

# **Socioeconomic Impacts of Potential Wishbone Hill Coal Mining Activity**

prepared for:

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# **Socioeconomic Impacts of Potential Wishbone Hill Coal Mining Activity**

## **Summary of Findings**

The purpose of this study is to assess some of the significant socioeconomic effects of potential coal mining activity at Wishbone Hill. The analysis scenario assumes a 16-year period of start-up and mine production using two known deposits that are currently permitted by the State of Alaska for mineral exploration. “Mine Area 1” would be mined during years 2-7 and “Mine Area 2” would be mined during years 8-16. Mining would only take place at one of these areas during any given time. We considered four kinds of effects: Jobs and income, fiscal impacts, property values, and traffic.

### **Jobs and income**

During the 15-year operation phase, 93 new direct jobs would result in a total of 145 direct, indirect, and induced jobs. As a result of these new jobs, a total of \$7.8 million of annual personal income would be generated. The direct mining jobs would have high wages – ranging from \$70,000 to \$90,000 per year. Jobs and income would be about half these levels during the initial one-year construction phase.

### **Fiscal Impacts**

Mine development would generate 93 additional households, 270 additional residents, and 78 additional students. Total additional annual property tax revenues – from new homes and from taxes on mine property -- to the Borough for education and areawide functions would be \$440,227, while total additional annual Borough expenditures for education and areawide functions would be \$318,326. The State of Alaska would receive annual royalties of \$1.25 million, which would exceed projected State spending on education. Additional Port MacKenzie fees would equal \$818,440 per year, mostly for wharfage.

### **Property Values**

There are 98 parcels with structures within 1 mile of Mine Area 1. The total property value (land + buildings) of these parcels is \$11.6 million. Roughly half the parcels (55 of 98) have buildings with assessed value less than \$50,000. There are 8 parcels with structures within 1 mile of Mine Area 2. The total property value of these parcels is \$0.5 million. Only one of these 8 parcels has buildings assessed at more than \$50,000. In theory, property market values could go up or down depending on a host of factors. Negative factors might include the extent and nature of possible noise, dust, traffic, or visual impacts. Positive factors would include the demand for housing by mine workers and additional economic activity in the area. Two realtors were contacted to inquire regarding their opinion about whether property values would decrease, remain the same, or increase if the mine scenario occurs. One indicated that values would remain the same or increase; the other thought that values would increase.

### **Traffic**

The mine would generate additional average annual daily traffic (AADT) of 186 one-way trips on the Glenn Highway and 64 AADT on the route of the coal trucks to Port MacKenzie. Trucks would operate at night with covered loads. This mine traffic would increase traffic above 2008 levels by between 2.1% and 7.3% on the Glenn Highway and by between 0.4% and 3.8% on Knik Goose Bay Rd. These percentages would decrease over time as the amount of non-mine traffic grows. According to one set of projections, mine-related traffic on the Glenn Highway near Moose Creek would drop from 7.3% of 2008 levels to 3.3% of projected year 2019 levels.

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## 1. Introduction

The purpose of this study is to assess some of the significant socioeconomic effects of potential coal mining activity at Wishbone Hill. The analysis assumes a 16-year period of start-up and mine production using two known deposits that are currently permitted by the State of Alaska for mineral exploration. We consider four general effects:

- Jobs and income
- Fiscal impacts
- Property values
- Traffic

This study is not an environmental impact statement. It is not an environmental assessment. It does not attempt to assess the health and environmental effects of coal mining, coal transportation, or coal burning. Rather, it is intended to be a compilation of known facts and a projection of some impacts that are reasonably foreseeable, given certain assumptions.

## 2. Coal Mining Scenario

The coal mining scenario includes the following assumptions. The assumptions reflect general information provided by Usibelli Coal Mine, Inc., through Borough staff.

