

Brechan Enterprises: Moving Cost Estimates, Economic Contribution to Kodiak

Prepared for

Brechan Enterprises, Inc.

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Prepared by

northernconomics inc.

880 H STREET, SUITE 210, ANCHORAGE, ALASKA 99501

T: 907.274.5600 **F:** 907.274.5601

E: norecon@norecon.com • www.northemeconomics.com

PROFESSIONAL CONSULTING SERVICES IN APPLIED ECONOMIC ANALYSIS

Anchorage

880 H St., Suite 210, Anchorage, AK 99501
TEL: 907.274.5600 FAX: 907.274.5601

President & Principal Economist: Patrick Burden, M.S. **Vice President & Senior Economist:** Marcus L. Hartley, M.S. **Senior Consultant, Planning Services:** Caren Mathis, MCP, AICP **Economists:** Leah Cuyno, Ph.D., Ken Lemke, Ph.D., Jonathan King, M.S. **Policy Analyst:** Nancy Mundy, Ph.D. **Socioeconomic Analyst:** Don Schug, Ph.D. **Analysts:** Michael Fisher, MBA, Cal Kerr MBA **Office Manager:** Stephanie Cabaniss **Document Production:** Terri McCoy

Bellingham

1801 Roeder Ave., Ste. 124, Bellingham, WA 98225
TEL: 360.715.1808 FAX: 360.715.3588

Associate Economist: Hart Hodges, Ph.D.
Economist: Tamer Kirac, M.A.
Analyst: Kelly Baxter-Porteen, M.S.



northerneconomics inc.
E-mail: norecon@norecon.com Web: www.northemeconomics.com

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Executive Summary

Brechan Enterprises, Inc., based in Kodiak, asked Northern Economics, Inc. (Anchorage) to assist in evaluating the financial impacts of a potential operational move, as well as to assess the economic contribution of the company's operations to the regional economy (Kodiak Island Borough).

Background. Since 1981, Brechan has operated an asphalt and gravel mining operation at Bells Flat, under permit from the Kodiak Island Borough. The four tracts, totaling approximately 75 acres, are zoned for industrial use, but adjacent lands have been developed for residential development. This has introduced use-conflicts. The Borough would like to shift Brechan's gravel and asphalt operations to Salonie Creek, approximately two to three miles further away.

Gravel Operations. Gravel has been mined from two locations, Bells Flat and Near Island, with total tonnage averaging 100,000 tons per year.

Future Use. From 1990 to 2000, population in the Woman's Bay Census District Place has grown an average of 1.1 percent a year, almost three times the Borough population growth rate of 0.4 percent. Another measure of current and future use is the average vehicle-miles traveled per road segment. There has been a steady increase in road use for both the Bells Flat and Rezanof Drive figures. This increased use has resulted from the increased focus by the Borough on residential development in the Bells Flat area.

Moving Cost. The estimated moving costs are \$4.472 million, for development, demobilization, and setup. These are 2003 dollars and are based on engineering estimates. There are many unknowns related to potential gravel deposits at Salonie Creek, including quality, depth, and total volume. Assuming a ten-year operational life, the increased cost per ton will be \$5.07, consisting of \$4.47 for development costs and \$0.50 per ton for increased transportation cost.

Economic Impacts. Northern Economics used an Input-Output analysis program (IMPLAN) to estimate the direct and indirect impacts of Brechan's operations at Kodiak. Results show Brechan supports 300 direct and indirect jobs in the Kodiak Island Borough economy with approximately \$10.9 million of labor income associated with these jobs. These jobs are in the construction, trade, services, and other economics sectors. In addition, Brechan's operations generate \$12 million in total value added to the Borough economy. Total contribution to the Kodiak Island Borough economy is projected at \$28 million.

