

# **Indigenous Empowerment: The Pebble Mine and Environmental Justice in Bristol Bay, Alaska**



(Picture from Cenaliulrii Tribes, <http://www.cenaliulriit.org/Cenaliulriit%20Files/Fishing%20River.JPG>)

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## Abstract

Bristol Bay, Alaska is home to the largest sockeye salmon fishery in the world<sup>1</sup>. As a result, the area is very important to the local indigenous peoples, Yup'ik Eskimo's, Denaina Athabascans, Aleuts and Alutiiqs who have lived in the area for thousands of years and continue to depend on the bay's renewable resources for subsistence, lifestyle and commercial uses. In 1986, a mining conglomerate that calls itself the Pebble Partnership began to discover the minerals in what today is expected to be the largest copper and second largest gold mine deposits in North America, and possibly one of the largest in the world. This paper analyzes whether The Pebble Partnership and government regulatory regimes are properly addressing the environmental health and justice concerns of the indigenous peoples of Bristol Bay, including potential impacts of mining operations on air and water quality, water supply, aquatic life and the welfare of the indigenous people. Further, this paper analyzes whether stakeholders and the media are considering indigenous concerns. I conclude that environmental justice concerns are largely being met by the Pebble Partnership as well as by the federal, state and local agencies responsible for permitting. The individual companies included within The Pebble Partnership have a mixed human rights and environmental record, especially in developing countries and indigenous regions. The mining industry's relations with stakeholders are changing though as technology and government oversight improves and stakeholders demand more access to the permitting process. However there are many ways to improve this industry, and many ways for the Natives of Bristol Bay to improve their standing in order for their concerns be addressed.

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<sup>1</sup> Lee, Jeannette. "Forum Weighs Fishing, Drilling in Bristol Bay." Anchorage Daily News. 19 March 2008. <http://www.adn.com/money/story/349523.html>

## Question

Broadly, this paper explores if the proposed Pebble Mine poses a long term environmental, social and economic risk to the indigenous peoples of Bristol Bay, Alaska. The proposal to start the potentially major mine on state land is close in proximity to rich sockeye salmon habitat. To what extent does the proposed Pebble Mine operation take into account the environmental health and justice concerns of indigenous peoples living in the Bristol Bay region? How can the residents of Bristol Bay assure that their environmental justice and health concerns are be addressed by the regulatory regime and the mining companies?

## Methods

To answer these questions, I conducted a media analysis of Anchorage Daily News articles focusing on the Pebble Mine since July 20, 2004. The Anchorage Daily News is Alaska's largest and only statewide newspaper, read by over 171,000 people throughout the state each day<sup>2</sup>. It is read by voters, lawmakers and others who are stakeholders or potential stakeholders in the Pebble Mine debate. This analysis was used to see how each of the potential stakeholders is being covered in the outlet, and to analyze how the issue is being framed by the state media. Mostly, I wanted to see if indigenous concerns were being covered. I analyzed the newspaper for articles that covered the Pebble Mine's potential impacts on subsistence resources, wildlife and drinking water resources, and potential socioeconomic impacts on the local indigenous population such as job opportunities and revenue issues.

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<sup>2</sup> "Anchorage Daily News." 2008. The McClatchy Company. February 12, 2008. <<http://www.mcclatchy.com/146/story/447.html>>

I also evaluated the regulatory and permitting processes of the Federal, State, and Local governments. This was done by looking at the different permits and approvals that the Pebble Partnership has to obtain from the various agencies and departments of the three levels of government through a wide variety of environmental and safety laws. Specifically, I analyzed if these permits and approvals would strive to protect the resources that Bristol Bay indigenous people depend on to continue their cultural traditions and subsistence livelihoods.

I also evaluated the environmental compliance and human rights records for each of the mining companies involved with the Pebble Partnership: Northern Dynasty Ltd., Anglo American PLC, and Rio Tinto. Anglo American, a British mining firm, and Rio Tinto, a mining firm based in the United Kingdom and Australia, are the two largest hard rock mining conglomerates in the world and operate in over 60 countries. I relied on a scholarly analysis of Dr. Saleem Ali to establish the history of these firms. Dr. Ali is a Professor at the University of Vermont specializing in mining impacts on indigenous populations. I also searched the legal record of each company through the LexisNexis database. This revealed patterns of behavior by these mining companies with respect to their environmental health and justice concerns for other indigenous peoples throughout the world. It was difficult to find the information on the companies' environmental records, especially in developing nations and indigenous areas. Consulting further with Dr. Ali, he concluded that I would have to find out from the companies themselves, an object for further research.

Lastly, I conducted a stakeholder analysis of the various different decision-makers, non-governmental organizations, governments and mining companies that may

be affected or have an opinion on the Pebble Mine. I wanted to understand how each stakeholder is addressing Native concerns with the Pebble Mine. This data was collected through interviews, published data and reports, and by a media analysis of the Anchorage Daily News and other news sources.

### Environmental Justice

Environmental justice is defined on the U.S. Department of Energy's website as "The fair treatment and meaningful involvement of all people-regardless of race, ethnicity, income or education level-in environmental decision making. Environmental Justice programs promote the protection of human health and the environment, empowerment via public participation, and the dissemination of relevant information to inform and educate affected communities<sup>3</sup>."

This definition is very relevant because it will address whether indigenous communities have meaningful involvement in the permitting process for the Pebble Mine.

Furthermore, the definition of the University of Michigan's School of Natural Resources and the Environment is incorporated, which states that environmental justice is

"the right to a safe, healthy, productive, and sustainable environment for all, where 'environment' is considered in its totality to include the ecological (biological), physical (natural and built), social, political, aesthetic, and economic environments. Environmental justice refers to the conditions in which such a right can be freely exercised, whereby individual and group identities, needs, and dignities are preserved, fulfilled, and respected in a way that provides for self-actualization and personal and community empowerment<sup>4</sup>."

The right to a safe, healthy and productive ecological environment is a large concern with the proposed Pebble Mine for indigenous peoples, since some 20% of the

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<sup>3</sup> "Environmental Justice Definition." U.S. Department of Energy. December 14, 2007. [http://www.lm.doe.gov/env\\_justice/definition.htm](http://www.lm.doe.gov/env_justice/definition.htm)

<sup>4</sup> Rajzer, Julie. "Environmental Justice Definitions" April 6, 1997. University of Michigan. December 14, 2007. <http://eelink.net/EJ/definitions.html>

average indigenous family's diet in Bristol Bay consists of sockeye salmon alone<sup>5</sup>. The mine could pose environmental risks to the physical environment through infrastructural developments. The Pebble Partnership proposes to build roads and airports which could threaten a number of subsistence habitat areas important to indigenous peoples. Social, political and economic environments may be heavily affected in a mining scenario.

President Clinton's 1994 Executive Order 12898 on Environmental Justice will have an impact on the proposed Pebble Mine through increased oversight from differing government regulatory regimes. Under the Executive Order, 17 federal agencies and departments must consider the health and wellbeing of minority and low-income communities. They must include these populations in environmental decision-making, provide more information, and seek more possible ways to increase their influence in the environmental processes that may impact their communities<sup>6</sup>.

### Background Information

Freshwater lakes surround the area near the proposed mine, providing important habitat for all five Pacific species of salmon, as well as trout and other freshwater fish species. The Pebble Partnership has applied to water rights for the Upper Talarik Creek and Kuktuli River, both of which drain into Alaska's largest lake, Lake Iliamna (see Figure 1 map.) The Kvichak River flows from Lake Iliamna into Bristol Bay. Kuktuli River also forms with the Mulchatna River, which flows into the Nushagak River, a main

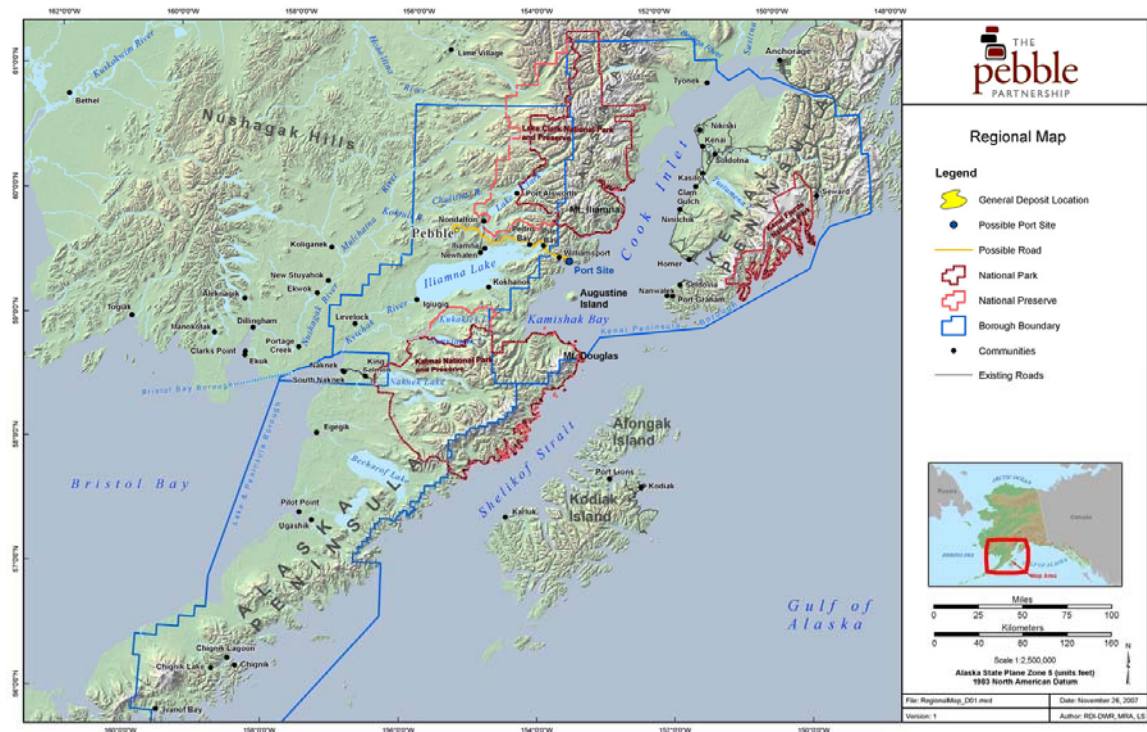
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<sup>5</sup> "Bristol Bay Census Area: Subsistence." Date unknown. Alaska Department of Community and Economic Development. December 10, 2007. [http://www.dced.state.ak.us/dca/AEIS/Bristol/Subsistence/Bristol\\_Subsistence\\_Narrative.htm](http://www.dced.state.ak.us/dca/AEIS/Bristol/Subsistence/Bristol_Subsistence_Narrative.htm)

<sup>6</sup> EXECUTIVE ORDER 12898 OF FEBRUARY 11, 1994. September 1, 2007. Environmental Protection Agency. February 22, 2008. <http://www.epa.gov/fedreg/eo/eo12898.htm>

drainage into Bristol Bay. Iliamna Lake, apart from being critical habitat for millions of salmon that spawn in it every year, is home to one of only two freshwater seal species on earth (Lake and Peninsula Borough, 2007.) This area is also near the Pacific Rim of Fire, a continental fault line that is home to a lot of volcanoes and earthquakes.

**Figure 1: Map of Bristol Bay Watershed, Indicating the proposed Pebble Mine Location and Federal, State and Tribal Lands.** From the Pebble Partnership website: <http://www.pebblepartnership.com/images/RegionalMap.jpg>



## Bristol Bay Population Demographics

Bristol Bay residents account for approximately one percent of the population of the State of Alaska, with nearly 9,000 year-round residents. According to the 2000 U.S. Census, Bristol Bay’s population is 66 percent Alaska Native or American Indian<sup>7</sup>. In the three villages nearest to the mine, Alaska Natives or American Indians are the vast

<sup>7</sup> “The Bristol Bay Region.” Date unknown. University of Alaska Fairbanks. December 14, 2007. <http://www.uaf.edu/bbc/region.html>

majority of the population. In Nondalton, 90% of 196 year round residents are of indigenous descent. In Iliamna, 58% of 82 residents are indigenous and in Newhalen, 91% of 167 residents are indigenous. The villages of Nondalton and Newhalen have a high unemployment rate and low median income. In Nondalton for example, nearly 38% are unemployed and the median household income is \$19,000, below the federal poverty level of \$22,000 for a family of three<sup>8</sup>. This is compared to the U.S. Department of Health and Human Services data that shows the 2008 poverty guidelines in Alaska (see Table 2.) The Department of Community and Economic Development’s Community Database Online states that the average household size in Nondalton is 3.25 persons, and the median household income is \$19,000. A household of three persons is determined to be in poverty if they make less then \$22,000 per year, which means that the average household in Nondalton makes below the median household income to be classified in the federal poverty guideline level for 2008<sup>9</sup>.