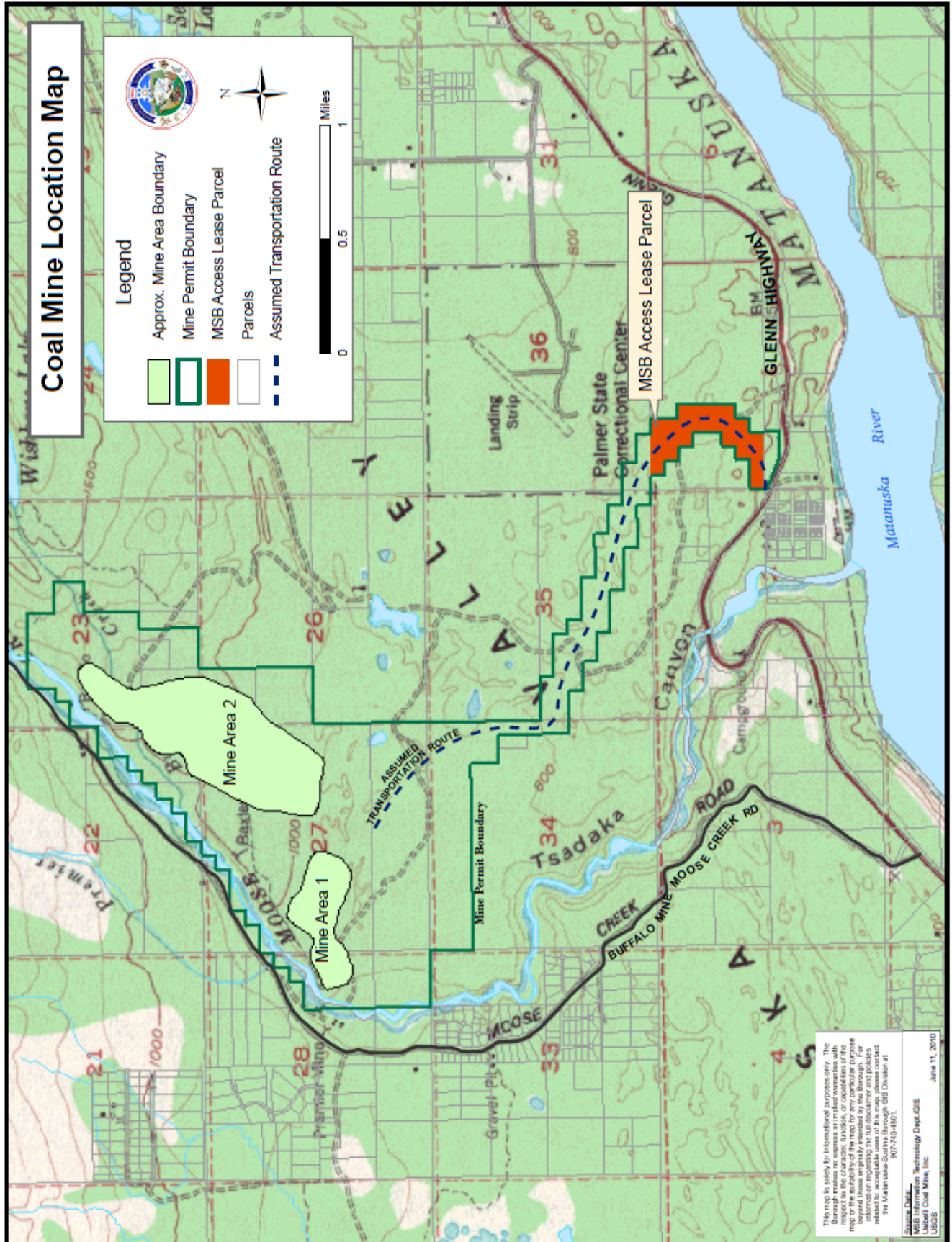
### Construction Phase (year 1)

