ALASKA MINERS ASSOCIATION, INC.

Infrastructure for Mines

September 2010

By Steve Borell

Most people assume that the basic infrastructure required for Alaska mines is provided by the state or federal government. By basic infrastructure I refer to electrical power, roads, railroads, airfields, and ports.

I first researched the topic several years ago when I was asked to speak at an Alaska session in Tacoma, Washington. My assigned topic was to describe the infrastructure that the state will have to build to service various prospective mining projects. However, as I began to research the topic, I realized that most of the basic infrastructure used by Alaska's large mining operations was not built by the state or federal government but rather by the mines themselves.

Infrastructure is a major cost item wherever it occurs, and especially in remote parts of the state. Furthermore, the infrastructure is often needed long before the mine has a positive cash flow from operations because infrastructure is needed before the mine can even be built. It is needed to bring in the supplies and equipment that are used to build the mine. Infrastructure costs have a huge adverse financial impact on the project's rate of return because of the time value of money which must be spent long before there is any return.

The table titled "Infrastructure for Alaska Mines" is a list of Alaska's large mines and major projects showing how their infrastructure was funded. The six large operating mines have a total of 18 items of infrastructure. Twelve of those items, shown with an (*), were paid for entirely by the mines. Three items were existing infrastructure. Two items, indicated by (+), were paid by a government "authority" and the cost recovered by charging the mine a user fee. One item, indicated by (*+), was constructed by the mine with a partial payment by the State.

Infrastructure for Alaska Mines

Mine/Project	Power	Road	Airfield	Port
Major mines now in operation				
Usibelli Coal	On grid	On road & RR		
Greens Creek	*Diesel, now on grid	*7 mi		*Yes
Red Dog	*Diesel	+55 mi	*4500 ft	+Yes
Fort Knox	*24 mi to grid	*4 mi		
Pogo	*55 mi to grid	*55 mi	*3000 ft	
Kensington	*Diesel	*+6 mi		*Yes
Major mines now in idle status				
Nixon Fork	*Diesel		*4500 ft	
Rock Creek	*6 mi to grid	3mi by State		
New large projects in permitting or advanced exploration				
Chuitna Coal	*10 mi to grid*	*13 mi*	*3000 ft*	*Yes*
Donlin Creek	*Diesel & wind*	*23 mi*	*5000 ft*	*Yes*
Pebble	*105 mi to grid*	*~80 mi		*Yes

* Constructed by the mine

\+ Reimbursed by mine based on throughput

*+ Combination of mine and State funding

The mines in idle status have a total of four items of infrastructure. Three of the four were constructed by the mines and one item, a three-mile road, was part of the "Roads to Resources" program and was constructed by the State. For the three advanced projects – if these projects can get through the permitting process, all 11 items of infrastructure required will be constructed by the mines.

To summarize the numbers – 88% (30 of 34 items) of the items of infrastructure required by the major mines and advanced projects has been paid (or will be) by the mines.

The situation is very different in other states and countries. In the lower 48 states and much of Canada, only the final few miles of road or powerline will be paid by the mine. It is a rare case where the mine is isolated from the road system or must build its own power plant, airfield, or port. Throughout Canada, the roads, railroads, and powerlines are typically built by the government.

In some countries the governments will provide much of the infrastructure. I recall hearing a few years ago that a project in Inner Mongolia of northern China was going to need a road. This need was expressed to the government officials. Within a year a 200 km road was under construction; two years later it was complete.

I often hear that the State of Alaska built the road and port facilities for the Red Dog Mine. That is correct. The Alaska Industrial Development & Export Authority (AIDEA) paid for construction of the road and port known as the Delong Mountains Transportation System (DMTS). But Red Dog makes annual payments to AIDEA based on throughput of concentrates that are shipped. If the mine does not meet a certain level of throughput each year, Red Dog must still pay a guaranteed minimum amount to AIDEA. That has not yet happened because every year since the mine began operating in 1989 the throughput has been more than the minimum. The initial construction of DMTS was $180 million with a subsequent upgrade of $85 million for a total cost of $265 million. Thus far the state has received $312 million of interest and principle on its investment. That says nothing about the jobs and other benefits to the region and the entire state.

There are numerous other roads and other infrastructure throughout Alaska that was built by the mining industry. Electrical power generation in Juneau is a case of particular note. Juneau has the lowest power cost in the state because of the mining industry. There are five hydroelectric generating plants in Juneau. Three of these were built by the mining industry and a fourth was built because of mining guarantees. The three plants built by the mines are Gold Creek (1893), Salmon Creek (1913) and Annex Creek (1915). When the A-J mine closed these plants were sold to Alaska Electric Light & Power (AEL&P). Salmon Creek was upgraded in 1984 with a new generator but the others still operate with the original equipment.

A fourth hydroelectric power plant, Dorothy Lake (2009), was built because the Greens Creek mine signed a contract guaranteeing that it would take any power not required by the city. The result was that AEL&P was able to obtain funding for the plant.

As I previously mentioned, most people assume that the basic infrastructure required for Alaska mines would be provided by the state or federal government. Those people would be wrong and the facts clearly show that the basic infrastructure requirements are most often constructed by the mines themselves.