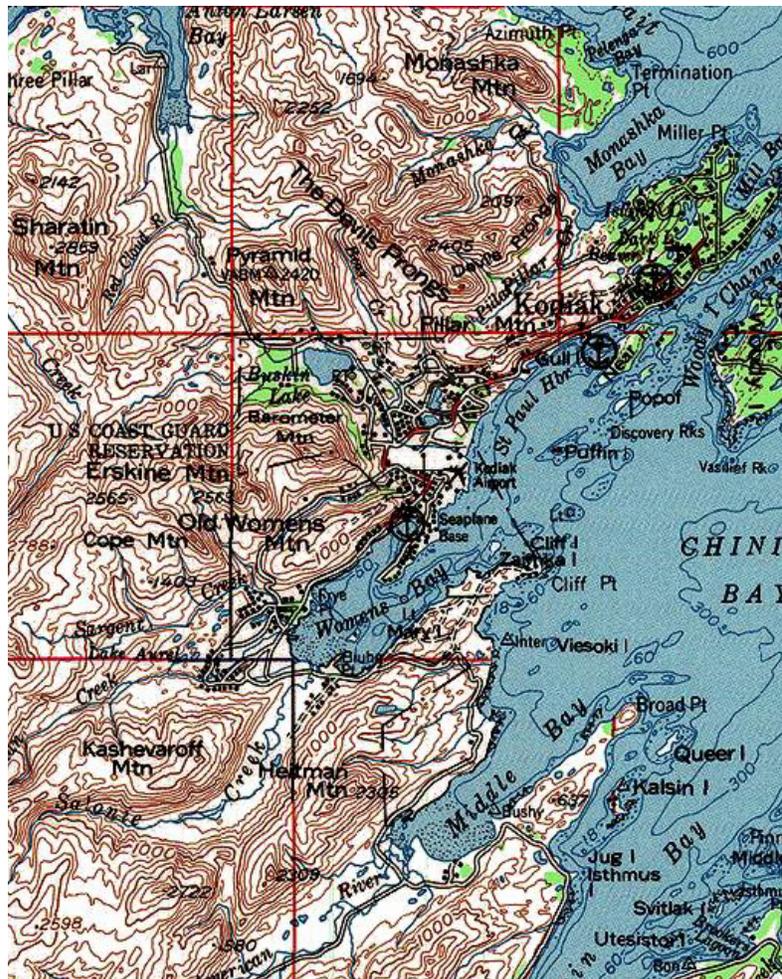
1 Background

Brechan Enterprises Inc., based in Kodiak, Alaska, asked Northern Economics, Inc. (Anchorage) to assist with a financial evaluation of moving its gravel operations, along with an assessment of Brechan's economic contributions to the Kodiak Island Borough economy. This report summarizes results of these analyses.

As a General Contractor, Brechan first developed a gravel mining operation east of South Sargent Creek Road in 1970. Figure 1 is a general location map, showing the areas where Brechan operates a gravel mining and asphalt plant.

The Bell's Flat area is west of Woman's Bay, which is south of Kodiak itself. Salomie Creek extends to the southwest of Woman's Bay.

Figure 1. Bells Flat Area, Kodiak Island, General Location Map



Gravel operations were moved southwest of this quarry in 1982, to the current four tracts that were designated as suitable for gravel extraction by the Kodiak Island Borough. Figure 3 is a more detailed map showing Bells Flat, Russian Creek area.

These four tracts, totaling about 75 acres, are being mined by Brechan under an agreement with the Borough that expires in 2007. Brechan estimates there is sufficient gravel to extend operations through the year 2020.

Asphalt operations (only) are continuing at the original gravel pit.

Residential development at Bells Flats has accelerated since 1982. The current gravel quarry is surrounded on three sides by platted residential lots that developed after Brechan's operations began. This growth, coupled with construction activity and truck traffic, has resulted in an effort to move Brechan's operations to another location, along Salonie Creek.

Figure 2 is a photograph showing Brechan's gravel area, with adjacent homes.

Figure 2. Bells Flat, Industrial Gravel Site



Total haul distances are expected to increase by three to five miles, if operations are moved, though no specific rock quarry has been identified at Salonie Creek.