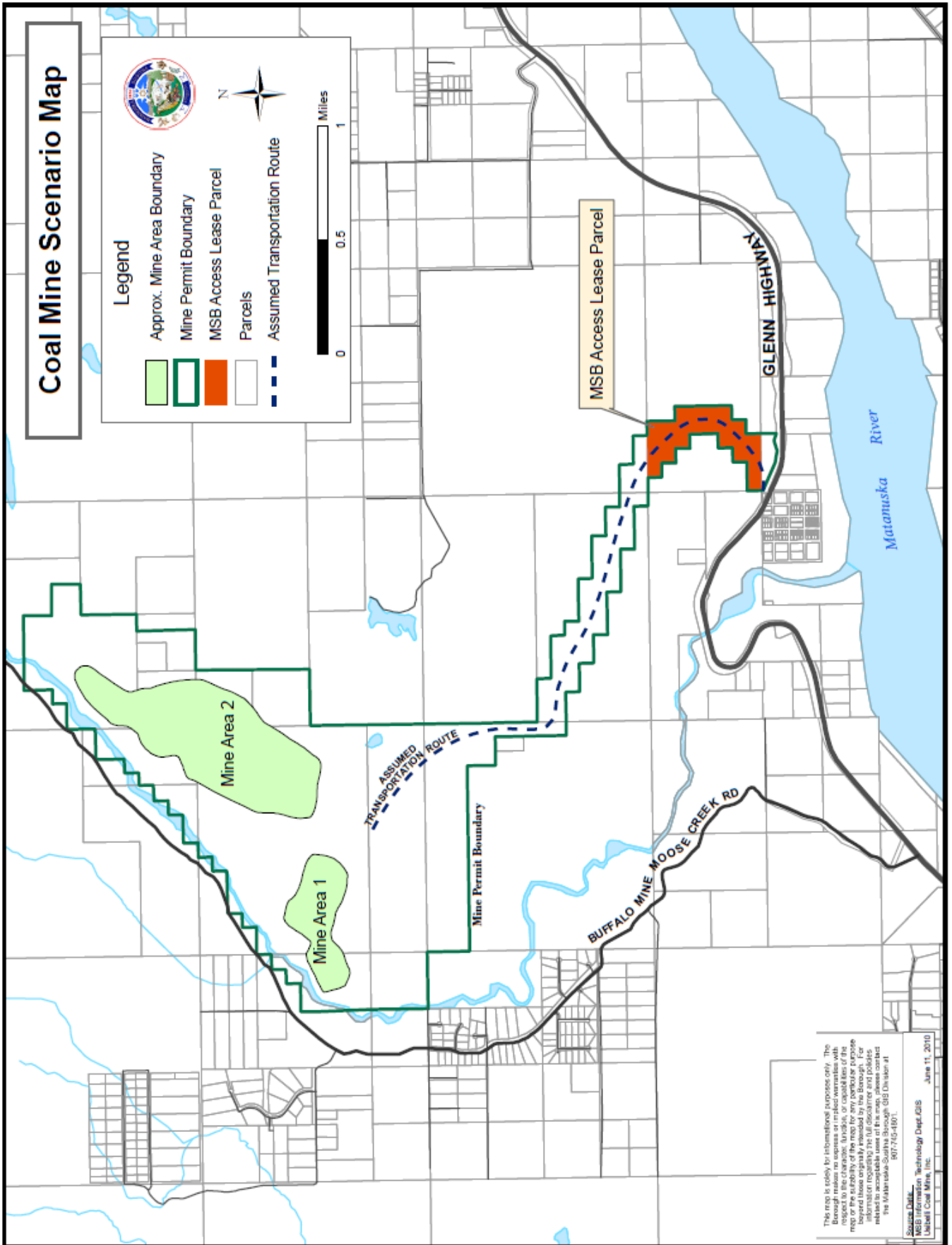
- Mine access would be developed from Glenn Highway milepost 55.6. Access road would pass through Usibelli-owned lands, lands leased from the Borough, and lands leased from the Mental Health Trust and the State of Alaska.
- Neither the Jonesville Road nor the Buffalo Mine Road would be used for mine access.
- 45 new direct jobs at mine site plus 10 jobs building access road, for a total of 55 direct jobs, at average wages of \$84,773 per year.
- \$20 million of taxable improvements constructed or installed at mine site. These improvements would include a washer plant, shop, office, and warehouse.

### Operations Phase (years 2-16)

- Mining would be limited to two specific areas --“Mine Area 1” would be mined during years 2-7 and “Mine Area 2” would be mined during years 8-16. Mining would only take place at one of these areas during any given time.
- 500,000 tons per year mined, trucked to Port MacKenzie, and exported by ship
- 93 new direct jobs at average wages of \$71,613 per year
- 12 trucks are expected to each make three round trips per day, up to six days per week, during nighttime hours (between 8 pm and 6 am). It is estimated the trucks would need to operate during 300 -325 days per year. The trucks would be covered.

The following maps depict the coal mining scenario.





### 3. Projected Jobs and Income

#### Projected jobs and income, with multiplier effects

We used the IMPLAN regional economic modeling system with data for the Borough economy to estimate the total jobs and income from the coal mining scenario, including economic multiplier effects. During the one-year construction phase, the 55 new direct jobs would result in a total of 86 direct, indirect, and induced jobs. As a result of these new jobs, a total of \$5.3 million of personal income would be generated. During the 15-year operation phase, 93 new direct jobs would result in a total of 145 direct, indirect, and induced jobs. As a result of these new jobs, a total of \$7.8 million of annual personal income would be generated. Most of the income would accrue to the people holding the direct jobs. Additional jobs, especially those “induced” by the re-spending of direct job wages, would have very low average wages. Most of these induced jobs are in the trade sectors. The following table provides additional detail about these results.

