378	$8,207,378
Unpaved	$840,000	$69,700,000	$6,579,187	$7,419,187
Igiugig to Naknek				
Paved	$1,012,500	$102,375,000	$9,663,476	$10,675,976
Unpaved	$1,125,000	$90,000,000	$8,495,363	$9,620,363
Igiugig to Levelock				
Paved	$256,500	$27,435,000	$2,589,670	$2,846,170
Unpaved	$285,000	$24,300,000	$2,293,748	$2,578,748
TOTAL				
Paved Option	$4,778,856	$282,049,500	$26,623,478	$31,217,334
Unpaved Option	$5,084,106	$248,472,000	$23,453,999	$28,353,105

Table 21
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Overland
Naknek Option

	Independent*	Alternative**	System***
Marine Elements			
Homer–Seldovia		4,000	
Homer–Williamsport		4,200	
Roadway Elements			
Williamsport to Pile Bay		4,200	
Pile Bay to Pedro Bay to Iliamna	17,900	32,400	33,700
Iliamna to Igiugig	16,100	106,100	115,100
Igiugig to Naknek	24,100	110,000	123,200
Igiugig to Levelock	15,000	39,600	43,800

* Demand on the link as an independent element.

** Demand on the link as part of the alternative.

*** Demand on the link assuming implementation of a Cook Inlet to Bristol Bay to Alaska Peninsula roadway system.

Table 22
Cost Synopsis
Cook Inlet to Bristol Bay Marine
Hovercraft Option

	Annual O&M Cost	Total Capital Cost	Annualized Capital Cost @ 7% Interest	Annual Capital plus O&M costs
Marine Elements				
Homer–Williamsport-Seldovia	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer–Williamsport Shoreside	$185,000	$3,822,000	$360,770	$545,770
Lake Iliamna (Hovercraft)	$1,728,600	$5,500,000	$519,161	$2,247,761
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
TOTAL				
Paved Option	$3,969,456	$26,929,500	$2,541,954	$6,326,410
Unpaved Option	$3,992,706	$24,372,000	$2,300,544	$6,108,250

Table 23
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay Marine
Hovercraft Option

	Travel Demand
Marine Elements	
Homer–Seldovia	4,000
Homer–Williamsport	4,200
Lake Iliamna Hovercraft Service	6,900
Roadway Elements	
Williamsport to Pedro Bay	4,200
Pedro Bay to Iliamna	22,100

Table 24
Cost Synopsis
Cook Inlet to Bristol Bay Marine
Shallow-Draft Landing Vessel Option

	Annual O&M Cost	Total Capital Cost	Annualized Capital Cost @7% Interest	Annual Capital plus O&M costs
Marine Elements				
Homer–Williamsport–Seldovia*	$1,846,606	$2,750,000	$259,581	$1,921,187
Homer, Williamsport Shoreside	$185,000	$3,822,000	$360,770	$545,770
Lake Iliamna (Shallow-Draft Vessel)**	$318,300	$526,000	$49,651	$367,951
Lake Iliamna Shoreside	$6,250	$250,000	$23,598	$29,848
Roadway Elements				
Williamsport–Pile Bay				
Paved	$209,250	$14,857,500	$1,402,443	$1,611,693
Unpaved	$232,500	$12,300,000	$1,161,033	$1,393,533
TOTAL				
Paved Option	$2,565,406	$22,205,500	$2,096,042	$4,476,448
Unpaved Option	$2,588,656	$19,648,000	$1,854,632	$4,258,288

*Vehicle demand for this element of the alternative was estimated at 2,800 vehicles/year.
**Vehicle demand for this element of the alternative was estimated at 770 vehicles/year.

Table 25
2020 Annual Travel Demand Estimate
Cook Inlet to Bristol Bay
Shallow-Draft Landing Vessel Option

	Travel Demand
Marine Elements	
Homer–Seldovia	4,000
Homer–Williamsport	4,200
Lake Iliamna Marine Service (S.D.)	3,600
Roadway Elements	
Williamsport to Pedro Bay	4,200
Pedro Bay to Iliamna	22,100

FROM THE OFFICE OF REP. SHARON CISSNA

HIGHWAY OF ALL ALASKANS

For the Economic Development and Tourism Committee
Rep. Gayle Phillips, Chair

PROVIDING ACCESS TO THE E-COMMERCE HIGHWAY

During the legislative interim there have been major changes in the possibility of all Alaskans having the opportunity to obtain access to the Internet. The project discussed during last year's committee meetings has changed due to some of these recent developments.