**Table 1: Socioeconomic statistics for villages nearest proposed Pebble Mine. Source: State of Alaska Department of Community and Economic Development, Community Database Online. [http://www.dced.state.ak.us/dca/commdb/CF\\_COMDB.htm](http://www.dced.state.ak.us/dca/commdb/CF_COMDB.htm)**

Village	Percent Native	Unemployment Rate	Median Household Income
Nondalton, pop. 196	90%	38%	\$19,000
Newhalen, pop. 167	91%	31%	\$36,000
Iliamna, pop. 82	58%	3%	\$60,000

<sup>8</sup> “Community Database Online.” Alaska Division of Community and Regional Affairs. January 24, 2008. [http://www.dced.state.ak.us/dca/commdb/CF\\_COMDB.htm](http://www.dced.state.ak.us/dca/commdb/CF_COMDB.htm)

<sup>9</sup> “The 2008 HHS Poverty Guidelines.” January 23, 2008. U.S. Department of Health and Human Services. February 5, 2008. < <http://aspe.hhs.gov/poverty/08poverty.shtml>>

**Table 2: 2008 HHS Poverty Guidelines, SOURCE: *Federal Register*, Vol. 73, No. 15, January 23, 2008, pp. 3971–3972. < <http://aspe.hhs.gov/poverty/08poverty.shtml>>**

<b>Persons in Family or Household</b>	<b>48 Contiguous States and D.C.</b>	<b>Alaska</b>	<b>Hawaii</b>
1	\$10,400	\$13,000	\$11,960
2	14,000	17,500	16,100
3	17,600	22,000	20,240
4	21,200	26,500	24,380
5	24,800	31,000	28,520
6	28,400	35,500	32,660
7	32,000	40,000	36,800
8	35,600	44,500	40,940
For each additional person, add	3,600	4,500	4,140

### **A Subsistence Lifestyle**

For thousands of years, the indigenous peoples of Bristol Bay have utilized rich subsistence wildlife resources to provide for their families. The indigenous peoples continue to heavily depend on these resources. Per capita, 20% of the diet in Bristol Bay consists of subsistence foods. That is more than 211 pounds annually per capita and a total of 265,000 pounds of subsistence food utilized in Bristol Bay each year. The average subsistence fish consumption for Bristol Bay residents’ accounts for 55 percent of all subsistence foods utilized. However, salmon is just one subsistence resource for local residents. Subsistence foods also include moose, caribou, bear, and smaller terrestrial animals such as fox and beaver, among others<sup>10</sup>.

<sup>10</sup> “Bristol Bay Census Area: Subsistence.” Date unknown. Alaska Department of Community and Economic Development. December 10, 2007.  
[http://www.dced.state.ak.us/dca/AEIS/Bristol/Subsistence/Bristol\\_Subsistence\\_Narrative.htm](http://www.dced.state.ak.us/dca/AEIS/Bristol/Subsistence/Bristol_Subsistence_Narrative.htm)

## World's Largest Sockeye Fishery

The salmon fishery has given Bristol Bay fisherman and residents a renewable commercial resource that has pumped billions of dollars into the Alaska and United States economy. In 2007, 31.6 million fish were harvested in Bristol Bay, worth nearly \$108 million dollars. This is 84% of the 20 year average and 12<sup>th</sup> highest harvest since Alaska statehood<sup>11</sup>. It is estimated that nearly 88% of the regions economic base relies on the salmon fishery<sup>12</sup>. Recent years though have seen a depressed regional economy because of foreign salmon farm competition, which has lowered the value of the wild sockeye salmon market<sup>13</sup>. But the wild salmon market value may increase in the future due to a number of factors. These include forecasts that show increased runs and higher projected salmon harvests<sup>14</sup>, increasing salmon prices due to reduced salmon runs along the Pacific Coast<sup>15</sup>, and increased marketing strategies to promote wild Alaska salmon<sup>16</sup>.

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<sup>11</sup> Nelson, Patricia et. al. "Run Forecasts and Harvest Projections for 2008 and Review of the 2007 Season." February 2008. Alaska Department of Fish and Game. March 17, 2008. <<http://www.sf.adfg.state.ak.us/FedAidPDFs/sp08-09.pdf>>

<sup>12</sup> "Bristol Bay Economic Opportunity Plan" April, 2004. Bristol Bay Native Association. December 14, 2007. [www.bbna.com/econdev/BBeconopplan.pdf](http://www.bbna.com/econdev/BBeconopplan.pdf)

<sup>13</sup> "Projections of Future Bristol Bay Salmon Prices" October, 2004. University of Alaska Anchorage. December 10, 2007. <[http://www.iser.uaa.alaska.edu/iser/people/knapp/Knapp\\_BB\\_Price\\_Projections\\_October\\_2004.pdf](http://www.iser.uaa.alaska.edu/iser/people/knapp/Knapp_BB_Price_Projections_October_2004.pdf)>

<sup>14</sup> Nelson, Patricia et. al. "Run Forecasts and Harvest Projections for 2008 and Review of the 2007 Season." February 2008. Alaska Department of Fish and Game. March 17, 2008. <<http://www.sf.adfg.state.ak.us/FedAidPDFs/sp08-09.pdf>>

<sup>15</sup> Koopman, John. "Salmon Fishing off California, Oregon Banned." April 10, 2008. San Francisco Gate. April 12, 2008. <<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/04/10/BAO6103NBB.DTL>>

<sup>16</sup> "State of Alaska FY2009 Governor's Operating Budget." January 7, 2008. State of Alaska. January 14, 2008. <[http://www.gov.state.ak.us/omb/09\\_omb/budget/DCCED/comp393.pdf](http://www.gov.state.ak.us/omb/09_omb/budget/DCCED/comp393.pdf)>

## **Public Opinion on the Pebble Mine**

Although permitting and site assessment for the proposed Pebble Mine has yet to be completed, opposition to the project has grown and the controversy has been a big story in the Alaskan press since 2004 when Northern Dynasty submitted its application<sup>17</sup>. There is varying public opinion polls conducted to show statewide opinion on the issue. The Alaska-based environmental non-governmental organization who has led opposition against the project, the Renewable Resources Coalition (RRC), financed a state-wide residential opinion poll on the project and found that fifty three percent of Alaskans oppose the project, twenty eight percent support it and the rest were undecided in 2007. In a competing poll, Northern Dynasty's poll conducted by Dittman Research stated that thirty one percent of Alaskans are against the proposed Pebble Mine, while forty five percent are for it and the rest are undecided in 2007. The only poll that focused exclusively on Bristol Bay residents, also commissioned by the Renewable Resources Coalition, shows that a lopsided number of residents oppose the development of the proposed mine, with seventy percent of all Bristol Bay residents opposed. Seventy four percent of the indigenous people opposed in 2007<sup>18</sup>. Many indigenous people say their opposition is due to concerns about the potential environmental and watershed impacts of the mine. The salmon fishery has been important for the survival of their people, and many do not want to risk their clean water and healthy subsistence foods that they get

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<sup>17</sup> "Iliamna-area villages oppose Pebble mine plans" March 23, 2005. Fairbanks Daily News-Miner. December 12, 2007. LexisNexis.

<sup>18</sup> "Bristol Bay and Lake and Peninsula Borough Pebble Mine Survey" Date Unknown. Renewable Resources Coalition and Hellenthal & Associates. December 10, 2007. <<http://www.renewableresourcescoalition.org/hellenthal.pdf>>

from the region. They believe that subsistence animals and their habitat may be affected by the mine<sup>19</sup>.

### **Guarantees and Proposals to Address Environmental Justice Concerns**

Although Anglo-American and Rio Tinto have been involved in controversies with past mining operations near indigenous communities, they say they are looking to improve their mining reputation by increasing public dialogue and engaging with indigenous and local stakeholders. Since many still depend on the healthy commercial fishery for jobs, income and livelihood, the Pebble Partnership says that their mining project will not hurt the fishery, will have minimal ecological impacts, and will create vast economic benefits such as job growth and tax revenue for the region and indigenous peoples<sup>20</sup>.

The Pebble Partnership has stated that they plan to have a “no net loss” policy for Bristol Bay fisheries, guaranteeing that they will pay all fish lost in monetary value for both the commercial and subsistence fishery<sup>21</sup>. Northern Dynasty also publicly states that it will increase jobs and local tax revenue for local residents. They claim that in 2008 mineral prices, the proposed Pebble Mine holds up to \$500 billion and that at least 1,000 permanent jobs would be created in the estimated mining period of over 50 years.

The Pebble Partnership has strived to hire Alaskans. According to its 2006 study of jobs created from preliminary Pebble Mine jobs so far, 638 people were employed by

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<sup>19</sup> “Iliamna-area villages oppose Pebble mine plans” March 23, 2005. Fairbanks Daily News-Miner. December 12, 2007. LexisNexis.

<sup>20</sup> McGee, Sean. Personal Interview. April 12, 2008.

<sup>21</sup> “Pebble Mine” December 14, 2007. Northern Dynasty Mines Inc. December 14, 2007. <<http://www.northerndynastyminerals.com/ndm/Pebble.asp>>

the Pebble Partnership. Of those 638 employees, 526 were Alaska residents (82%) and 125 were Bristol Bay local residents (19%). 45 employees (7%) were from Canada and the remaining 67 (nearly 11%) were from the lower 48 U.S. States<sup>22</sup>.

Sean McGee, who works as a community liaison with Northern Dynasty, says that there is a requirement in the baseline studies that the Pebble Partnership will have to create and define existing social and cultural and economic conditions of the Bristol Bay area. He also said that they are working with a number of firms to identify the heritage and ethnic background of the region. All has to be fully documented<sup>23</sup>.

Mr. McGee has also conceded that “generally those communities and residents closer to the project, there will be more effects: positive and negative.” He believes that the further away villages are, they will experience lesser impacts. From a positive perspective, the Pebble Partnership is

“focused on a value that can have a profound positive benefit through employment, contracting through supply and service, infrastructure through energy and transportation. There might as well be very substantial tax revenue gained for the whole Bristol Bay region, not only for villages and boroughs nearest to the mine. These tax payments may be in the tens of millions of dollars, spending contracts will be in hundreds of millions, employment will be in thousands, so there is a lot of potential to make positive economic contributions.”

He also believes that natural resources would continue to operate and ways of life will continue according to their vision, but “it remains to be seen if we can really accomplish that.” Asked if the Pebble Partnership would support an income tax from the Lake and Peninsula Borough, he said that he didn’t know if the borough can legally

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<sup>22</sup> “Pebble Mine” December 14, 2007. Northern Dynasty Mines Inc. December 14, 2007. <<http://www.northerndynastyminerals.com/ndm/Pebble.asp>>

<sup>23</sup> McGee, Sean. Personal Interview. April 12, 2008.

impose an income tax on mining workers. But he was sure that infrastructure like hospitals and schools would be vastly expanded. He though was not sure through which vehicles these would be funded by.

As for potential mining effects, he said “that is the \$64 million dollar question” and “they are working on the studies.” He guaranteed that the Pebble Partnership would not pursue the project if they could not show that fishery and watershed resources are protected. “The key issue is where you will put site mining areas and we have four objectives; 1) you have to use low habitat value areas 2) water quality must be maintained at 100% through state and federal laws which have extensive water quality standards, so we have to obtain approvals which is the biggest challenge. 3) Stream flows so that the project location and its water use do not diminish flows for fish. Air quality probably won’t be a significant issue. As for terrestrial wildlife, we will probably not have significant impacts on wildlife resources.”