**Table 1: Jobs and income from coal mining**

	Direct	Indirect	Induced	Total
Construction Phase (year 1)				
<b>Average annual employment</b>	<b>55</b>	<b>9</b>	<b>22</b>	<b>86</b>
Average wages and salaries per job	84,773	31,383	18,272	62,174
Average Employee compensation (includes benefits)	110,205	40,798	23,753	80,826
<b>Total personal income</b>	<b>4,662,500</b>	<b>282,445</b>	<b>401,980</b>	<b>5,346,925</b>
Operations phase (years 2-16)				
<b>Average annual employment</b>	<b>93</b>	<b>15</b>	<b>37</b>	<b>145</b>
Average wages and salaries per job	71,614	31,383	18,272	53,948
Average Employee compensation (includes benefits)	93,098	40,798	23,753	70,132
<b>Total personal income</b>	<b>6,660,075</b>	<b>473,880</b>	<b>666,922</b>	<b>7,800,876</b>

#### Context for assessing jobs and income

According to the adopted Sutton Comprehensive Plan November 2009 Update,

Currently, there is minimal commercial development within the planning area. The majority of existing economic development is composed of a few stores serving the local population and several small highway-oriented businesses. There is also a significant and growing number of home occupations ranging from the production of handmade crafts to auto repair. (p. 20).

The Palmer Correctional Center has about 129 employees earning average annual wages of \$48,456, according to information provided by the correctional center.

The following table summarizes information about average wages in some relevant industries and sectors.

**Table 2: Comparison of average wages  
(using year 2008 data unless otherwise noted)**

<b>Alaska mining wages</b>	<b>annual</b>	<b>per month</b>
Mining, except Oil & Gas	\$ 89,664	\$ 7,472
Coal (avg year 2010 wage at Healy coal mine)	80,000	6,667
Metal Ore	92,208	7,684
Nonmetallic mineral and quarrying	[not disclosed by ADOL]	
<b>Mat-Su Borough wages</b>	<b>annual</b>	<b>per month</b>
Palmer Correctional Center (2010 data)	\$ 48,456	\$ 4,038
Average wage for jobs within Mat-Su Borough	35,304	2,942
Retail trade	26,448	2,204
Accommodation and food services	14,700	1,225
(does not include tips; does not include income to self-employed proprietors)		

source: Alaska Department of Labor & Workforce Development, Palmer Correctional Center  
Healy mine wage provided by Usibelli Coal Mine, Inc.

**Potential displacement of existing jobs and business**

Our review of the McDowell Tourism Infrastructure Study, the adopted “Sutton Comprehensive Plan November 2009 Update,” and similar information from Borough staff suggests that there are currently very few tourism business establishments in the immediate area. These include the Moose Wallow Bed and Breakfast on Buffalo Mine Road and the Pinnacle Mountain RV Park at Glenn Highway mile 67 – 11 miles east of the proposed mine access. A school facility, the Ya Ne Dah Ah Tribal School, is also located within the subdivision, across the Glenn Highway from the assumed mine access road entrance.

According to the Trails Map in the Sutton Comprehensive Plan (p. 86), there are several hiking trails in the Wishbone Hill area. One of these trails -- the “Premier-Baxter Mine Loop” -- appears to be the only named trail that crosses the scenario mining areas. It is not known how many people use these trails and what proportion of users are tourists (defined as someone living outside the Borough).

Since the trucks transporting coal will be covered, will operate at night, and will not be present east of mile 56, it is unlikely that these coal trucks will dissuade tourists from traveling on the Glenn Highway to the Sutton area or to attractions such as the Matanuska Glacier -Sheep Mountain area or Wrangell-Saint Elias National Park. Trucks will not be operating during school hours and therefore should not affect school activities.



## 4. Fiscal Impacts

### Property tax revenues and public service expenditures

The goal of this analysis is to identify **additional** revenues and **additional** expenditures caused by the mining operations. We consider the following: Residential property tax revenues for areawide functions (financed by the adopted FY11 9.956 areawide mill rate); industrial property taxes paid by Usibelli at 17 mills; expenditures on education, and expenditures on areawide general government. This analysis does not include potential changes in property taxes due to changes in property values near the mine area. (These are considered in the next section).

### Education expenditures

For FY11, it is projected that there will be 16,923 total students in the Mat-Su Borough School District (MSBSD). The adopted total school district budget equals \$275 million (including debt service). The budgeted expenditure per student is \$16,271. Of this, the Borough budget pays \$3,221 and the State of Alaska pays most of the rest. (See appendix for more detail).

Our review of the MSB's education expenditures, and the fact that the State of Alaska funds education on a per-student basis, demonstrates that education expenditures are likely to increase proportionally with the number of new students. We used estimates of the demographic relationships among jobs, households, population, and students that were developed by Scott Goldsmith in his paper on the impacts of marginal oilfields. Using Goldsmith's estimates, an additional 145 total jobs would result in 78 additional students, requiring an additional Borough expenditure of \$252,170.