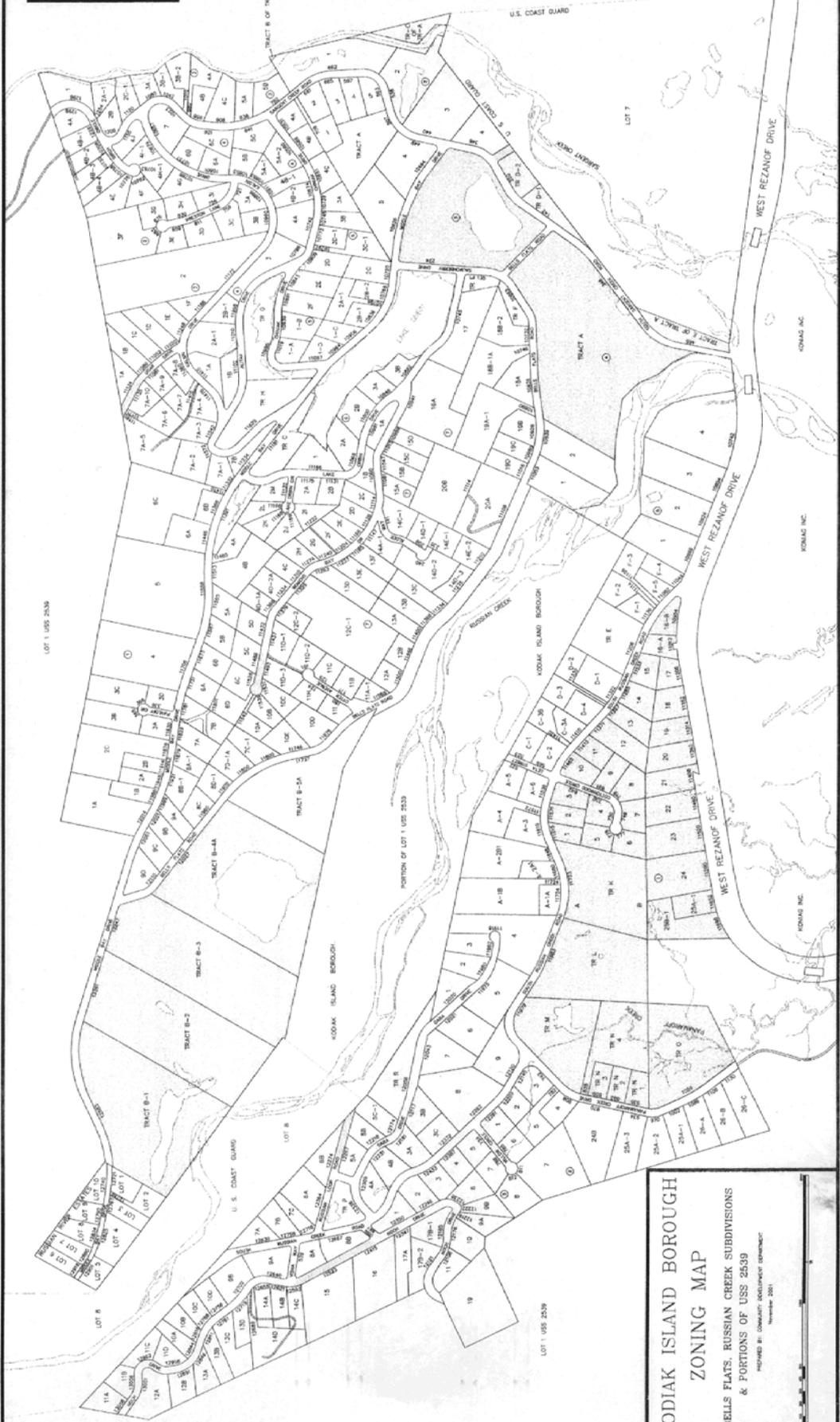
Parent rock sources in Salonie Creek are considered inferior according to exploratory work done by engineer Jim Graham, now with Brechan. There are more fines and silts (mud) at Salonie Creek, increasing the amount of washing and handling that could be needed.



LOT 1 USS 2539

ZONING LEGEND

(M) NATURAL USE
(C) CONSERVATION
(PL) PUBLIC USE LAND
(RH) RESIDENTIAL 1
(B) BUSINESS
(I) INDUSTRIAL



**KODIAK ISLAND BOROUGH
ZONING MAP**

BELLS FLATS, RUSSIAN CREEK SUBDIVISIONS
& PORTIONS OF USS 2539

PREPARED BY: COMANET/BOULDERVIEW CONSULTANTS
November 2001



2 Gravel Operations

Historical gravel operations were reviewed to determine likely usage rates. This section provides information on past gravel use, along with potential growth in demand for gravel and asphalt. Growth projections are based on population estimates and vehicle-miles traveled on Rezanof Drive, over time.

2.1 Historical Use

Table 1 summarizes cubic yards and tonnage of gravel use, at two sites, for the years 1981 to 2003.