As for releasing data, Mr. McGee states that “we have not released all environmental data, but have released all environmental study programs and summary data. In 2004 the raw data we gave out to the community led to misunderstandings and intentional misrepresentation by our critics. But we are striving for quality assurance and to provide all summary data and study programs. And beginning this month (April 2008) we will schedule releases of environmental data in stages over the next 12 months.”

Asking if he could provide a mine that is similar to Pebble, he stated that “This is difficult, every project has its own geological and topography and climate and social environment. There are some near similarly important fisheries, or similar seismic conditions. There are some reference points, but there are some mines in the Arctic such as Red Dog Mine. Fraser Valley mines with significant salmon populations are an example of how a mine co-existed in a large salmon spawning watershed.”

He also stated that fish species in the watersheds near the proposed Pebble Mine would be monitored for toxic chemicals and trace metallic elements. Asked about why Fraser River salmon populations have declined drastically according to recent scientific studies, he said that

“there may be issues with ocean survival for salmon because of changing ocean conditions. Fraser is different than watersheds in the Pebble area because there are pulp mills located there, and the river runs through the city of Vancouver. But all of those mines located on the Fraser, they have never had an impact on the Fraser fisheries. For example at Vadeen lake, 90% of the Skena sockeye run returned which is evidence that they have not had an impact on that fishery.”

As for why the Pebble Partnership stated that Alaska was a very good place to do business for a mining company, Sean McGee stated that

“the mining process is positive in Alaska and the United States, not because environmental regulations are weak but the process is very well defined. There is a high degree of certainty and standards that mining companies have to meet. In the regulating agencies, there are people working for them who are very professional with high expertise in the field, and there are plenty of resources by the state to review the project. When you go to other jurisdictions such as developing countries, there are lower environmental standards and regulations which can lead to instability.”

As for taxes, the Pebble Partnership does not have a view on taxes but thinks that low taxes can encourage investment and development, and because mining labor is very intensive it is good to have a low tax rate to let miners get as much out of their work as they can (Sean McGee, 2008.)

When asking Mr. McGee about the reputation of Anglo-American and Rio Tinto, he said that

“there are a lot of accusations that are deeper to understand and require a fair and objective account, and some are unfair. The way mining companies have done business, there have been tremendous changes such as social performance changes, environmental

changes compared to the past. International scrutiny has changed this the way mining companies are doing business today.”

When asked about indigenous peoples employed in the Pebble Partnership, he said that

“Natives are working on site operations and a number are working with him in public affairs. The number of Natives employed in the Pebble Partnership is only about 20, but we just hired John Shively and he is surely in process of building a leadership team to include more Natives.”

As for the potential Clean Water Initiative that may stop future mining projects if they may adversely impact salmon or clean drinking water streams, Sean McGee said that the initiatives

“were started to stop the Pebble mine, but it would have much wider spread effects on all development projects in the state. It’s a drastic piece of legislation that’s not about water but reducing mining in the state as a whole.”

As for potential seismic impacts on the mine, Mr. McGee said

“there will be design and construction in tailings embankments taking that into account. The State’s Dam safety office that provides these permits stated very rigorous requirements in assessing seismic risks and for projects like this to withstand seismic risk. We will have to include models that look at last 100 years for seismic activity, future prediction models and measurements of faults and subduction zones.”

When asked if Alaska’s reclamation bonds would apply for a mine if it were to ever be destroyed by an earthquake, Mr. McGee said that

“the bonds are not intended to address catastrophic events, only to restore a mine site when the mine is closed. To my understanding for catastrophic events, there are no bonds required to address them.”

### **Potential Mining implications**

Cyanide, heavy metals and acid drainage are common water pollutants for mineral operations, which are very dangerous to fish and other wildlife. The U.S. Environmental Protection Agency has concluded that mining operations have contaminated up to 40 percent of all headwaters in the Western continental United States<sup>24</sup>. As one of the largest minerals found near the proposed Pebble Mine, copper extraction can be environmentally damaging. The amount of raw material to marketable material is particularly high due to the low percentage of metal in the ore and to the mining methods and processes that must be used. Copper tailings, dump and heap leach wastes and waste rock/overburden are three different forms of copper waste<sup>25</sup>. This means that there is likely to be much waste rock that will result from copper development at Pebble Mine. Research shows that salmon are highly sensitive to small amounts of metals. This data shows that just a small amount of copper can highly impact the olfactory functions, or sense of smell, in salmon. These functions are very important for their reproductive and migratory purposes<sup>26</sup>.

### **Alaska's Mining History**

Mining companies pay a lower amount of taxes than the oil and gas industry in Alaska. Seven percent of their royalties is paid to the State of Alaska for mines making

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<sup>24</sup> "Human Health and Environmental Damages from Mining and Mineral Wastes" July 2005. Environmental Protection Agency, January 29, 2008. <<http://www.epa.gov/epaoswer/other/mining/minedock/damage/damage.pdf>>

<sup>25</sup> "Copper Mining and Production Wastes." November 15, 2007. Environmental Protection Agency, February 5, 2008. <http://www.epa.gov/rpdweb00/tenorm/copper.html>

<sup>26</sup> Ramstad, K.M., C. A. Woody et al. "Concordance of nuclear and mitochondrial DNA markers in detecting a founder event in Lake Clark sockeye salmon." 2007. American Fisheries Society Symposium February 9, 2008. <<http://www.fish4thefuture.com/pubs.html>>

over \$250,000 per year, whereas the oil industry pays about 20 percent of their royalties to state taxes. The tax rate depends on each sectors' total income. Commercial fishing returns 5 percent to the State Department of Revenue<sup>27</sup>.

Mines in Alaska have varying compliance records. Red Dog Mine in Northwestern Alaska is North America's largest zinc mine. In 2006, it was the "top toxic polluter in the United States" for the sixth year in a row, according to the U.S. Environmental Protection Agency's (EPA) Toxic Release Inventory (TRI)<sup>28</sup>. As a result, the EPA has classified the State of Alaska as the largest emitter of toxic substances into the land, air and water among all the states. At issue is the estimated 500 million pounds of waste rock that is dumped each year into permitted areas and stored as stockpiles and mine tailings. The waste rock found from Red Dog Mine must be contained to the point that toxic chemicals are kept from leaching into the environment. But the EPA found that upwards of 320,000 pounds of methanol, lead and zinc had leached into the air as "fugitive emissions" not confined to a stack, duct or vent, which cause concerns for air quality<sup>29</sup>. Since waste rock contains toxic materials, there may be potential for them to leach toxic chemicals into the environment. The amount of toxic material released into the environment from Alaska's various industrial operations increased by 900,000 pounds in 2004, and 44 million pounds in 2005. Juneau's Green River gold, zinc, silver

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<sup>27</sup> "Tax Divisions Program." 2008. State of Alaska Department of Revenue. November 16, 2007. <<http://www.tax.alaska.gov/programs/index.aspx>>

<sup>28</sup> "Red Dog Mine tops EPA's list of toxic waste disposal sites." March 23, 2007. Anchorage Daily News. December 14, 2007. <<http://www.adn.com/money/industries/mining/story/8731781p-8633499c.html>>

<sup>29</sup> "Red Dog Mine tops EPA's list of toxic waste disposal sites." March 23, 2007. Anchorage Daily News. December 14, 2007. <<http://www.adn.com/money/industries/mining/story/8731781p-8633499c.html>>

and lead mine also was ranked as the second top polluter in Alaska, and seventh top polluter in the nation<sup>30</sup>.

### **Pebble Mine History**

In 1986, a company called Cominco Alaska Exploration (CAE) discovered gold and copper deposits near two major Bristol Bay watersheds that are part of the salmon spawning grounds. Color anomalies visible from aircraft in this area tipped mining interests to discover these deposits<sup>31</sup>. The following years, the company expanded exploration and found vast amounts of gold and copper in the region, more than anticipated. In 2005, Canada-based Northern Dynasty acquired Cominco's mineral rights to the area, and began site specific planning to develop these minerals. In 2006, Rio Tinto invested in the project, and owns nearly 20% of Northern Dynasty shares. In June of 2007, Northern Dynasty partnered with Anglo American to form the Pebble Mines Corporation, and each corporation owns 50% of the Pebble project<sup>32</sup>.

### **Proposal**

The Pebble Partnership must apply for about 67 federal, state and local permits and approvals to begin commercial mining production. As of right now, the Pebble Partnership estimates that they will begin applying for these permits in 2009 after a

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<sup>30</sup> "Red Dog Mine tops EPA's list of toxic waste disposal sites." March 23, 2007. Anchorage Daily News. December 14, 2007. <<http://www.adn.com/money/industries/mining/story/8731781p-8633499c.html>>

<sup>31</sup> "Iliamna Quadrangle." United States Geological Survey. February 28, 2008. [http://ardf.wr.usgs.gov/ardf\\_data/Iliamna.pdf](http://ardf.wr.usgs.gov/ardf_data/Iliamna.pdf)

<sup>32</sup> "Pebble Mine" December 14, 2007. Northern Dynasty Mines Inc. December 14, 2007. <<http://www.northerndynastyminerals.com/ndm/Pebble.asp>>

baseline study is completed. In 2010, they estimate that their feasibility studies will be complete, and in 2015 they may begin commercial production of the mine. In the March 2008 estimate, there is nearly 67.3 billion tons of copper, 81.7 million tons of gold and 4.054 billion tons of molybdenum in both the Pebble East and Pebble West deposits, worth nearly \$500 billion in March 2008 mineral value prices<sup>33</sup>.

The minerals would be extracted through an open-pit mine. Pebble West, a much smaller mineral deposit compared to Pebble East, could be up to two miles wide, several thousands of feet deep and generate up to 2.5 billion tons of waste rock material. There could be up to two artificial lakes created to store chemicals and other discharged waste, which may require water runoff from nearby watersheds and groundwater. Tailings dams would also be required, and it is estimated that one dam near the Pebble West deposit could be up to 740 feet tall and 4.3 miles long<sup>34</sup>. Pebble East would more likely be mined through underground methods. Minerals could be transported through a possible 9 mile long road stretching along the north end of Lake Iliamna to a shipping port located in Iniskin Bay on Cook Inlet. Power could be supplied from a submarine cable line through Cook Inlet<sup>35</sup>.

## **Stakeholder Involvement**

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<sup>33</sup> “Pebble Mine” December 14, 2007. Northern Dynasty Mines Inc. December 14, 2007. <<http://www.northerndynastyminerals.com/ndm/Pebble.asp>>

<sup>34</sup> “Fishing for Molybdenum.” November 8, 2007. The Economist. December 10, 2007. <[http://www.economist.com/world/na/displaystory.cfm?story\\_id=10110049](http://www.economist.com/world/na/displaystory.cfm?story_id=10110049)>

<sup>35</sup> “Pebble Project.” April 9, 2008. Alaska Department of Natural Resources. <<http://www.dnr.state.ak.us/mlw/mining/largemine/pebble/>>

In Alaska, Natives are not situated in reservations like those found in indigenous communities in the continental United States. Indigenous peoples in Alaska, through the Alaska Native Claims Settlement Act, are largely divided into 13 regional respective stockholding corporations. Each Alaska Native alive in 1991 received 100 shares in their respective regional Native corporations. These corporations equally dole out economic gains among all their shareholders from various corporate economic investments. Pebble Mine is located in the boundaries of the Bristol Bay Native Corporation (BBNC), which has an option to invest in the Pebble project. Currently, BBNC is neutral in the development of the Pebble Mine, stating that it is “supportive of responsible economic development...(but the Pebble Mine) could pose risks to commercial fisheries, sports fisheries, subsistence activities, and could change the way of life in Bristol Bay.” The corporation states that “as in any development, it is important to weigh the rewards against the risks.” The corporation is waiting to review all permits and applications to make a decision. In a 2007 shareholder survey, 69% of BBNC shareholders were “personally opposed to the Pebble Mine,” but 57% agreed that the BBNC should maintain a neutral position until further information is available<sup>36</sup>.