Our office has begun to work toward methods of developing a broad-based mentoring program that would set up a pilot project to bring together Alaskans who have mastered developing successful e-commerce businesses with Alaskans who have a dream but need help achieving the reality.

This program would create a partnering between the federal available funds, the Department of Community and Economic Development, municipal and village governments, and individual vol-

ATTACHED ARE DENALI COMMISSIONS EFFORTS ON RURAL CONNECTIVITY, PRESS RELEASE ON GCI'S LATEST SATELLITE, THE DIGITAL DIVIDE & EXAMPLES OF ALASKAN E-COMMERCE

The Denali Commission is sending out an RFP for an extensive Statewide Telecommunications Survey. This will provide an inventory of all telecommunications services currently available in 316 Alaskan villages.

This week-end PBS is airing a documentary *The Digital Divide*, highlighting the growing divide between those with and without Internet access. (Coincidentally, the President will mention this Divide in his State of the Union address tonight.)

GCI launched a telecommunications satellite Monday (coming on-line in March) that will double the company's satellite capacity and increase Internet speed in some remote villages.

Rural Alaska Challenges

- Infrastructure
  - Fuel Storage
  - Power Utilities
  - Sanitation
  - Solid Waste
  - Water & Wastewater
  - Health Care Facilities
  - Transportation
  - Telecommunication
  - Housing
  - Schools
  - Community Facilities
- Economic Development
- Education, Training, Capacity Building

Telecommunications

"Simply put...Everyone should be able to get access at a reasonable cost. Without this principle, new technology could create another class of "haves and have nots" in our state, instead of fulfilling the promise of erasing distance and equalizing opportunity."

Lt. Governor Fran Ulmer
State of Alaska

"With the emerging digital economy becoming a major driving force of our nation's economic well-being, we must ensure that all Americans have the information and tools and skills that are critical to their participation. Access to such tools is an important step to ensure that our economy grows strongly and that in the future no one is left behind."

Secretary William M. Daley
Department of Commerce

Background:

Internet technologies, which are revolutionizing business and industry in urban areas of Alaska are not reaching the rural communities of our state. The positive impact Internet connections will have on education, training, health care and economic development in rural communities can not be overemphasized. The negative impact of leaving the rural communities behind in technological advances will only further compound the challenges of self-sustainability for rural Alaska.

The remoteness and sparse population, that so uniquely identifies rural Alaska, also are the primary limitations for private telecommunications to justify connections in most communities.

With the advent of the Universal Service Fund E-Rate Program, which provides up to 90% subsidies for Internet connections in rural schools and libraries, many rural

communities recently received or will be receiving their first point of presence for Internet connectivity through the local school or library. Private users are prohibited from accessing these federally subsidized services. So, an individual who wishes to open a web-site for commerce or have an e-mail account from home must use ?1800 dial-up access? which costs between $200.00 -$400.00 per month for basic e-mail and minimal Web browsing.

The Denali Commission will evaluate the availability of Internet technologies and other advanced telecommunications in relation to the future of economic development, education, training, and health care in rural Alaska.

(back) (next)

Questions/comments:
webmaster@denali.gov

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Alaska Statewide Telecommunications Survey
Scope of Work
1/12/00

Alaska has made many rapid advances in telecommunications, particularly with the recent completion of large-scale fiber optic projects. Urban Alaskans have cable television, high-speed modems and competition among Internet service providers. Few rural Alaskans have such services at affordable prices. Anecdotal information shows that various telephone services and advanced telecommunications in many rural communities lag far behind urban communities. Telecommunications providers emphasize market conditions do not make it profitable to furnish urban-type services to Alaska's rural villages. Rural Alaskans have complained about the problem. But policy makers lack detailed information about the services available in rural villages, what companies or non-profits are providing those services, and how much rural consumers pay for those services.