Table 1. Brechan Enterprises, Gravel Use, in Tons, Two Sites, 1981 to 2003

From Date	To Date	Cubic Yard Volume	Tonnage@ 2 tons /cy	Near Island Quarry Tonnage	Total Tonnage
	06/30/1981	5,260.00	10,520.00		10,520.00
07/01/1981	06/30/1982	57,810.00	115,620.00		115,620.00
07/01/1982	06/30/1983	26,836.00	53,672.00		53,672.00
07/01/1983	07/15/1984	89,513.00	179,026.00		179,026.00
07/16/1984	06/30/1985	55,289.84	110,579.68		110,579.68
07/01/1985	06/30/1986	38,949.00	77,898.00		77,898.00
07/01/1986	08/26/1987	46,517.60	93,035.20		93,035.20
08/27/1987	06/30/1988	19,148.50	38,297.00		38,297.00
07/01/1988	06/30/1989	45,962.00	91,924.00		91,924.00
07/01/1989	06/30/1990	25,423.10	50,846.20		50,846.20
07/01/1990	06/30/1991	88,983.00	177,966.00		177,966.00
07/01/1991	06/30/1992	39,950.90	79,901.80		79,901.80
07/01/1992	06/30/1993	20,989.23*	41,978.47		41,978.47
07/01/1993	06/30/1994	20,989.23*	41,978.47		41,978.47
07/01/1994	06/30/1995	20,989.23*	41,978.47		41,978.47
07/01/1995	06/30/1996	13,773.00*	27,546.00	41,320.25	68,866.25
07/01/1996	06/30/1997	13,773.00*	27,546.00	41,320.25	68,866.25
07/01/1997	06/30/1998	27,546.00*	55,092.00	77,757.43	132,849.43
07/01/1998	06/30/1999	17,521.00*	35,042.00	31,145.00	66,187.00
07/01/1999	06/30/2000	17,521.00*	35,042.00	31,145.00	66,187.00
07/01/2000	06/30/2001	24,881.79	49,763.58	1,323.41	51,086.99
07/01/2001	06/30/2002	45,393.50	90,787.00	44,054.02	134,841.02
07/01/2002	06/30/2003	36,465.50	72,931.00	42,685.25	115,616.25
			1,598,970.86	310,750.60	1,909,721.46

Source: Brechan Enterprises, Inc.

Note: Asterisks indicate grouped data; allocated to each year in group.

Table 2 shows tonnage by source and percent, again, for the years 1981 to 2003.

Table 2. Brechan Enterprises. Gravel Use, Two Sites, 1981 to 2003, In Tons and Percentage

Year	Bells Flat Tonnage	Near Island Tonnage	Total Tonnage	Bells Flat Tonnage (%)	Near Island Tonnage (%)
1981	10,520		10,520	100.0	0.0
1982	115,620		115,620	100.0	0.0
1983	53,672		53,672	100.0	0.0
1984	179,026		179,026	100.0	0.0
1985	110,580		110,580	100.0	0.0
1986	77,898		77,898	100.0	0.0
1987	93,035		93,035	100.0	0.0
1988	38,297		38,297	100.0	0.0
1989	91,924		91,924	100.0	0.0
1990	50,846		50,846	100.0	0.0
1991	177,966		177,966	100.0	0.0
1992	79,902		79,902	100.0	0.0
1993	41,978*		41,978	100.0	0.0
1994	41,978*		41,978	100.0	0.0
1995	41,978*		41,978	100.0	0.0
1996	27,546*	41,320	68,866	40.0	60.0
1997	27,546/	41,320	68,866	40.0	60.0
1998	55,092	77,757	132,849	41.5	58.5
1999	35,042*	31,145	66,187	52.9	47.1
2000	35,042*	31,145	66,187	52.9	47.1
2001	49,764	1,323	51,087	97.4	2.6
2002	90,787	44,054	134,841	67.3	32.7
2003	72,931	42,685	115,616	63.1	36.9
	1,598,971	310,751	1,909,721	83.7	16.3

Source: Brechan Enterprises, Inc.

Note: * indicate grouped data that was allocated to each year, equally, within the grouping.

Bells Flat has been the predominant source of gravel, at approximately 84 percent of all gravel used.

2.2 Future Use

Future gravel use will be driven by population growth and increased use of existing roads. The following two sections document increased population growth in the Bells Flat area, along with increased travel on Rezanof Drive.

2.2.1 Population

Table 3 illustrates population growth for the City of Kodiak, the Kodiak Island Borough, the Woman's Bay Census District Place (CDP) and housing growth in the same CDP.