Although by treaty law that states Indian tribes are supposed to own all the resources found on their reservations, mineral rights are held “in trust” by the U.S. Bureau of Indian Affairs (BIA)<sup>37</sup>. In 1970, there began to be a huge transfer of mineral rights on Indian lands to large multinational corporations, through leasing agreements between the BIA, the tribes and the mining corporations. Through these leases, many

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<sup>36</sup> “BBNC Report to Shareholders Concerning the Pebble Mine Survey.” 2007. Bristol Bay Native Corporation. December 17, 2007.  
<<http://www.bbnc.net/uploads/File/pdf/BBNC%20Pebble%20Survey%20Results.pdf>>

<sup>37</sup> Gedicks, Al. The New Resource Wars. Boston, MA: South End Press, 1993.

Indian tribes got only as much as 2 percent of the value of the minerals extracted from their lands, in what many of them call “internal colonialism.” In international standards, the American Indian Policy Review Commission in 1997 said that “the leases negotiated on behalf of Indians are among the poorest agreements ever made<sup>38</sup>.”

Alaska’s lawmakers express widely different positions on the issue. Governor Sarah Palin is currently neutral on the project, as she wants to review all environmental impact studies before she can make a decision. The Governor fishes in Bristol Bay with her husband Todd, who is originally from the Bristol Bay region<sup>39</sup>. She has made numerous trips to the region in her goals to help solve other socioeconomic problems affecting the area, such as poverty and alcohol abuse. When running for governor, Palin said that the Pebble Project can help create many jobs and revenue in the region and state. She also believes that it is not good to shut down any potential project that can help Alaska’s economy<sup>40</sup>.

Alaska’s federal delegation is currently split on this issue, with Alaska’s Senior Senator Ted Stevens coming out heavily against the Pebble Mine<sup>41</sup>. He has had a long history getting federal funding for projects located in rural Alaska, many in Alaska

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<sup>38</sup> Gedicks, Al. The New Resource Wars. Boston, MA: South End Press, 1993.

<sup>39</sup> Jans, Nick. “Stealth bills take aim at your right to vote on game issues.” March 24, 2008. Anchorage Daily News. April 10, 2008. <<http://www.adn.com/opinion/compass/story/354362.html>>

<sup>40</sup> Quinn, Steve. “Palin, select lawmakers meet with Pebble Mine officials.” October 24, 2007. Anchorage Daily News. November 2, 2007. <<http://www.adn.com/money/industries/mining/story/63163.html>>

<sup>41</sup> Dobbyn, Paula. “Stevens Pledges to Stall Pebble.” March 4, 2006. Anchorage Daily News. December 18, 2007. <<http://dwb.adn.com/news/alaska/story/7499691p-7410683c.html>>

Native communities. Representative Don Young said that science would have to show if Pebble was a viable option<sup>42</sup>.

The Alaska state legislature is currently considering a number of bills that would affect the future of the Pebble Mine<sup>43</sup>. The state legislator who represents the Bristol Bay region is Representative Bryce Edgmon, a Dillingham Democrat. His main campaign argument in 2006 was based on an anti-Pebble Mine platform. He is currently the sponsor of legislative bills that would essentially stop any future mining operations from adversely impacting watersheds that are important for salmon spawning and clean drinking water, including House Bill 134 that seeks to ensure clean water for essential salmon habitat in Alaska. Edgmon has brought a number of Alaska Legislators to the Bristol Bay region to argue that the Pebble Mine is not good for the region<sup>44</sup>.

Representative Gabrielle LeDoux, a Republican from Kodiak who represents some villages on the Alaska Peninsula, also opposes the development of the Pebble mine.

Environmental groups who oppose the Pebble Mine in Alaska are led by the Renewable Resources Coalition (RRC), who is primarily concerned about the impacts the mine could have on fishing and hunting interests. It was given a lot of funds by Bob Gillam, who is a sports fishing lodge owner in the Lake Iliamna area<sup>45</sup>. RRC has also done outreach to increase Native involvement in its group, and frequently cites how the

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<sup>42</sup> Maynard, Misty. "House Candidates Debate Fish Issues." March 21, 2008. Kodiak Daily Mirror. April 16, 2008. <<http://www.kodiakdailymirror.com/?pid=19&id=5983>>

<sup>43</sup> Eurich, Johanna. "Two Bills Target Pebble Mine." February 27, 2007. KDLG Radio. April 10, 2008. <<http://www.aktrekking.com/pebble/news.html>>

<sup>44</sup> Bluemink, Elizabeth. "Pebble Bill Spurs Talk in the Bush." September 26, 2007. Anchorage Daily News. March 27, 2008. <http://dwb.adn.com/money/industries/mining/v-printer/story/9332488p-9247566c.html>

<sup>45</sup> Bluemink, Elizabeth. "Enemy of Pebble also an Investor in Mining Firm." May 10, 2008. Anchorage Daily News. May 10, 2008. <<http://www.adn.com/money/industries/mining/story/401815.html>>

mine could impact indigenous peoples and their way of life. A number of other environmental groups have also actively campaigned against the project. Trout Unlimited is another fishing and hunting groups who focused its effort to stop the Pebble Mine. Other national environmental groups who have started campaigning against Pebble include The Wilderness Society, National Wildlife Federation and American Rivers Society<sup>46</sup>.

The Bristol Bay Native Association (BBNA), a consortium of all 30 indigenous tribes in the Bristol Bay Region, passed a resolution opposing the Pebble Mine. They cite its potential impacts on indigenous people and traditions such as subsistence foods. The Bristol Bay Economic Development Corporation (BBEDC), the local economic development group, also opposes the mine due to potential impacts on tourism operations, the commercial and subsistence fisheries, and impacts on hunting and fishing activities. A number of local and tribal governments have also passed resolutions opposing the project. A native group, Nunamta Alukestai, who was formed by the former CEO of the Bristol Bay Native Association Terry Hoefflerle, has led local indigenous opposition to the project.

Many local groups have also come out in support of the project, or are staying neutral until all permitting and studies are completed. Those who are neutral include the Lake and Peninsula Borough, the Bristol Bay Borough and a number of tribes and villages near the proposed mine site. They have all stated the potential good impact it could have on the local economy, while expressing concerns about its environmental

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<sup>46</sup> “The Pebble Scoreboard.” 2007. Renewable Resources Coalition. May 16, 2008. [http://www.renewableresourcescoalition.org/pebble\\_scoreboard.htm](http://www.renewableresourcescoalition.org/pebble_scoreboard.htm)

impacts. The Alaska Peninsula Corporation, the local economic development corporation for Alaska Peninsula villages and similar to the Bristol Bay Economic Development Corporation, has promoted the project.

A number of statewide organizations were created to promote the development of the Pebble mine. They are led by the *Truth About Pebble*, a statewide mining organization who has repeatedly stated the potential good local impacts for indigenous peoples. The group *Alaskans Against the Shutdown* was also created to try to defeat the proposed Clean Water Initiative, a ballot question for Alaskan voters that would prohibit any mining that could adversely impact watersheds important to salmon and clean drinking water. Alaska voters will vote on the Clean Water initiative in August of 2008. These groups also include the Alaska Mining Association and the Alaska Chamber of Commerce.

**Table 3: Stakeholder Involvement in the proposed Pebble Mine. Sources on “For” and “Against” are from various media outlets and/or from the stakeholder’s websites or publications.**

Federal	State	Local	Stakeholders/NGOs	
			For	Against
U.S. Environmental Protection Agency	Office of the Governor	City of Dillingham	Truth About Pebble	Renewable Resources Coalition
U.S. Army Corps of Engineers	Alaska State Legislature	Lake and Peninsula Borough	Alaska Mining Association	Trout Unlimited
National Marine Fisheries Service	Alaska Department of Natural Resources	Bristol Bay Borough	Rio Tinto	Alaskans for Responsible Mining
U.S. Fish and Wildlife Society	Alaska Department of Fish and Game	City of New Stuyahok	Northern Dynasty	Nunamta Aulekestai
U.S. Bureau of Alcohol, Tobacco and Firearms	Alaska Department of Environmental Conservation	City of Koliganek	Anglo-American	Nushagak-Mulchatna
U.S. Mining, Safety and Health	Alaska Department of Transportation	City of Ekwok	Alaska Peninsula	Bristol Bay Native

Administration			Corporation	Association
Coast Guard	Alaska Department of Public Safety	Village of Iliamna	King Salmon Tribe	Bristol Bay Economic Development Corporation
Federal Communications Commission	Alaska Department of Labor	Levelock Village Council	Pebble Partnership	Bristol Bay Alliance
		Pedro Bay Village Council	Against the Shutdown	Pure Bristol Bay
		Nondalton Village Council		Curyung Tribal Council
		Port Alsworth Village Council		Alaska Inter-Tribal Council
		Bristol Bay Native Corporation		Felt Soul Media
		Village of Newhalen		Peter Pan Seafood's

### Mining Profiles and Record

When observing other mines around the United States and world, some areas have witnessed increased crime rates as immigrating mine employees moved in. In Wyoming for example murder, rape and violent crime rates increased as mining developments increased throughout the state<sup>47</sup>. Although mining has created jobs, revenue and income for areas, historically it did not necessarily mean for local residents. Policy and political processes all have an impact on the social, economic and environmental outcomes of a mining operation and these issues should be scrutinized by the indigenous people of Bristol Bay to ensure their environmental justice concerns are addressed.

<sup>47</sup> Bittner, Amy. "Summary of Economic Development Publications and Recommendations for the State of Wyoming." January 5, 2005. State of Wyoming. March 14, 2008. <[http://eadiv.state.wy.us/specialreports/WY\\_Econ\\_Develop.pdf](http://eadiv.state.wy.us/specialreports/WY_Econ_Develop.pdf)>

## **Northern Dynasty and Hunter Dickinson**

Northern Dynasty Inc. is part of the mining conglomerate Hunter Dickinson, one of the world's largest gold producers with eight subsidiaries. Northern Dynasty, based in Vancouver, British Columbia, was created in 1983 and is a subsidiary of Hunter Dickinson (HD). Northern Dynasty's chairman is Robert Dickinson and its President and CEO is Ronald Thiessen, has over 150 employees and over \$1 billion worth in shares fully diluted. HD also produces molybdenum, copper, PGM, lead and silver in Canada, Chile, Mexico, South Africa, China and other parts of the United States. Northern Dynasty claims that it has a advantage in cost and expertise for developing the Pebble Mine as part of the HD group, because they share mining advice from professionals such as geologists, financial and management experts, administrative and support workers<sup>48</sup>.

## **Rio Tinto**

Rio Tinto currently owns nearly 20 percent of all investments in the Northern Dynasty, the exploratory company who recently joined with Anglo-American to form the Pebble Partnership. The company has had strained relationships in the past with local residents and nations where their mines are located. Rio Tinto is currently being sued by the nation of Indonesia by not divesting 51 percent of its coal mining earnings to a local coal mining company, even though Indonesia has said that it was part of the agreement Rio Tinto had made before developing the project (The Independent, 2001.) In Australia, Rio Tinto has not allowed its workers to be involved in a mining union, which has angered some mining workers. Also, in 2002 Rio Tinto was fined by the Australian

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<sup>48</sup> "Corporate Profile." 2008. Northern Dynasty Minerals Ltd. December 14, 2007. <<http://www.northerndynastyminerals.com/ndm/CorporateProfile.asp>>

government after a 3 year legal fight over unfair firing practices for 190 of their mining employees in what was Australia's largest unfair dismissal case, but the fine was reprimanded on an appeal. In 2003, Rio Tinto also laid off over 300 copper mine workers in Utah after copper commodity prices fell. Rio Tinto in 2003 also fought Australia's tax agency, claiming that it did not owe over \$500 million to the Australian government (The Australian, 2002.)

Based in London and Melbourne, Rio Tinto was established as a mining company in 1873. Today, its Chairman is Paul Skinner and CEO is Tom Albanese. Its 2006 operating revenue was \$25.440 billion, its operating income was \$8.974 billion, its net income was \$7.867 billion and its pre-tax profit was \$10.4 billion. It had 32,000 employees across the world. It's largest mineral product is copper, where it holds 32% of the worlds copper profits. It also produces coal, iron, gold, uranium, aluminum, diamonds, and its subsidiaries produce a number of other minerals such as talc, titanium dioxide, salt, borax, bauxite. Rio Tinto trades as two companies. Rio Tinto Limited, based in Melbourne, Australia and Rio Tinto TLC, based in London. (Rio Tinto, 2007.)