**Table 3: Education expenditures**

<b>Potential additional education expenditures</b>	<b>Total</b>	<b>Borough</b>	<b>State</b>
additional jobs	145		
households per job	0.64		
additional households	93		
school-aged students per household	0.84		
additional students	78		
Cost per student	16,271	3,221	11,107
<b>Total additional expenditures</b>	<b>1,273,809</b>	<b>252,170</b>	<b>869,531</b>

### General government expenditures

The FY2011 proposed Borough budget includes \$41.6 million for areawide general government. Using the year 2009 Borough population of 84,314, this equates to \$494 per person. We assume that half of this cost is fixed during the 16-year scenario period and that the other half varies with population. Using the Goldsmith estimates, 145 new jobs would result in 270 new residents leading to additional areawide general government expenditures of \$66,656.

### Property tax revenues

Using the Goldsmith estimates there would be 93 additional households. We assume that the average cost of new houses would be \$200,000. We ignore road service area and fire service area taxes because we have ignored the expenses for those functions. For the coal mine property we assume an initial capital cost of \$20 million with some allowance for depreciation over time. The result of these assumptions is \$440,227 of additional property taxes, as shown in the following table.

**Table 4: Additional property tax revenue**

<b>Potential additional Borough property tax revenue</b>		
additional households		93
average value of new housing per household		200,000
Total additional property value		18,604,586
Mill rate	9.956	
<b>Additional res.tax revenue for areawide expenditures</b>		<b>185,227</b>
Coal mine taxable property value		15,000,000
(allowing for some depreciation over time)		
mill rate	17.000	
<b>Additional property tax from mine</b>		<b>255,000</b>
<b>Total additional property taxes</b>		<b>440,227</b>

### Summary of tax revenues compared with public service expenditures

The above analysis shows that total additional property tax revenues to the Borough would be \$440,227, while total additional Borough expenditures for education and areawide general government would be \$318,826. Under the current school foundation formulas, the State of Alaska would incur additional education costs, and might incur further general government costs related to population. According to Usibelli, the mine would generate \$1,125,000 in royalty payments to the State, which would exceed the additional projected education expenditures. The State would also receive tax revenues from the mining license tax and from the corporate income tax, but at this time it is not known what these additional revenues might be.

**Table 5: Summary of tax revenues and public service expenditures**

	Borough	State of Alaska
<b>Revenues</b>		
Residential property taxes (areawide)	185,227	-
Industrial property taxes	255,000	-
<b>Total property tax revenue</b>	<b>440,227</b>	-
<b>Mine royalties to State of Alaska</b>		<b>1,125,000</b>
<b>Expenditures</b>		
Education	252,170	869,531
General Govt (areawide functions)	66,656	not determinable
<b>Total expenditures</b>	<b>318,826</b>	<b>869,531</b>
Additional item: Mining license tax on net income (to State of AK)		
		not determinable
Additional item: Corporate income tax (to State of AK)		
		not determinable