Table 3. Population and Annual Growth Percent, 1990 and 2000 Census, City of Kodiak, Kodiak Island Borough, Woman's Bay Census District Place (CDP)

Year	City of Kodiak	Kodiak Island Borough	Population WB CDP	WB CDP H Units
1990	6,365	13,309	620	255
2000	6,334	13,913	690	269
Difference	-31	604	70	14
Growth %	-0.05	0.44	1.08	0.54

Source: Census Bureau, 1990 and 2000.

Over the decade noted, the City of Kodiak had a decrease in population, while the Kodiak Island Borough gained 604 people. The Woman's Bay CDP had 1.08 percent growth per year, as compared to the Borough's 0.44 percent. Housing units in Woman's Bay grew at 0.54 percent per year.

The Woman's Bay CDP does not include the U.S. Coast Guard station, which is adjacent to it.

2.2.2 Vehicle-miles Traveled

Table 4 shows vehicle-miles traveled on two road segments: the Bells Flat area and the Rezanof Drive road. These figures are consistent with population growth, along with impacts from the U.S. Coast Guard Station on Rezanof Drive.

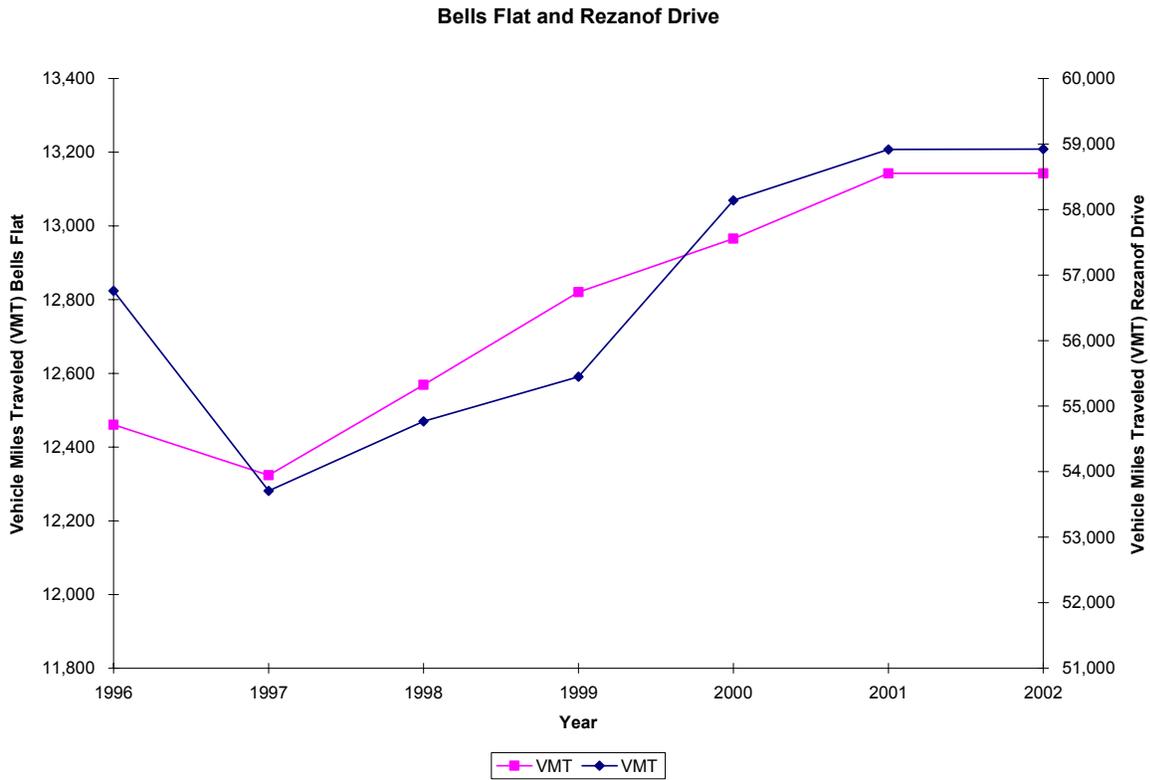
Table 4. Bells Flat and Rezanof Drive Vehicle-miles Traveled, with Annual Growth Rates in Percent, from 1996 to 2002.