Rio Tinto has a long history, dating back to ancient times when it is said to have helped build King Solomon's empire on the Iberian Peninsula, and drew Phoenician Merchants to its shores. Following Roman rule and innovations in ancient infrastructure, Rio Tinto was sold from the Spanish to the British in 1871, where it resumed to be one of the largest copper and sulphur producing companies in the world. The British firm helped create some of the finest golf courses, lawns, metal houses and social clubs in Europe, including some of the first tennis courts and football pitches (Andalucia, 2007.) In 1962, it bought majority shares into Australian based Consolidation Zinc, and became

known as the Rio Tinto-Zinc Corporation (RTZ.) A partner company was created in Australia, called Conzinc Riotinto of Australia (CRA), which today is the primary mining company in that nation over RTZ (Rio Tinto, 2007.)

In Bougainville, Papua New Guinea, a subsidiary of Rio Tinto was under considerable controversy with treatment to indigenous populations. The Panguna Copper/Gold Mine was vitally important to the economy of Papua New Guinea in the 1980s, but the people of Bougainville claimed they were seeing little benefit from it. Bougainvillean leaders alleged that the mine had been responsible for devastating environmental consequences. They also claimed that Bougainville Copper had set up a system of apartheid on the island, with one set of facilities for white workers, and one set for the locals. Allegations rose on the poisoning of one of their rivers, causing birth defects and the extinction of some species like the flying fox on their island. In 1987, the Panguna Landowners Association was formed to try to get billions of dollars in compensation from Rio Tinto and its island partner. After the meetings failed, and after a New Zealand mining company came out saying the local Jaba River was not poisoned, activists formed the Bougainville Revolutionary Army, which conducted terrorist acts against the mine. The campaign was successful in its goal of shutting the mine down in 1989, and today the mine remains vacant. In 2006, Citizens of Bougainville brought a class action lawsuit in the United States for its atrocities on environmental and human rights issues. Rio Tinto tried to have the U.S. Court of Appeals Ninth Circuit reject the case, but their efforts were unsuccessful (Hagens Berman, LLC 2007.)

In 2003, Rio Tinto was scrutinized in Madagascar for its activities in mining ilmenite, a mineral from sand used to make paint and toothpaste. Rio Tinto promised that

the mine would be a “model of green capitalism and a tonic for the world’s fourth poorest country.” Their proposal that 6,000 hectares and millions of tons of soil would be mined resulting in an artificial lake as well as major infrastructure such as roads and ports to support Rio Tinto trucks and ships. The Madagascar government gave the go-ahead, looking toward revenue that would benefit its nation in spite of environmental impacts (WildMadagascar.org, 2007.)

In 2006, the Indonesian Forum on the Environment (WALHI), which is the largest environmental non-governmental organization in that nation that comprises of over 438 organizations, published a report about the environmental impacts of Rio Tinto’s Freeport copper and gold mine operation in Papua. (Indonesian Forum on the Environment, 2006.) WALHI has said that Rio Tinto is not complying with water quality laws and regulations brought by the nation of Indonesia. They have also said that the Indonesian Ministry on the Environment has not enforced Indonesian environmental laws and regulations because they are being bribed by Freeport-Rio Tinto, who owns the Freeport Mine. They stated that Freeport did not obey orders to build a stable tailings dam, has breached water quality standards, was negligent in waste rock management and is continuing to polluting the Otomona Ajkwa River system through discharging acid rock. WALHI’s report states that environmental tests have revealed up to double the amount of heavy metal particulates were in the river in 2005. They claim that it has had devastating impacts on local vegetation, and increased fish and animal mortality. Fish in the river has shown that they contain up to 100 times the amount of copper in their systems compared to nearby freshwater areas not directly below the mine. In the lower estuary, there are approximately 35% fewer aquatic species. WALHI’s report also

makes recommendations to the government, saying that the government should enforce laws, increase mining taxes and establish an independent panel to study the effects that mining has had on the environment (Indonesian Forum on the Environment, 2006.)

In 2007, the Shoshone Paiute Tribe of the Duck Valley Reservation in what state>??? was awarded \$20,000 from the US EPA to research concerns and solutions of fish kills in Mill Creek, part of the Owyhee River that have been noticeable since World War II. The research will show the health effects of this former mine on local populations, wildlife, recreationists and livestock.

In efforts to reduce their environmental impact, in September of 2007 Rio Tinto announced plans to join the United States Action Partnership (USCAP) along with 27 other large multi-national corporations. USCAP is one of the largest NGOs to push for nationwide economy efforts to combat climate change. In its statement, Rio Tinto said that “as one of the world's leading mining and exploration companies, Rio Tinto has a long-standing and deep commitment to sustainable, development worldwide, and is pursuing a number of technology solutions to reduce greenhouse gas emissions and improve energy efficiencies (USCAP, 2007.)”

In November 2006, Rio Tinto announced plans to boost iron ore production up to 600 million metric tons which it will commit \$2.4 billion to achieve. It announced its plans after rejecting a bid by BHP Billiton Ltd. to buy the company for \$150 billion. It will focus on developing iron ore deposits in Australia, and Simandou, New Guinea in order to meet the demand of its biggest customers in China. China Investment Corporation, one of the largest buyers of BHP and Rio Tinto iron ore along with other

Chinese steelmakers, is planning to bid for the mining company as well (Associated Press, 2007.)

In its 2006 Sustainable Development Report, Rio Tinto Energy America stated that it is committed to sustainable practices. The Rio-Tinto subsidiary develops coal, uranium and sulfur in Colorado, Wyoming and Montana. They say that they want to help communities that may be environmentally affected by their activities. They also stated that they are committed to working with all stakeholders in the project. The report also gave some specific examples on how it will reduce environmental contaminants in their projects, such as acid runoff in one of its Tennessee coal plants. It detailed how much revenue their activities are providing each state, safety/occupational health improvements, their charitable work and employment figures/salaries. For example, RTEA has said that since 1998 they have reduced their freshwater use by 30%, energy consumption by 9%, and spent over \$2 million to reduce greenhouse gas emissions. They also have targets to reduce their environmental damage each year. Three of their mines won awards from various mining associations for “outstanding environmental work.” These awards were endorsed by the EPA, as well as other state environmental agencies. It also listed government compliance to laws as well as its four environmental projects at its specific mines (Rio Tinto Energy America, 2006)

In the gold and copper sector, it owns the Kennecott Utah Copper Corporation with a merger between Utah Copper Company in 1989. Together they have mines in Australia, the United States, Indonesia, South Africa and Chile. Kennecott is based in Magna, Utah and owns the largest open pit copper mine in the world in Bingham Canyon, Utah, which is 15 miles southwest of Salt Lake City. Notably, it created about

30% of copper used by the allied powers during World War II. After huge success, it opened other copper mines in Chile, Arizona, New Mexico and Nevada. In the 1990s, Kennecott employed 2,400 people and mining 300,000 tons of copper annually and was said to have the most environmentally friendly smelter in the world, which would capture 99.8 percent of sulfur contained in the copper elements (Online Utah, 2007.)

Environmental concerns about the Bingham Canyon mine though persist. Kennecott is currently working with the Utah Department of Environmental Quality (UDEQ) and the US EPA to investigate the potential health risks of the mine's arsenic contamination (Kennecott Utah Copper, 2007.) Its current approach is to remove arsenic sediments that are currently buried into the ground, which are believed to have contaminated groundwater aquifers near the mine. Kennecott's project will cost \$15 million and take four decades to complete (Department of Justice, 2007.)

In the Iron Ore sector, Rio Tinto has many partners and subsidiaries. It owns Hamersley Iron, which has many partners or owns and operates many mines in Western Australia. It also owns over half of Robe River Iron Associates and almost 3/5ths of the Iron Ore Company of Canada. Rio Tinto also has a number of partners in the energy sector. In the coal industry, it owns Rio Tinto Coal Australia. In the uranium industry, it owns Energy Resources of Australia which operates the Ranger Uranium Mine. This group also owns the Rossing uranium mine in Namibia.

In the aluminum sector, Rio Tinto owns Comalco, which mines for bauxite in Tasmania, Boyne Island and Queensland, Australia as well as in New Zealand. In 2007, Rio Tinto agreed to purchase Alcan Incorporated to create one the largest aluminum

producer in the world for \$38.1 billion. It created a division to be based in Montreal, called Rio Tinto Alcan (Canada TV, 2007.)

In the Diamonds sector, Rio Tinto Murowa diamond mine in Zimbabwe, 60% of the Diavik Diamond mine in the Northwest Territories in Canada. Most significantly, Rio Tinto owns the Western Australia Argyle diamond Mine, which produces over 90% of so-called pink diamonds. It also produces around 30% of the annual production of all natural diamonds. cites

### **Anglo American**

Based in London, Anglo American was founded as a gold mining company in 1917 by Sir Edward Oppenheimer in South Africa. Its current Chairman is Mark Moody-Stuart and the CEO is Cynthia Carroll, who toured the Pebble Mine area and Alaska in 2007. Its 2006 operating revenue was \$38.637 billion, operating income was \$9.832 billion and net profit before taxes was \$6.186 billion. It has 209,000 employees around the world. The company and its subsidiaries mine for gold, platinum, diamonds, coal, base metals, ferrous metals and other industrial minerals (Anglo American, 2007) In 1928, two years after becoming a majority stakeholder in the De Beers diamond company, Anglo became involved in the Zambian copper belt. In May of 1999, Anglo American merged with mining company Minorco, and its gold operations were spun off to later become AngloGold Ashanti. It also owns its other subsidiary, Anglo Platinum, which is the worlds largest platinum producer. Combined, Anglo American is the worlds second largest mining company and operates in over 60 nations. In 2006, the company

saw a massive increase in profits, up 76% in 2006. At a profit of nearly \$6.2 billion, it is much larger than the \$3.5 billion reported in 2005 (War on Want, 2006.)

In 2005, the Human Rights Watch published a report called “The Curse of Gold”, saying that Anglo American was one of a few multinational corporations that were helping fuel atrocities in the northeastern part of Congo through its conglomerate AngloGold Ashanti. They say in their report that local people were suffering from ‘ethnic slaughter, torture and rape’ while warlords and other international companies like AngloAshanti were benefiting from the gold mines. Specifically, the report claims that AngloGold Ashanti partnered with a warlord group called the Nationalist and Integrationist Front (FNI) to ensure monopolistic power over the mines. Although AngloGold has denied that they are involved with the group, they conceded that they had to make some payments to it in order to continue their 2003 mining agreement with the Democratic Republic of Congo. As a response, they co-chaired the “Africa Economic Summit” in June 2005 to “promote business investment and engaging business as a catalyst for change in Africa.” The United Nations labeled this region so troubled that they had to create a draft of human rights business standards for all international business firms in the region, known as the “United Nations Norms.” It strived for corporate responsibility in the region for both labor and environmental concerns, but many corporations failed to enact the draft (Human Rights Watch, 2005.)

War on Want, in its 2006 “Anglo American: The Alternative Report,” stated that Anglo-American has participated in a number of atrocities in labor, social and environmental issues. These include cases in Columbia, Congo, Philippines, South Africa, Mali, For example, AngloGold Ashanti was said to have devastated drinking

water, fishing and land irrigation at its Obuasi gold mine in Ghana, one of Africa's largest. In 2005, Ashanti says local villagers were nearly flooded with toxic chemicals like cyanide when heavy rainfalls forced the company to drain the lake. Mary Robinson, UN High Commissioner for Human Rights, has even gone as far as saying that she is "deeply concerned" about the "range and severity of human rights problems that continue to affect this sector." Anglo American has directly taken on this report, saying that the mine that it owns in Ghana for example was bought in 2004 and was previously owned by a 'Ghanaian company.' They claim that they are pouring a lot of money into development modern environmental controls (Anglo American, 2006.)

Anglo American, in its annual "Report to Society" says that it has improved in diversity issues in its hiring practices in 2006. It will continue to do so in the future. In the front on climate change, they are working to eliminate carbon emissions through increased funding for clean coal technologies as well as carbon capturing schemes. They also support carbon trading mechanisms for corporations. They are promoting their Socio-Economic Assessment Toolbox (SEAT) which looks at how people may be affected by their mining operations and 'looks for solutions to their problems.' They seek to improve environmental and labor reporting, as well as keep scorecards and continue to improve stakeholder engagement. (Anglo American, 2007.)