The Denali Commission, in cooperation with the State of Alaska, federal agencies and private industry, wishes to obtain a current and comprehensive inventory of the telecommunications services available to rural Alaskans and the price they pay for these services. This inventory will provide the basis for potential collaboration between state government, federal agencies, private sector and Native organizations for the future enhancement of telecommunications services in rural Alaska.

An outline of the goals of this survey are as follows:

1. **Comprehensive Assessment of Services Available** - The objective of this task is to research available sources within the state of Alaska to provide a comprehensive inventory of all telecommunications services currently available in 316 communities and villages in Alaska. (This portion of the survey will exclude Anchorage, Fairbanks, Juneau, Ketchikan and Sitka. These areas will only be assessed for basic comparison purposes in section 3 below)

   Examples of sources of information include school districts, local governments, tribal governments, village corporations, health organizations, telecommunications providers and the Regulatory Commission of Alaska.

   For each rural village or community the assessment will include information related to the availability and price of the following services:
   a. Basic telephone service, both local and long-distance
   b. Pay-phone availability
   c. Emergency telephone services (B911 & E911)
   d. Wireless telephone services
   e. Direct broadcasting satellite services for radio and television.
   f. Cable broadcasting services for radio and television.
   g. Any other satellite services that provide voice and data communications
   h. Internet services

2. **Cost of Services** – A price will be provided for all available services (listed above) in each of the 316 communities and villages in Alaska. The price will be in a unit of value that can be compared to other communities in Alaska and outside Alaska ie; per minute rates, monthly charges, per use charges, etc.

3. **Cost Comparison Information** – The survey's primary goal is to provide information on availability and cost of services in rural Alaska as compared to urban Alaskan communities and other urban areas in America. To accomplish this effort, the survey will provide a summary of the average price of services (listed above) in the following communities:

   Anchorage, AK, Fairbanks, AK, Juneau, AK, Ketchikan, AK, Sitka, AK, Seattle, WA, Los Angeles, CA and Chicago, IL.

The cost comparison information on these communities will not be an in-depth analysis of all the services available or an identification of all of the companies that provide service for these communities. The survey will only list the average price of services for the communities listed above.

4. **Database Development** - A searchable database is to be developed so that the information is easily accessible to review the availability and cost of telecommunications services by community, region, telecommunications provider, service, price of service, etc. A companion hard-copy document is to be provided that includes a summary, by community, of all information obtained.

5. **Timelines** – A request for Professional Services will be released by the Denali Commission no later than February 15, 2000. After a qualified contractor is selected the Commission staff will enter into contract negotiations and obtain a price for the services needed to complete the survey. The contract will not be approved until the full Denali Commission approves funding. The first draft of the survey will be delivered to the Commission by no later than June 1, 2000.

6. **Selection of Contractor** -- The Denali Commission will be requesting proposals from a qualified person or team to assist the Commission in obtaining information regarding telecommunication services in the State of Alaska. The successful contractor will be a person or team with a proven track record in similar contracts. Experience involving the telecommunications industry will be preferred.

January 20, 2000

Contact: David Morris, (907) 265-5396; dmorris@gci.com
Kathy Day, (907) 561-4488, kday@gci.net

DRAFT DRAFT DRAFT

GALAXY XR SATELLITE SCHEDULED FOR JANUARY 24 LIFT-OFF
New Satellite To Double Capacity and Improve Telecommunications in Rural Alaska

ANCHORAGE – GCI (NASDAQ: GNCMA) announced today that Galaxy XR, the satellite that will provide primary telecommunication services for its customers in rural Alaska, is scheduled to be launched from Arianespace Space Center in Kourou, French Guiana on Monday, January 24. The satellite will double the company's satellite capacity and provide long-distance voice, fax, Internet and data traffic.

"This new satellite expands the capability of GCI's existing earth stations and will provide the highest C- and Ku-band performance ever available in Alaska," said Richard Dowling, GCI senior vice president for corporate development.

GCI will own six C- and one Ku-band transponders on Galaxy XR once it achieves in-orbit checkout. The seven transponders represent a $50 million capital investment. Each transponder is capable of carrying a minimum of 1,800 simultaneous voice or data calls.