Year	Bells Flat VMT	Annual Growth %	Rezanof VMT	Growth %
1996	12,461		56,760	
1997	12,324	-1.1	53,706	-5.4
1998	12,569	2.0	54,769	2.0
1999	12,820	2.0	55,449	1.2
2000	12,965	1.1	58,141	4.9
2001	13,142	1.4	58,917	1.3
2002	13,142	0.0	58,924	0.0

Source: Traffic Counts, Alaska Department of Transportation and Public Facilities.

Figure 4 shows growth in miles traveled on both road segments for the years 1996 to 2002. There has been a steady increase in use since 1997.

Figure 4. Vehicle-miles Traveled, Bells Flat and Rezanof Drive, 1996 to 2002



2.3 Net Impacts on Gravel Operations

The net impact on gravel operations in the Bells Flat area has been increased population pressure and, along with more people, increased traffic on the current road system. The Kodiak Island Borough’s zoning at Bells Flat suggests that increased residential development was a planned and deliberate effort to place homes near the industrial sites.

3 Cost Analysis

Brechan Enterprises prepared a moving cost estimate; it is presented and discussed in this section.

3.1 Moving Cost Estimate

Table 5 is a detailed cost projection, in 2003 dollars, that shows a total moving cost of \$4.47 million. A key factor is the unknown, and perhaps inferior, gravel source at Salonie Creek. Figures in this table could change as rock sources are located at different distances from the main road systems, and at different depths.

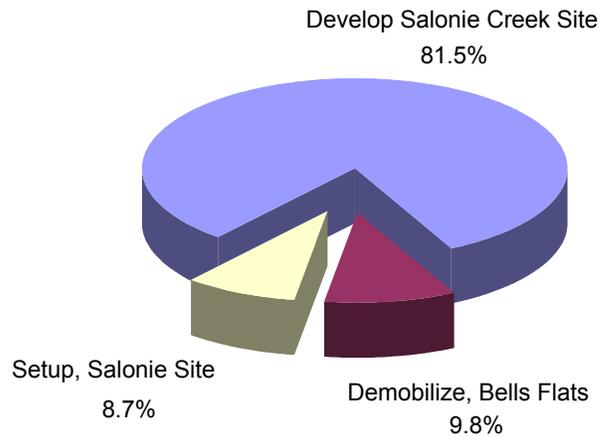
Table 5. Moving Cost Estimate, Bells Flat to Salonie Creek, Costs and Percentages.

Cost Center	Cost	% of Total
Develop Salonie Creek Site		
Clear 45 acres	\$ 225,000	5.0
Remove overburden. 45 acres	\$ 2,800,000	62.6
Improve 2 miles, access road	\$ 100,000	2.2
Pave 2 miles, access road	\$ 520,000	11.6
Subtotal	\$ 3,645,000	81.5
Demobilize, Bells Flats		
B Tracts		
Crusher	\$ 27,000	0.6
Washplant	\$ 13,500	0.3
Shop	\$ 16,500	0.4
Lab, scales, tanks	\$ 22,500	0.5
Reclaim tract	\$ 270,000	6.0
Subtotal	\$ 349,500	7.8
Pit 1		
Aesco Asphalt Plant	\$ 27,500	0.6
B-B Asphalt Plant	\$ 27,500	0.6
Oil storage plants	\$ 35,000	0.8
Subtotal	\$ 90,000	2.0
Setup, Salonie Site		
Crusher	\$ 45,000	1.0
Washplant	\$ 22,500	0.5
Shop	\$ 162,500	3.6
Lab, scales, tanks	\$ 22,500	0.5
Aesco Asphalt Plant	\$ 45,000	1.0
B-B Asphalt Plant	\$ 45,000	1.0
Oil storage plants	\$ 45,000	1.0
Subtotal	\$ 387,500	8.7
Direct costs, Move and setup	\$ 4,472,000	100.0

Source: Brechan Enterprises Inc. 2003.

A major cost factor for the move is developing the Salonie Creek area, as shown in Figure 5. Demobilization at Bells Flat, and setup at Salonie Creek, is less than 20 percent of the projected costs.

Figure 5. Moving Cost Estimates by Category, Bells Flat to Salonie Creek.



3.2 Cost Impacts

If Brechan is required to move its gravel and asphalt operations to Salonie Creek, there are two principal costs. First, the development cost of \$4.74 million is a significant impact on its own; the second impact is an increase in delivered costs of material.

Development Costs

Salonie Creek gravel has not been clearly defined as to location, depth or amount of overburden. For purposes of this analysis, a two-mile distance (four miles round trip) is projected, along with average overburden depths. A ten-year life is also projected for the deposit.