In 1926, Anglo American became a majority stakeholder in De Beers diamond corporation, which is responsible for nearly 40% of the world's diamond production. Cite Today, Anglo owns 45% of De Beers shares. De Beers is active in 25 nations and owns roughly 70% of African diamond mines, with largest ones in Namibia, Tanzania, South Africa and Botswana and with many partners of its own. In Namibia and Botswana, the

government owns 50% and 25% of the partner companies, respectively. In South Africa, De Beers currently holds an exemption that would otherwise require them to spray down dust for miners while extracting diamonds. Mining with high levels of dust particulates greatly affects the lung and respiratory health of workers. In the 1990s De Beers adopted a no-conflict, zero tolerance policy, which stated that they would not buy diamonds from rebels or other areas where diamonds were traded illegally or violently. It complied with this policy through the Kimberly Process Certification Scheme as well as its own “Best Diamond Practice Principles.” In 2006, De Beers earned \$425 million, of which \$227 went to Anglo American (War on Want, 2006.)

Anglo American’s other subsidiaries include Copebras of Brazil who produces phosphates, Tarmac of the United Kingdom which is a road surface materials corporation, and Anglo Platinum Ltd. of South Africa. Anglo American bought Tarmac in 1999, but agreed to sell Tarmac in 2007 to focus on mining metallic minerals, and the sale will be completed in 2008. Anglo Platinum Ltd. is 75% owned by Anglo American, and produces 38% of the world’s platinum, which makes it the largest producer in the world. Anglo Platinum is the eighth largest mining company in its own right, and made a profit of \$1.8 billion in 2006, which \$1.3 billion went to Anglo American. Anglo Platinum’s shareholders saw their returns double in 2005 Anglo Coal, Anglo Base Metals, Anglo Ferrous Metals and Anglo Industrial Metals are also subsidiaries (War on Want, 2006.)

Although a lot of this data was received from either non-governmental organizations or the mining firm itself, it was difficult to find the compliance record for each mining firm in developing nations. For example, I could not find data from the

Government agencies in nations such as Angola and Indonesia to independently verify what each stakeholder or developing actor has claimed in this section. Dr. Saleem Ali, the Professor at the University of Vermont specializing in mining research, has even said that environmental and socioeconomic data from the mining operations in developing countries is difficult to obtain. This would be an important avenue for study in the future.

### Cost-Benefit Analysis

In this section, I summarize the benefits associated with Pebble Mine according to its promoters and estimate the costs associated with environmental impacts of the mine. The Pebble Partnership says the benefits include: Annual state tax revenues, both blue collar and professional jobs that will be awarded heavily toward Alaskans and Bristol Bay residents, money spent on roads and other infrastructural needs in the region and diversity of jobs for the region. Exact figures will be accounted for in the future. I estimate the potential economic losses associated with these impacts.

Bristol Bay's largest fishery is sockeye salmon, although there is a market for the four other Pacific Salmon species consisting of Chinook, Pink, Chum and Coho salmon. Economic figures by the Alaska Department of Fish and Game for the Bristol Bay fisheries do not take into account these four species in their 2004-2006 economic fishery report because the vast majority of the salmon caught and sold from Bristol Bay are sockeye salmon. In 2004 only about one million of the 26 million salmon caught in Bristol Bay was not sockeye. The ten year average for the market buying price of all Bristol Bay sockeye salmon from 1996 to 2006 was \$0.66 per pound (Alaska Department of Fish and Game, 2007.) The average number of sockeye salmon caught per year in the

same period was 18,827,826. The total average value of the sockeye salmon fishery each year during that period was \$74,149,000 (Alaska Department of Fish and Game, November 2006)

The five rivers that are directly downstream from the proposed Pebble Mine include the Nushagak, Mulchatna, Kaktuli, Talarik and Kvichak Rivers, which all fall into the Nushagak and Naknek-Kvichak fishing districts (two of five Bristol Bay fishing districts.) If we analyze the two districts that would be impacted by the contamination from the Pebble Mine, the Naknek-Kvichak district and the Nushagak District, we see how much economic value they contribute each year on average for the total Bristol Bay fishery.

In 2004 for example, 26,261,802 sockeye salmon were harvested in all five fishing districts in Bristol Bay. In the Naknek-Kvichak district, about 4,756,293 sockeye salmon were harvested for subsistence and commercial purposes, while 6,733,740 were harvested in the Nushagak district. A total of 11,490,033 sockeye were harvested in the two districts combined, which accounts for 43.75% of all Bristol Bay sockeye caught that year (Alaska Department of Fish and Game, 2007.) If we take the average value of the sockeye salmon fishery between 1996 and 2006 (\$74,149,000) and assume that 43.75% of that value was from the Nushagak and Naknek-Kvichak districts as in 2004, roughly \$32,440,187 is generated from the salmon that spawn in the Nushagak and Naknek-Kvichak districts.

There may be issues with this figure. First, not all salmon in each of the five districts are the same size or sold for the same value, which would impact how much each individual district contributes to the overall economic value from the Bristol Bay

fishery. Second, total sockeye salmon runs differ each year in each district, which means that one district could contribute more one year compared to other years. Third, the Nushagak and Naknek-Kvichak fishing districts have other rivers and streams besides the five rivers that are directly downstream from the proposed Pebble Mine, so we would have to take out the values associated with the unrelated rivers. Fourth, it is unsure if any of the sockeye that are recorded for value from the two fishing districts actually spawn or have any biological dependence on any of these five rivers. There is a lack of data to know how many salmon caught in the Nushagak and Naknek-Kvichak districts actually spawn in any of the five rivers directly downstream from the proposed Pebble Mine, or even if any of the rivers have substantial amounts of sockeye salmon that migrate through them. There is also a lack of full data to show the extent the Pebble Mine would impact the salmon runs of these five rivers. But it is known that Northern Dynasty's detailed plans to create large tailings ponds may consume these freshwater streams that act as critically important habitat for juvenile salmon (Northern Dynasty, 2007.)

The figure also does not account for the amount that is generated from the other four species of salmon that are commercially harvested in the two fishing districts. Tourism dollars are not accounted for, as many tourists come to Bristol Bay to fish and hunt for other animals that are dependant on the salmon that migrate in these five rivers. It also does not account for the possible fluctuations in the spawning salmon population for each river, and the fluctuations in the price of salmon per pound in the marketplace. Recent years have seen an increase in the price of sockeye salmon from Bristol Bay.

There are other factors that we need to consider. The value of the subsistence harvest of salmon in Bristol Bay is not calculated or estimated by any governmental

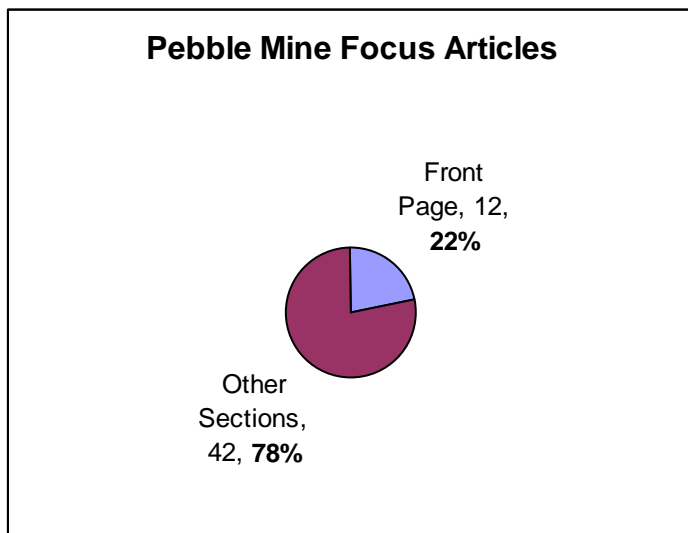
agency. Nearly 20% of the diet of Bristol Bay residents is comprised of salmon, according to the State of Alaska. Data needs to show the average amount that a Bristol Bay family pays for food costs per year, to possibly calculate how much their harvest of salmon for subsistence use saves them in dollar value each year. Food not caught through subsistence means is generally expensive in rural Alaska, as most of it is shipped in from the continental U.S.

Northern Dynasty has claimed in January of 2006 that the gold, copper and molybdenum minerals that would be extracted from the Pebble Mine would be worth roughly \$500 billion in 2008 mineral prices, according to their preliminary studies. Yet they also claim that they have years of exploratory mining to complete their studies. Therefore, more data is needed for a complete cost-benefit analysis of the proposed Pebble Mine as compared to the salmon fishery.

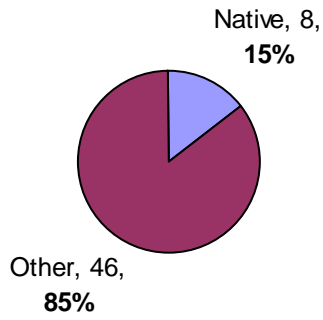
#### Media Analysis

Since July 20, 2004 to March 2008, the Anchorage Daily News, Alaska's largest newspaper, published nearly 326 articles, letters to the editor and opinion pieces that covered the Pebble Mine. Of those 326 articles, 157 were letters to the editor, 54 were regular informational articles and 48 were opinion pieces from the Anchorage Daily News editorial board, it's "Who's Up, Who's Down" section that characterizes different groups based on recent news stories, Compass pieces (opinion-editorials from the community) and articles from the opposing editorial board, the Voice of the Times. The Voice of the Times section dissolved from the newspaper in 2007.

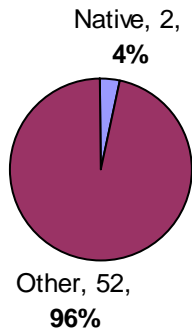
Of the 54 articles ran since July of 2004, 12 were on the front page, or nearly 22 percent, showing that it is currently one of the most controversial environmental issues in Alaska. Of these 54 articles, 8 articles (or just 15 percent) focused on issues of particular concern for Bristol Bay Natives, such as potential mine impacts on subsistence resources, jobs to local people and the opinions of local Native leaders. 22%, or 12 articles, focused mainly about the mining venture, such as profiles about the mining companies, what the different company leaders believe and seismic studies. 8 articles (or 15%) focused on non-governmental organizations, mostly environmental groups, and mainly focused on their issue with the environmental risks associated with the Pebble Mine on fisheries, watersheds and drinking water. 5 articles, or 9%, focused on the economic impacts that the mine could have. These stories included ones such as mineral estimates, revenue and total number of statewide jobs it could create. A large 39%, or 21 articles, focused on statewide stakeholders and their views of the Pebble Mine. This included the views of the governor, legislature, differing bills that may impact the future of the Pebble Mine, statewide campaign rhetoric and the proposed Clean Water Ballot Initiatives.