The Ku-band transponder will be used to carry high-speed Internet traffic to more than half of Alaska schools, as well as voice and data services to remote fishing, mining and logging operations. Voice/fax, Internet, telemedicine and distance education applications will be delivered over both C-band and Ku-band.

Galaxy XR is the replacement satellite for Galaxy X. The launch of Galaxy X failed shortly after takeoff from Cape Ca[illegible], Florida in August 1998.

Galaxy XR is a Hughes-built HS 601 HP model spacecraft and will be carried to geostationary orbit aboard an Ariane 4 launch vehicle using a 42L twin-booster configuration. The satellite has a total of 48 Ku- and C-band transponders and is owned and will be operated by PanAmSat, the world's leading commercial provider of satellite-based communications services. PanAmSat operates a global network of 20 satellites and seven technical ground facilities.

Other tenants aboard Galaxy XR include: Hughes Network Systems, the State of California, California State University and the University of Southern California. In addition to telecommunication services, the satellite will deliver television programming for Disney, TVN Entertainment, Viacom and other programmers across the United States.

The launch of Galaxy XR will be the 94th Ariane 4 launch and the 10th in the 42L configuration. The launch vehicle will power the spacecraft to 22,300 miles above the equator at 123 degrees west longitude. Ariane 4 is built by Arianespace, a venture of the European Space Agency and the world's first commercial space transportation company.

GCI is an Alaska-based and operated company that provides local, wireless, and long distance telephone, cable television, Internet and data communication services to more than 180,000 customers throughout Alaska. More information about the company can be found at www.gci.com.

# # #

THE IMPORTANCE OF GALAXY XR
TO ALASKA CONSUMERS

FACT SHEET

Satellite communication is used for telecommunication services in rural Alaska because most of the state's communities are off the road system, separated by great distances and populated rather sparsely. In telecommunication parlance this is called a "thin route." Satellite communication is the most cost efficient means of delivering a high quality telecommunication signal over a large area that is lightly populated. In contrast, "thick routes" may support other transmission technologies such as fiber optics or microwave. The trade-off to these technologies is that they cost more to construct and maintain, but costs can be spread among a larger user base.

-C-band will be used in village and regional centers for traditional voice, facsimile, Internet and data communication for residential and business users. Antenna diameters usually range between 3.6 meters to 13 meters.

-Ku-band is used in discreet locations where bandwidth requirements are not as intense as C-band. Those using Ku-band for voice and data applications will include fishing lodges; logging or mining located far from established communities; private data/voice line applications for businesses; and, dedicated high-speed Internet access to more than half of Alaska's schools. Antenna diameters are generally 1.8 meters.

The geographic coverage of Galaxy XR includes all of mainland Alaska, offering virtually uniform signals. This new satellite also will offer greatly enhanced coverage of the Aleutian chain and Southeast Alaska.

Galaxy XR represents half of GCI's long-term, high-bandwidth offering to Alaskans. Beginning in 1996, GCI invested heavily in a network of earth stations that the company built throughout rural Alaska. This rural telecommunications network offers digital, broadband capabilities for a variety of users. The earth stations, often referred to as Demand Assigned Multiple Access (DAMA) sites, allow callers in rural villages to share satellite transponder bandwidth on an "as needed" basis – instead of using a continual established and expensive link with the satellite.

Until GCI brought competition and new technology to rural Alaska, phone calls outside of or between villages had to move between the earth station, to a satellite, then to another earth station, then to a satellite and finally to the receiver's earth station. This created a "double hop" between a caller and a village. DAMA uses only one "hop" between a caller in the village, the satellite and the person receiving the call. This represents a significant cost savings and improves the quality of the call.

GCI's Alaska United Fiber Optic Cable carries much of GCI's traffic between Anchorage, Fairbanks, Juneau and the Lower 48. The fiber optic cable is freeing up space on satellites like Galaxy XR, that will allow the company to offer a wider range of, and more advanced services to rural Alaska.