Table 6 illustrates increased costs per ton, at five likely production rates, over the project life of the deposit, for the development costs only.

Table 6. Development Cost per Ton, Five Rates

Tons, Annual	Cost/Ton
80,000	\$ 5.59
90,000	\$ 4.97
100,000	\$ 4.47
110,000	\$ 4.07
120,000	\$ 3.73

Source: Northern Economics Inc.

Average gravel production rates since 1981 are 83,000 tons per year, with a minimum of 38,000 tons (excluding 1981) and a maximum of 179,000 tons. A mid-range estimate of 100,000 tons per year is assumed with its increased cost of \$4.47 per ton.

Transportation Costs

Brechan engineers estimated increased travel costs for the Salonie Creek location. The projected four mile increased distance, at average load sizes (20 tons), speed (35 mph) and 100,000 tons annual usage are \$0.50 per ton.

Cost Summary, Three End Uses

Three typical end uses were selected to highlight increased cost impacts for the proposed move from Bells Flat to Salonie Creek:

- A standard driveway, 25' wide and 40' long, no excavation, 4 inches of D-1 crushed rock and 2" of asphalt pavement
- One mile of gravel road, with a 30' width, 3:1 side slopes, no excavation, 3' of gravel over existing ground and 4" of D-1 crushed rock
- One mile of paved road, pricing for pavement only, 2" of paving with a 28' width

Table 7 summarizes the cost impacts from a move to Salonie Creek only.

Table 7. Salonie Creek Cost Impacts, Three Typical End Uses.

	Driveway	Gravel Road	Paved Road
Material			
Pit run gravel, tons		43,500	
D-1, tons	25	3,700	
Paving, tons	15		2,000
Total material, tons	40	47,200	2,000
Increased costs			
Salonie Creek Development, \$/ton	\$ 4.47	\$ 4.47	\$ 4.47
Subtotal, Development	\$ 179	\$ 210,984	\$ 8,940
Transportation Costs			
Salonie Creek Dist, \$/ton	\$ 0.50	\$ 0.50	\$ 0.50
Subtotal, Transportation	\$ 20	\$ 23,600	\$ 1,000
Total Costs, Salonie Creek	\$ 199	\$ 234,584	\$ 9,940

Source: Northern Economics Inc.

The relative cost increase for a typical driveway is relatively low at approximately \$200, while the cost of a mile of gravel road would increase by \$234,600. Adding pavement to the gravel road would result in an additional cost increase of approximately \$10,000.

4 Economic Impacts

Brechan Enterprises, Inc., a general contractor operating in the Kodiak Island Borough, provides diversity in an otherwise seafood processing dominated economy. The company is involved in the region's heavy construction and building and materials trade.

In 2003, Brechan Enterprises spent an estimated \$27 million in direct costs, administrative expenses, and operating overhead. Brechan provided this estimate.

The local spending associated with these operating expenditures (estimated at \$22.57 million or 80 percent of the total \$27 million) generated, in turn, over \$28 million in direct, indirect, and induced effects in the Kodiak Island Borough economy; the company directly and indirectly supports 300 jobs in the construction, as well as trade, services, and other economic sectors in the region.

Brechan's economic contributions were estimated using input-output analysis. IMPLAN software and data were used to conduct the input-output analysis specific for the Kodiak Island Borough regional economy.

4.1 Input-Output Analysis

Input-output analysis is a technique used to quantify the multiplier effects of economic activities on a regional economy, such as the Kodiak Island Borough. When a company operates a business in a community, it makes payments to local vendors and its employees; these entities become the direct beneficiaries.

These direct beneficiaries, in turn, buy supplies from other local firms and hire workers. The shops selling the supplies and providing the services make additional purchases, as do their workers or employees (personal consumption expenditures). These additional rounds of spending by the vendors and their employees are part of the subsequent indirect and induced impacts, which are often called multiplier effects.

A share of purchases may be transferred to out-of-region suppliers; these are considered leakages in the model. Dollars spent flow through the regional economy until they are dissipated by these out-of-region purchases. Examples include purchased fuel or petrochemicals from the Kenai Peninsula, parts and equipment from Anchorage, and specific items shipped from Seattle. The impacts of purchases from suppliers outside the region are excluded from the model's estimates.