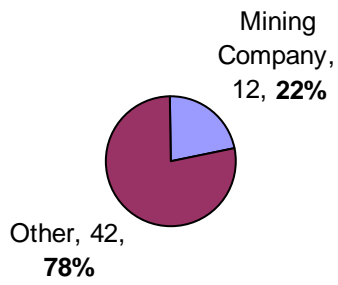
### Native Focus



### Native Focus, Front Page



### Mining Company Focus



### Mining Company Focus, Front Page

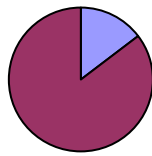
Mining  
Front  
Page, 2,  
4%



Other, 52,  
96%

### NGO (Non-Native Opponents) Focus

NGO, 8,  
15%



Other, 46,  
85%

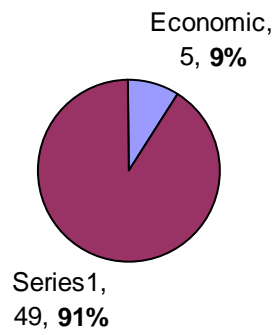
### NGO Front Page

NGO Front  
Page, 2,  
4%

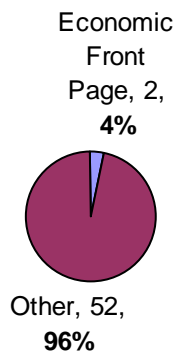


Other, 52,  
96%

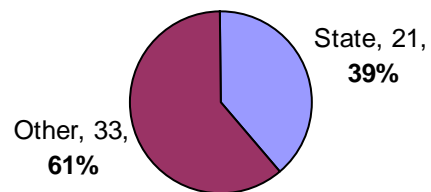
### Economic Benefits Focus



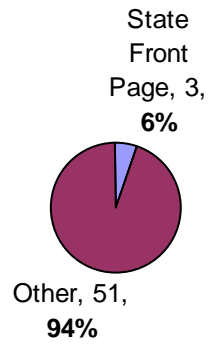
### Economic Benefits, Front Page



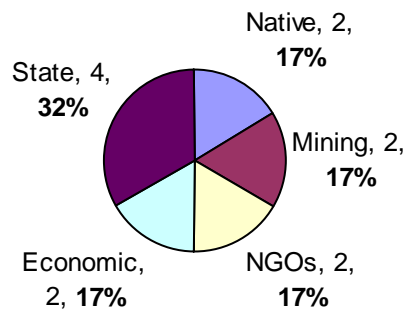
### State Stakeholder Focus Articles



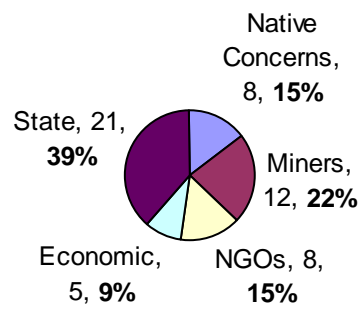
### State Stakeholders, Front Page



### Front Page Articles



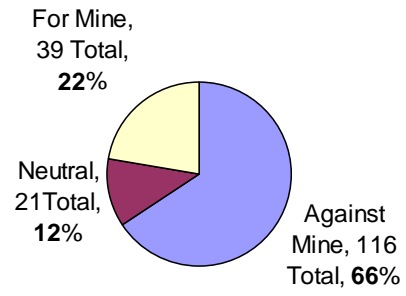
### Article Focus by Subject



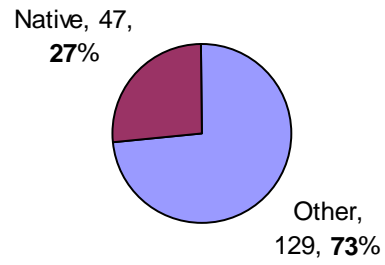
## **Letters to the Editor**

Of the 176 letters to the editor, about 66% had arguments against the proposed mine, such as how it may negatively impact the environment. 22% were letters in support of the mine or the permitting process, and 12% were neutral and/or informational letters to the editor, such as state workers explaining how the permitting process works. Of the 176 letters to the editor, only 27% (or 47 articles) focused on issues of concern for Bristol Bay Natives. Seventy six percent of the articles were associated with issues of Bristol Bay Natives presented arguments against the proposed mine or expressed concern on the mine's potential impacts on Native culture and resources. Just 15% stated arguments on how it could benefit the Native community and 9% were neutral or informational. Of all the letters, only 19% came from people from the Bristol Bay region, while 81% came from people outside of the Bristol Bay region. Of the 33 letters written by locals, about 70% were letters opposing the mine or concerns of the impacts it could have. Breaking it down by those who wrote in favor of the mine (39 letters), 18% of them wrote how it could benefit the Native community. Of those who wrote a neutral or informational letter on the mine, 19 percent wrote about Native issues. And those who wrote a letter opposing the mine, 31% were about how the mine could negative impact local Native peoples, culture and lifestyle.

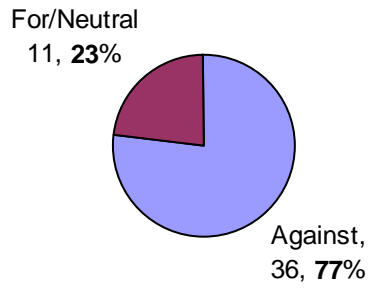
### Letters to the Editor, 176



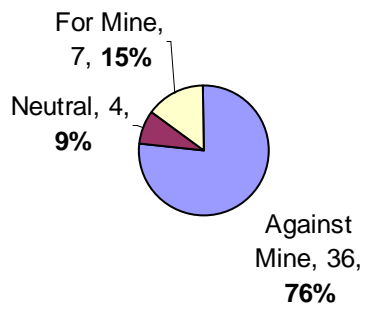
### Primarily Native Concern



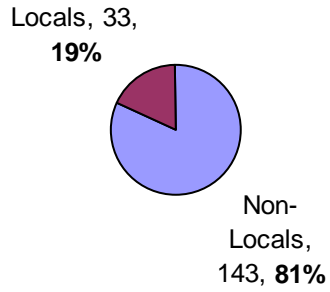
### Primarily Native Concern



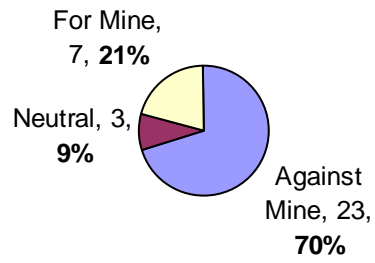
### Primarily Native Concern



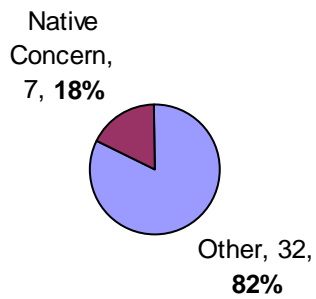
### Letters from Locals

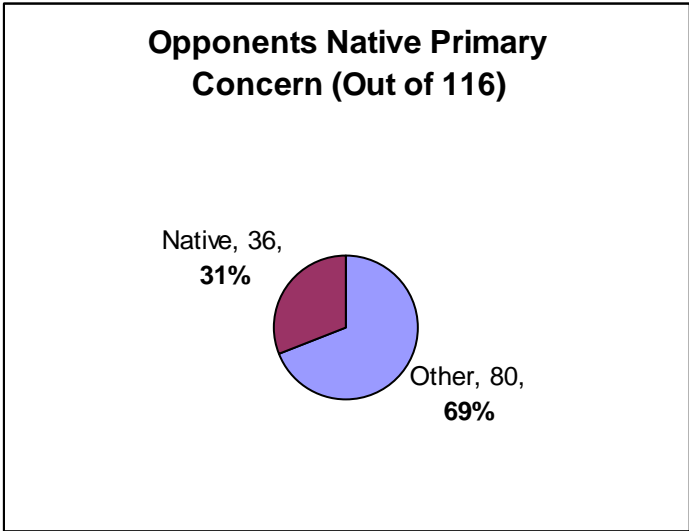
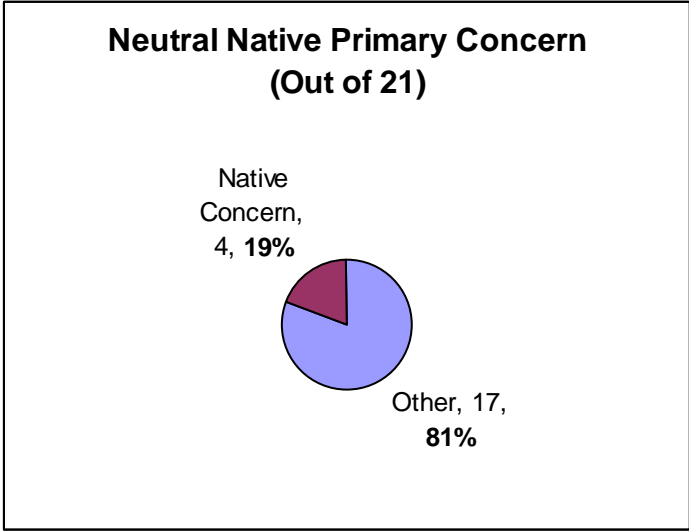


### Letters from Locals, 33



### Proponents Native Primary Concern (Out of 39)





**Opinion Section**

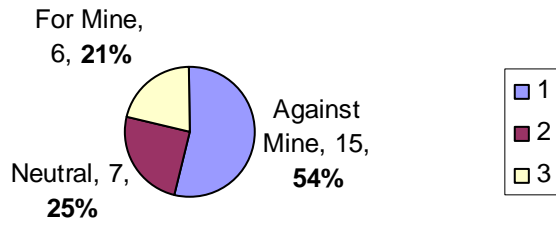
In the opinion section there are opinion-editorials from the community called “Compass Pieces,” Anchorage Daily News editorial board, a “Who’s Up and Who’s Down section that assesses different stakeholders throughout the state and the recent coverage they’ve received, and the former Voice of the Times which created alternative opinions, often in opposition to the Anchorage Daily News editorial board. Of the 28 Compass op-ed pieces, 54% presented arguments that were anti-mine, 21% were pieces that were for the mine and 25% were neutral or informational pieces. Of the six op-ed

pieces that were pro-mine, just one was from a local Bristol Bay resident, and five were from outside of the area, but none of them focused on Native issues or concerns. Of the fifteen anti-mine op-ed pieces, three (20%) were from Bristol Bay residents, and five focused on Native issues, while 33% (or 5 pieces) focused on Native issues. Looking at all 28 opinion editorials, about 18% focused on Native issues and 82% focused on other issues. 21%, or 6 writers of these pieces were from the local Bristol Bay region. There were seven neutral opinion editorials written. None were focused primarily on Native concerns, but 1 (14%) was from a writer in the Bristol Bay region.

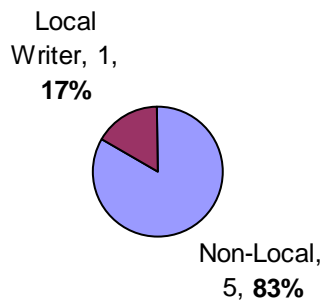
The Anchorage Daily News editorial board wrote 14 editorials about the Pebble Mine issue. 64% (or 9 articles) were neutral or informational pieces and five (36%) were pieces stating their opposition to the development of the mine. None had arguments in favor of the mine. Only two pieces of the 14 pieces (or 14%) focused primarily on Native issues. Its former opposing opinion section, the Voice of the Times, wrote six pieces in favor of the Pebble Mine. None of them focused on issues of Native concern.

In totality, the opinion section of the Anchorage Daily News published 48 pieces on the Pebble Mine. 42% (20 articles) were opposing articles or articles highlighting the damages that the mine could cause, 16 (33%) were neutral or informational pieces and 25% (or 12 articles) were pro-mine articles. Of these forty eight pieces, only 7 (or 15%) focused on issues of primary Native concern, while only 5 articles (10%) were written by local people in the opinion-editorial section. Further, of the 5 opinion-editorials written by locals, 60% (3 articles) were anti-mine while 1 (20%) was neutral/informational, and 1 (20%) was pro-mine.