**Port fee revenues**

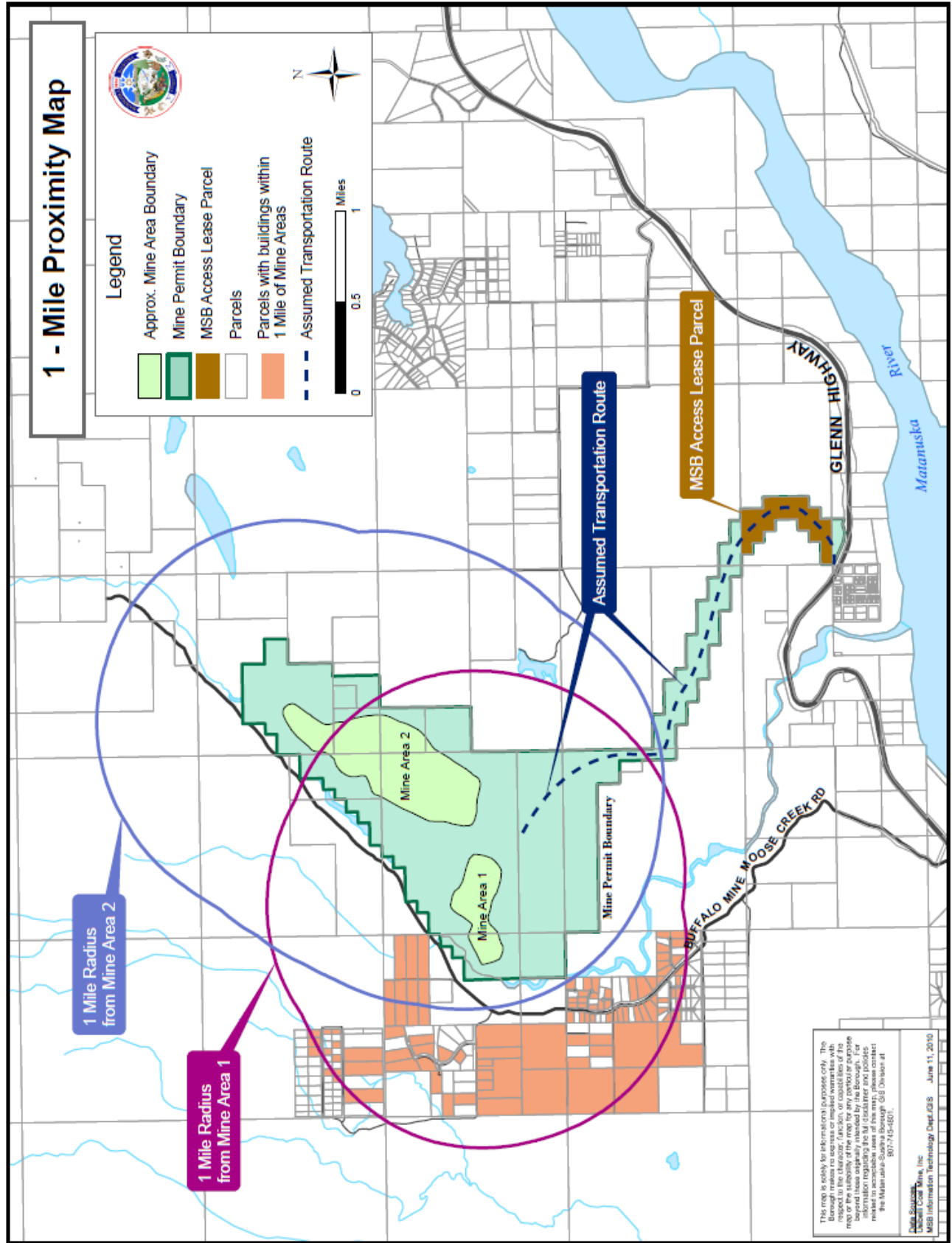
According to information provided by Port MacKenzie staff, the Port would receive additional revenues for wharfage, dockage, and storage under the coal mining scenario. However, these revenues would be associated with some additional costs and not all of the wharfage fees go to the Borough. Hence we show these revenues as stand-alone items. However, it is likely that since most of the Port costs are fixed, these additional port fees would greatly exceed the additional costs to the Port to provide the required services. Therefore, Port fees would likely provide a significant net fiscal benefit to the Borough.

**Table 6: Port fees**

		\$ per ton	\$ total
Wharfage		1.25	625,000
Dockage (avg 8 ships, avg 6 days each)	905 \$/day	0.09	43,440
Coal storage and office		0.30	150,000
<b>Total Port fees</b>			<b>818,440</b>

**5. Property Values**

Mining would be limited to two specific areas --“Mine Area 1” would be mined during years 2-7 and “Mine Area 2” would be mined during years 8-16. Mining would only take place at one of these areas during any given time. For purposes of the analysis in this section, we considered properties within 1 mile of mining area 1 and, separately, properties within 1 mile of mining area 2. The following map shows these areas.



According to MSB assessed value data, there are 98 parcels with structures within 1 mile of Mine Area 1. The total property value (land + buildings) of these parcels is \$11.6 million. Roughly one third (29 parcels) have buildings with an assessed value greater than \$100,000. Roughly half the parcels have buildings with assessed value less than \$50,000. Either the \$100,000 or \$50,000 level of assessed value might serve as a proxy for a “year-round” residence.

**Table 7: Current assessed property value within one mile of Mine Area 1**

Totals:	# of parcels	Total land value	Total buildings value	Total property value
BuildingValue >\$100k	29	1,017,600	6,491,000	7,508,600
BuildingValue \$50-100k	14	443,000	1,061,300	1,504,300
BuildingValue <\$50k	55	1,352,300	1,207,100	2,559,400
All parcels	98	2,812,900	8,759,400	11,572,300

There are 8 parcels with structures within 1 mile of Mine Area 2. The total property value of these parcels is \$0.5 million. Only one of these 8 parcels has buildings assessed at more than \$100,000.