IMPLAN software and data (2001, latest available) were used to generate regional multipliers and to calculate the economic contribution of Brechan Enterprises to the Kodiak Island Borough's regional economy.

The model contains information about the region's inter-industry transactions and economic data for each of the sectors in the regional economy. This information makes it possible to quantify impacts and effects with respect to the following economic indicators:

- Value of goods and services produced (or total industry sales/output)
- Employment (expressed in number of part-time and full-time jobs)
- Labor income (wages and salaries, and proprietor's income)
- Total value added (equivalent to gross regional product; includes labor compensation, rents, profits, and indirect business taxes)

Source data for the IMPLAN model as part of its input-output analysis are discussed in the following section.

4.2 Data Sources

The regional economic data used by the IMPLAN model are provided by government agencies such as the U.S. Census Bureau's County Business Patterns (CBP). The following explanatory information is published by the U.S. Census Bureau (www.census.gov).

CBP data are extracted from the Business Register, the Census Bureau's file of all known single and multiestablishment companies.

The Annual Company Organization Survey and quinquennial (every five years) Economic Censuses provide individual establishment data for multi-location firms.

Data for single-location firms are obtained from various programs conducted by the Census Bureau, such as the Economic Censuses, the Annual Survey of Manufacturers, and Current Business Surveys, as well as from administrative records of the Internal Revenue Service (IRS), the Social Security Administration (SSA), and the Bureau of Labor Statistics (BLS).

CBP is an annual series that provides sub-national economic data by industry. The series is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for statistical series, surveys, and databases between economic censuses.

Businesses use the data for analyzing market potential, measuring the effectiveness of sales and advertising programs, setting sales quotas, and developing budgets. Government agencies use the data for administration and planning.

County Business Patterns covers most of the country's economic activity. The series excludes data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. Beginning in 1998, data are tabulated by industry as defined in the *North American Industry Classification System: United States, 1997 (NAICS)*. Data for 1997 and earlier years are based on the Standard Industrial Classification (SIC) System. For more information on the relationship between the two systems, see the *Bridge Between NAICS and SIC*.

For this analysis, Northern Economics used data within IMPLAN for the Kodiak Island Borough, including all data provided as part of ZIP code 99615.

4.3 Results

The total economic effects (direct effects and multiplier effects) were estimated using information on total expenses and costs provided by Brechan Enterprises. In 2003, the total amount disbursed for direct costs, administrative costs, and operating overhead amounted to \$27 million, based on company estimates.

The projected regional purchase coefficient for the construction sector in the Kodiak Island Borough model is 80 percent. Therefore, in 2003, an estimated \$18.31 million were spent locally for Brechan Enterprises operations (excluding labor compensation); and about twenty percent of total costs and expenses were considered out-of-region purchases (e.g., Anchorage, Seattle).

Total direct labor expenses amounted to about \$5.7 million. Using a personal disposable income factor of 75 percent, the total estimated amount that households spent in the region amounted to \$4.26 million.

Brechan Enterprises therefore spent about \$22.57 million locally in the Kodiak Island Borough for the year 2003. These expenditures generated additional economic activity in the region through multiplier effects. The total economic impacts of these local expenditures are provided in Table 8.

Table 8. Economic Effects of Brechan Enterprises Operations, 2003

Economic Indicator	Total Economic Effects
Total Industry Sales	\$28,057,000
Labor Income	\$10,856,000
Total Value Added	\$11,979,000
Employment	300

Source: Northern Economics' estimates using IMPLAN software and data

Notes:

- 1) Total industry sales is also referred to as total industry output or value of total economic activity;
- 2) Labor income refers to wages and salaries, and proprietor's income;
- 3) Total value added is equivalent to gross regional product; it includes employee compensation, proprietary income, indirect business taxes, and other property type income such as rents, royalties, dividends, and profits;
- 4) Employment is measured in terms of number of part-time and full-time jobs

Output Multiplier

The model estimated an output multiplier of 1.3 for the construction sector in the Kodiak Island Borough regional economy. Hence, for every dollar spent locally, an additional 30 cents are generated as indirect effects (or multiplier effects).

This multiplier is consistent with other analyses in Alaska, including Southeast Alaska and Southwest Alaska. The statewide multiplier is somewhat higher, as the economy is larger.

The labor multiplier is 1.4, which means that for every three jobs at Brechan, there is approximately one additional position in the local Kodiak Island Borough economy.