# # #

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Documentary tackles digital divide

Laura Saponara / Independent Television Service

A "Tech Grrls" computer club at the Fulmore Middle School in Austin, Tex., aims to narrow the digital divide in two ways, reaching girls and the elderly.

MSNBC

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Watch a trailer prepared by the producers of "Digital Divide"

Jan. 24 — The term "digital divide" has entered the mainstream, but where are we as a society? A new documentary airing on PBS explores where the divide is widening as well as examples across the country of where educators and others have found ways to narrow it in their communities.

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- ○ Yes, and society must intervene
- ○ No, access is getting cheaper, narrowing the divide
- ○ Can't decide

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THE TWO-PART series airs nationally starting later this month and includes a companion Web site that looks at the divide by schools, gender, race, and the workplace.

Each category includes interviews, related links and an "interact" area. The latter is made up of three interactive quizzes and a timeline.

The Web site includes an outreach program aimed at getting teachers and community leaders to act after seeing the series.

Coincidentally, President Bill Clinton plans to recognize that divide in his annual State of the Union speech on Thursday.

And White House officials say Clinton is planning to call for spending as much as $100 million to provide computers and Internet access in perhaps as many as 9 million households.

Late last year, Clinton set a national goal of connecting all Americans to the Internet, not only in schools and libraries but also in homes, small businesses and community centers. The administration is working with the computer industry, private foundations, nonprofit organizations and civil rights groups to make the Internet more accessible.

A Commerce Department report last July documented a wide digital divide in America. It found that black and Hispanic households are only two-fifths as likely to have Internet access as white families. Households with incomes of $75,000 and above in urban areas are more than 20 times as likely to have Internet access as households at the lowest income levels.

The administration says more than 50 percent of America's schools and over 80 percent of its classrooms are wired for the Internet. The goal is to have all schools connected by the end of this year.

The Digital Divide Web site is at www.pbs.org/digitaldivide.

For broadcast times, the Independent Television Service has a database at www.itvs.org that can be searched by state or station.

The Associated Press contributed to this report.

YAHOO! SHOPPING

GiftCertificates.com

Merchants: 3 matching 'alaska':

- The Alaska Store: Ski trips and gear, native crafts, seafood, gifts, and free stuff.
- Sandra's Gold ~ Valdez, Alaska: Gifts & gold nugget jewelry from **Alaska**.
- Alaska Native Language Center Books in Print [CC]: Books about **Alaska**'s 20 native languages.

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- Books > Travel > North America > United States > States > **Alaska**

Products: Found 3024 products in 231 stores matching 'alaska'. Showing stores 1 - 20:

(Or, Show Me Products in this Price Range: **$1-$10** [353], **$10-$50** [696], **$50-$200** [210], **$200-$950** [59], **$1000-$51000** [15])

sort listing by: relevance | increasing price | decreasing price

Alaska (1996) by *Fraser C. Heston* from Yahoo! Video Shopping - (First of **95 matches**) **$9.54 - 14.95**

Synopsis: Two youngsters set out with a newly-rescued polar bear cub to find their pilot father, whose plane went down while flying medical supplies to remote settlements in **Alaska**'s vast wilderness....
Actors: Thora Birch; Charlton Heston; Vincent Kartheiser; Dirk Benedict; Duncan Fraser...
Facts: Available Format - Laserdisc VHS - 1 hr. 49 min. - PG (MPAA)

Alaska by *Compass America Staff* from Yahoo! Books Shopping - (First of **2037 matches**) **$14.56-19.95**

Publisher: Fodor's Travel Publications, Incorporated
Publication Date: 02/01/1999
Available Format: Paperback

Alaska by *Tropical Panama* from Yahoo! Music Shopping - (First of **85 matches**)

Song List: Quisiera Ser; El Suicidio; En Cada Cancion; Hagamos De Nuevo El Amor; Arena Mojada;...
Facts: Available Formats: CD, Cassette; Original Release Date: 06/03/1997; Label: Disa; Stereo;

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Alaska Alaska is the magazine for people who are stimulated by the wild beauty and exciting thrills of America's 49th state. Each issue canvasses the travel, adventure, lifestyles, and environment of the **Alaska**n region. 2662