**Table 8: Current assessed property value within one mile of Mine Area 2**

Totals:	# of parcels	Total land value	Total buildings value	Total property value
BuildingValue >\$100k	1	23,500	111,700	135,200
BuildingValue \$50-100k	0	-	-	-
BuildingValue <\$50k	7	280,000	111,400	391,400
All parcels	8	303,500	223,100	526,600

The above values can be used to consider the magnitude of possible changes in property values as a result of coal mining. In theory, property market values could go up or down depending on a host of factors. Negative factors might include the extent and nature of possible noise, dust, traffic, or visual impacts. Positive factors would include the demand for housing by mine workers and additional economic activity in the area.

Two realtors were contacted regarding their opinion about whether property values would decrease, remain the same, or increase if the mine scenario occurs. According to realtor Jerry Moses, the net effect is likely to be “a wash to an increase in property values.”<sup>1</sup> According to MSB staff who spoke with Mr. Moses, he was quite confident that property values would not decline. Additionally, Don Zimmerman of IEC Realty, a realtor who has made several sales in the Sutton market, stated that he thought property values would increase since the new economic

<sup>1</sup> Quotation provided by MSB staff via email dated 10 June 2010.

activity would generate more business in the area and this activity plus the new jobs would create more potential home buyers.

When considering changes in property values, it is important to remember that the market value may differ from the subjective value of the property to its current owner. In theory, it is possible for a property owner to suffer a loss of subjective value at the same time that the market value of the property is stable or increasing.

## **6. Traffic**

The traffic generated by trucks carrying coal would be 36 round-trips per day during night hours (between 8 pm and 6 am) for 300-325 days per year. The traffic generated by workers going to the mine would be approximately 85 on-site workers each making about 250 round-trips per year (5 work days per week assuming no carpooling or alternative transportation). These trips would be effectively staggered throughout the day with the first crew arriving at 5 am. There would also be 30 round-trips by 15 loader personnel on Saturdays, which would occur at night. Including an additional 2 round-trips per day to allow for deliveries and visitors, the mine would generate a total additional average annual daily traffic (AADT) of 186 one-way trips on the Glenn Highway and 64 AADT on the route of the coal trucks.

To place these numbers in context, the following table shows AADT figures from the year 2008 ADOT traffic map and compares them to the projected mine traffic. The comparisons show that mine traffic would increase current traffic levels by between 2.1% and 7.3% on the Glenn Highway and by between 0.4% and 3.8% on Knik Goose Bay Rd. These percentages would be lower when mine operations actually start because non-mine-related traffic will be greater than it was in 2008.

**Table 9: Traffic from mining compared to existing levels**

	trips/day	days/yr	AADT
<b>Traffic from mining activity</b>			
Coal trucks (36 round trips / day)	72	325	64
Mine workers - weekdays (85 on site)	170	250	116
Mine workers - Saturdays (15 on site)	30	50	4
Supply deliveries	2	260	1
<b>Total mine-related</b>			<b>186</b>

**Mine traffic compared to current (year 2008) traffic**

	Year 2008 AADT	Coal truck AADT as % of 2008	Worker trips and deliveries AADT as % of 2008	Total mine AADT as % of 2008
Glenn Highway between Farm Loop and Jonesville Rd (includes mine entrance)	2,562	2.5%	4.8%	7.3%
Glenn Highway between Fishhook Rd and Scott Rd	8,790	0.7%	1.4%	2.1%
Knik Goose Bay Rd East of Edlund Rd	17,312	0.4%		0.4%
Knik Goose Bay Rd SW of Settlers Bay Dr	1,699	3.8%		3.8%

note: totals may not add due to rounding.

In the future, the mine-related traffic will remain constant while the non-mine traffic continues to grow. Therefore, the percentage of traffic that is mine-related will continue to drop over time. To illustrate how this might occur, we used estimates from a traffic study prepared by Usibelli in 2009<sup>2</sup> that made projections for year 2019 traffic levels. For example, non-mine traffic on the Glenn Highway between Farm Loop Rd and Moose Creek is projected to more than double. As a result, the percentage increase in traffic on this segment of the highway due to mining activity drops from 7.2% to 3.3%.

<sup>2</sup> “Usibelli Wishbone Hill Mine Traffic Impact Analysis,” Draft Report dated February 4, 2009. (excerpts). Provided to authors of this study by Borough staff. Authors of the traffic analysis are unknown.

**Table 10: Traffic from mining compared to projected year 2019 levels**

	Projected year 2019 AADT	Coal truck AADT as % of 2019	Worker trips and deliveries AADT as % of 2019	Total mine AADT as % of 2019
Glenn Highway between Farm Loop and Moose Creek (includes mine entrance)	5,695	1.1%	2.1%	3.3%
Glenn Highway between Fishhook Rd and Scott Rd	12,917	0.5%	0.9%	1.4%



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Usibelli Wishbone Hill Mine Traffic Impact Analysis, Draft Report dated February 4, 2009. (excerpts). Provided to authors by Borough staff.

## Appendix: Notes on Methodology

### Economic Impact

Economic impact is driven by expenditures. For this reason the economic impact of the potential coal mines is estimated with the cost of the mines as the “output” of the activity in the IMPLAN model. Estimated labor costs for both the potential mining operation and the construction phases were provided by Usibelli. To estimate nonlabor costs we relied on previous cost studies by ISER and by Paul Weir Company. The basic breakdown of costs was for a hypothetical mine in the Nenana region producing 2 million tons/yr. All estimates in these studies were in 1988 dollars.

Upon careful inspection, the major nonlabor costs are about \$5/ton for materials and fuel, plus about \$2/ton for capital replacements, both in 1988 dollars. We adjusted these to 2009 dollars.

Because there currently is no coal mining industry in the Mat-Su Borough, we created a new Sector 21: Coal Mining within the IMPLAN database for the Borough and set the pre-existing level to a very low level. The “impact” is generated by adding the estimated Wishbone Hill scenario as an additional “event” that creates impacts.

The following detailed employment and cost scenario was assumed. The worksheet for the operations phase shows several additional calculations that we undertook to verify that the mining activity levels we prepared for input to the IMPLAN model were internally consistent and plausible.

### Construction Phase (year 1)

type of work	# workers	annual wages	benefits 30%	employee compensation
Dirt movers	15	87,500	26,250	1,706,250
Building construction	15	87,500	26,250	1,706,250
Specialists	5	87,500	26,250	568,750
Misc workers	10	80,000	24,000	1,040,000
Road construction	10	80,000	24,000	1,040,000
Total	55	84,773		6,061,250

## Operations phase (years 2-16)

### Mine Cost workup

Mine output, short tons per year: 500,000 short tons per year  
 Energy content of coal: 11,500 Btu/lb

type of work	# workers	annual wages	benefits 30%	employee compensation	\$ per ton	total \$
hourly - mine	55	70,000	21,000	5,005,000		
office - mine	15	90,000	27,000	1,755,000		
port workers	8	70,000	21,000	728,000		
truck drivers	15	60,000	18,000	1,170,000		
<b>Total</b>	<b>93</b>	<b>71,613</b>		<b>8,658,000</b>	<b>17.32</b>	<b>8,658,000</b>
Materials:	Materials \$/ton per ISER, in 1988\$ adjusted to year 2009\$:			\$5.00	\$8.83	4,412,983
Capital replacements (ongoing)	Capital (ongoing) \$/ton per ISER, 1988\$ adjusted to year 2009\$:			\$2.00	\$3.53	1,765,193
Indirect business taxes: payroll tax, unemployment etc.						
Wage base:	6,660,000	x	9%		1.20	599,400
Property taxes						
Value base:	20,000,000	x	1.74%		0.70	348,000
Subtotal, operating production cost per ton:					31.57	15,783,577
Royalties @ 5%					1.58	789,179
Subtotal, operating cost per ton delivered to Port					33.15	16,572,756
Wharfage					1.25	625,000
Dockage (avg 6 ships, avg 8 days each) 905 \$/day					0.09	43,440
Coal storage and office					0.30	150,000
Subtotal, operating cost per ton delivered onboard ship					34.78	17,391,196
Item: possible capital cost:						
	amount	25,000,000				
	return	12%				
	years	15				
	capital recovery factor	0.15				
Annualized capital cost					7.34	3,670,606
Total of all above					42.12	21,061,802
Compare to: Total cost cited by ISER for Wishbone Hill coal:						
1.15 \$/million btu in 1988\$						
26.45 \$/ton in 1988\$						
Convert to year 2009\$ using Anchorage CPI change					46.69	23,344,682

## Education Expenditures: Additional Detail

### Mat-Su Borough School District data

Number of FY11 Students 16,923

<b>FY11 School Budget</b>	Total	per student
Borough support - operating	48,347,365.00	2,857
State contribution - Foundation formula	131,934,118	7,796
State transportation funding	11,749,320	694
State TRS/PERS relief	32,000,000	1,891
Federal funds	29,387,915	1,737
Other local receipts	3,492,838	206
Operating Total Revenue (= total expenditure)	256,911,556	15,181
State reimbursement of debt service	12,280,710	726
Borough payment of debt service	6,163,429	364
<b>Grand Total Schools</b>	<b>275,355,695</b>	<b>16,271</b>
from Borough	54,510,794	3,221
from State	187,964,148	11,107
from Federal	29,387,915	1,737
from other	3,492,838	206