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Alaska sak35hf

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Alaska on Foot from REI - (First of 7 matches) **$15.00**

Alaska on Foot A practical guide for safe travel in **Alaska** and northwestern CanadaAlso covers map and compass skillsAuthor: MolvarPaperback, 222 pages, including maps and photosSpecificationDescription NoneNone 632565

Koronis Alaska Anchorage Hockey Jersey from Fogdog Sports - (First of 22 matches) **$113.95**

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Supplement Alaska TOP SERVICE from planestuff - (First of 4 matches) **$4.90**

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Orthodox **Alaska**: A Theology of Mission December 1993, Paperback, 252 pages Michael J. Oleksa [Usually ships in 5-7 business days.] 0881410926

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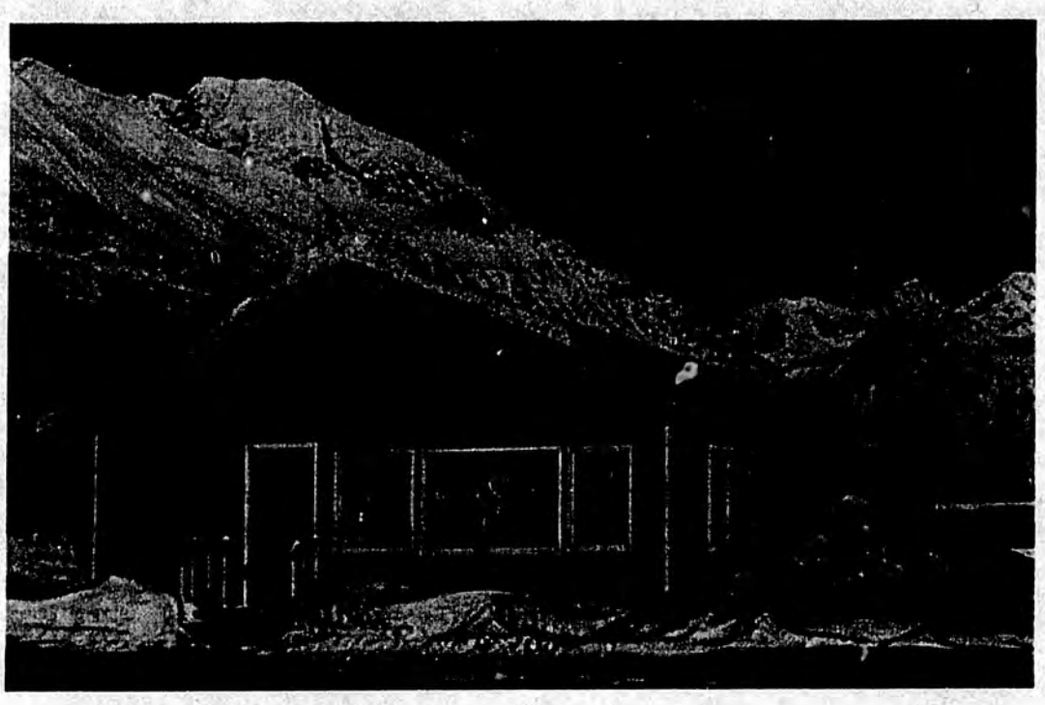

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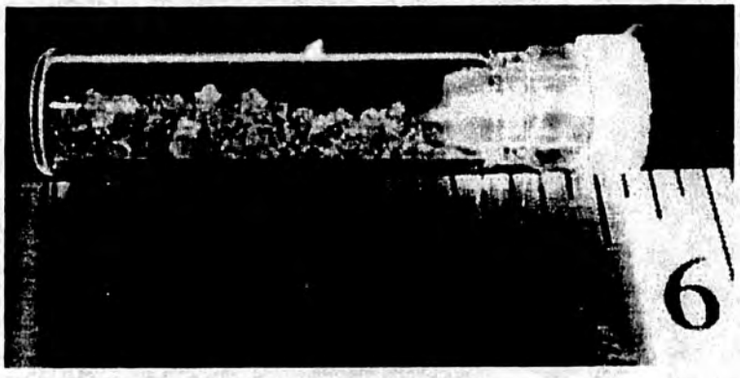

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