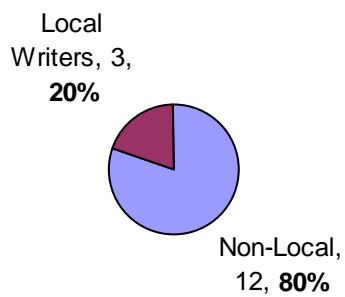
### Op-Eds (Compass Pieces)



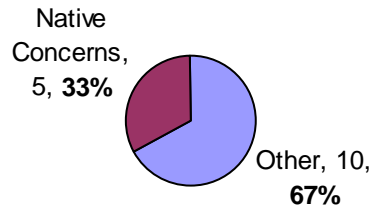
### Pro-Mine Op-Eds (6, none focused on Native Concerns)



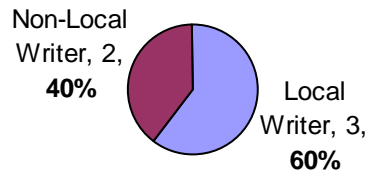
### Anti-Mine Op-Eds (15, 5 focused on Native Concerns)



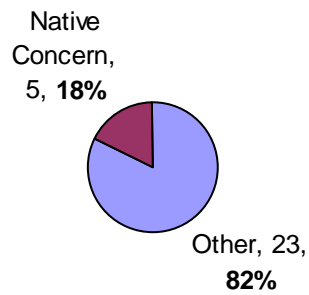
### Anti-Mine Op-Eds



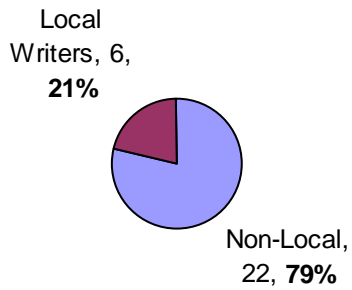
### Anti-Mine Op-Eds, Native Concerns



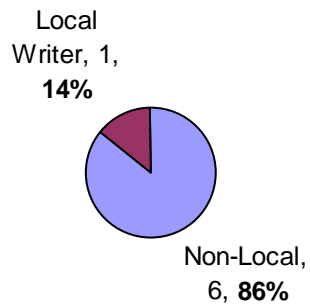
### Op-Eds, Native Concern (out of 28)



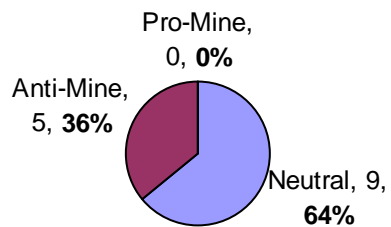
### Op-Eds, Local Writers (Out of 28)



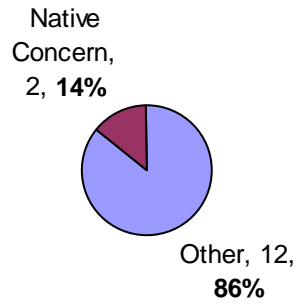
### Neutral Op-Eds (7, none focused on Native Concerns)



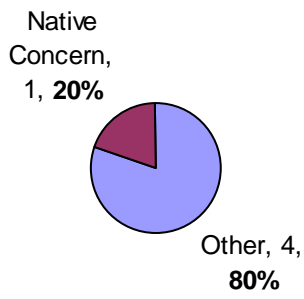
### ADN Editorial Board Opinion (Out of 14)



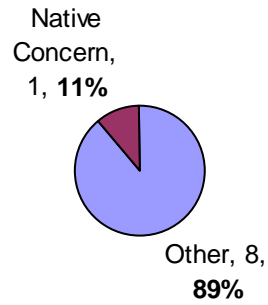
**ADN Editorial Board Opinion,  
Primary Native Concern (Out of 14)**



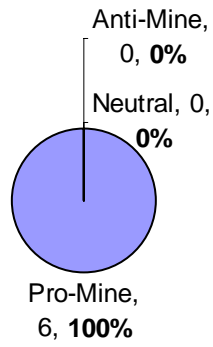
**ADN Editorial Board Opinion, Anti-  
Mine (out of 5)**



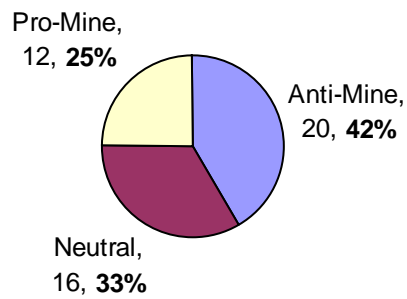
**ADN Editorial Board, Neutral (Out of 8)**



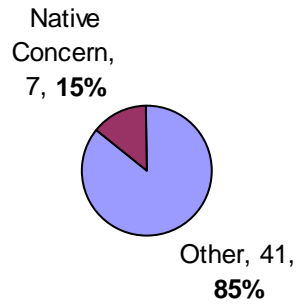
**Voice of the Times (6, none were local writers or Native Concern)**



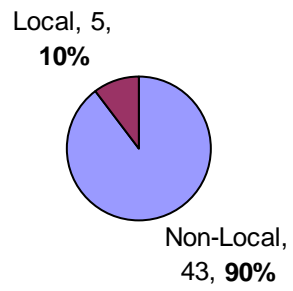
**Total Opinion Section (Out of 48)**



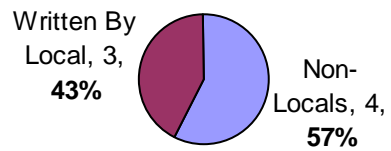
**Total Opinion Section, Native Concern (out of 48)**

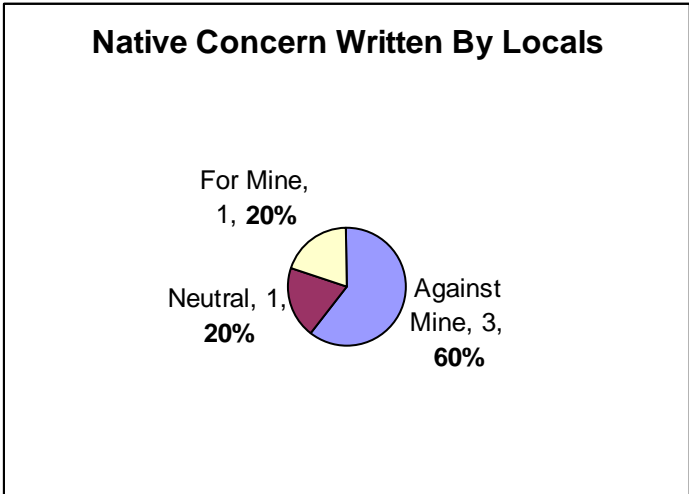


**Total Opinion Section, Written by Locals**



**Opinion Section, Native Concerns (Out of 7)**





Permitting and Approvals

There are over 67 federal state and local permits and approvals that the Pebble Partnership has to obtain to begin its developing activities. Over eight federal agencies, six state agencies and three local governments will have oversight of the project through various laws and requirements. These permits and approvals ensure that the mine will meet occupational and environmental safety standards (Alaska Department of Natural Resources, 2008.)

At the federal level there are 19 federal permits and approvals. The Environmental Protection Agency (EPA), Army Corps of Engineers (ACOE), National Marine Fisheries Service (NMFS), Fish and Wildlife Service (FWS), Mining Safety and Health Administration (MSHA), Bureau of Alcohol Tobacco and Firearms (BATF), US Coast Guard (USCG), and Federal Communications Commission (FCC) will all have oversight over the proposed mining project. The lead agency for the federal government is the EPA. There are a number of federal laws that give oversight to these different agencies. The Clean Water Act requires a number of these permits. Sections 301 and

306 require the Pebble Partnership to develop and meet wastewater standards under New Source Performance Standards (NSPS.) Section 511 (C) says that the NPDES permits actions for new sources are subject to the National Environmental Protection Act (NEPA), and that a Record of Decision (ROC) needs to be issued prior to the final permit action. Under section 404, the Pebble Partnership will need an issuance of a permit to allow mining fill or discharge into watersheds. Discharge also requires a permit and approval to satisfy the regulated activity for the National Marine Fisheries Service and the U.S. Army Corps of Engineers (Pure Bristol Bay, 2008.)

At the state level there are 45 state permits and approvals that must be met by the Pebble Partnership. The Alaska Department of Natural Resources (DNR), Department of Environmental Conservation (DEC), Department of Transportation (DOT), Department of Public Safety (DPS), Department of Labor (DL) and Department of Fish and Game (ADFG) will all have oversight through a number of different Alaska state laws. At the local level, the Lake and Peninsula Borough, the Bristol Bay Coastal Resources Commission and the Bristol Bay Native Corporation will review the state laws and permits (Pure Bristol Bay, 2008.)

There are a number of permits that address Bristol Bay indigenous peoples concerns. The Plan of Operations approval by the DNR will require the Pebble Partnership to create a 1) project description, 2) reclamation plan and bonding plan, 3) monitoring of surface/groundwater and wildlife impacts, 4) a transportation plan and 5) road maintenance agreements. The indigenous villages and peoples around Bristol Bay will have their environmental justice concerns met with this bond because it will require bonding if the mine will ever shut down, and monitoring of potential mine impacts on

subsistence foods and watersheds. The Fish Habitat and Fish Passage Permit from the DNR will also require the mining company to find ways to mitigate, reduce or compensate impacts to watersheds that are fish habitat or support fish passage. Since the cultural lifestyle for the indigenous peoples of Bristol Bay heavily depend on its fisheries, those concerns will be partly met. There may be concerns about the compensation aspect, since how can the mining companies compensate a traditional lifestyle if their fishing traditions and fish eating are lost due to pollution and toxic chemical concerns. The DNR and the federal National Historic Preservation Act also requires through various permits that any activities that may adversely impact cultural resources must find ways to reduce, mitigate or compensate these resources. Again, there is concern as to how this requirement will be enforceable or met. Health concerns are met through a number of permits, such as the Air Quality Permit. This will require regulation of any activity such as mining that may impact air quality, and restricts pollutants such as black smoke from leaching. Water quality under the State Division of Water's "Water Quality Certification" must also comply with the federal Clean Water Act, which aims to reduce industrial impacts to drinking water for communities (Pure Bristol Bay, 2008.)

### Recommendations

The American Bar Association and the University of California did a study looking at all 50 states' definitions and applications of environmental justice laws, and compared them to the 1993 executive order on Environmental Justice (University of California, 2008). They concluded that the State of Alaska does not have an environmental justice statute incorporated into the varying agencies. Incorporating an

environmental justice law would be an important step for the State of Alaska to ensure that the nearly 20% of its population who are of indigenous descent have fair representation in environmental decision making. In this environmental justice provision, the different state agencies and departments need to ensure minorities and those in the low-income socioeconomic class have proper access to information and the decision making process for the different state permits and approvals. This could help the indigenous peoples of Bristol Bay have a more direct and influential role in the Pebble permitting process as well as obtain more information. This can also help indigenous peoples become more involved for future potential mining projects.

The State of Alaska needs to provide more information on the residents of Bristol Bay. A cost of living analysis, subsistence valuation and more subsistence studies are needed. Currently, the State of Alaska provides information of the socioeconomic status of different villages, cities and boroughs. This information, which often states that many villages in rural Alaska are below the federal poverty guideline level, does not state in monetary terms the value of the subsistence fishery to those villages in the Bristol Bay region. The Alaska Department of Fish and Game states that nearly one-fifth of the diet for residents of the Bristol Bay Borough consists of subsistence caught fish and game, which means they do not have to pay as much for the often high-price of food paid at the local grocery store. This information can increase the numbers for the area's median income and provide more of an understanding of the overall financial benefits of their subsistence lifestyle. This should complement a thorough Cost-of Living analysis done across Bristol Bay, through surveys that optimize the average cost of groceries, food and other living necessities such as heating fuel per household. The Cost-of Living analysis

can then be compared to the financial amount that are offset from subsistence resources to provide better policies and regulatory frameworks for residents, and to understand their economic needs. The Department of Fish and Game's subsistence studies for each village in the region also does not include a detailed study for each village, city and borough or for peoples living in those individual jurisdictions. This would be beneficial to understand how each village depends on subsistence resources compared to others.

The State of Alaska, through its bonding permit, will require the Pebble Partnership to set up a bond in case it cannot meet its mine reclamation obligation. Since the Pebble Mine is located near the Pacific Rim fault line, there are a lot of earthquakes in the region. Last year alone, there were a number of earthquakes in the State of Alaska, many of which were near southwestern Alaska where the Pebble Mine would be located. The state incorporates a requirement that will force the Pebble Partnership to include a study on the potential risks of an earthquake, such as if one were to ever inflict damage on the operations' mine tailings pond, and other safety infrastructure requirements. This requirement should include emergency precautions and procedures to reduce environmental damages if natural disasters occurred, as well as bonding plans. There should be a plan to mitigate and/or compensate for damage in a natural disaster. This may be especially beneficial to indigenous populations of Bristol Bay because of the huge reliance on a healthy watershed to continue their traditional lifestyles.

Compensation for environmental damage is currently based on State of Alaska estimates (Alaska Department of Natural Resources, 2008.) But if the subsistence resources for the indigenous peoples of Bristol Bay are jeopardized from environmental damages, their environmental health is also jeopardized. In some cases, they may not be

able to practice their traditional subsistence lifestyles because of health risks to their subsistence foods. Subsistence studies can be applied for compensation if environmental disasters or damage occurred. Although the subsistence traditions are an intrinsic value, the State of Alaska should also conduct a contingent valuation study of residents of the Bristol Bay region before the mine starts commercial production. Valuation of a lifestyle may be very hard to determine and agree upon, but it is important for the indigenous peoples of Bristol Bay to be ensured that there is some fair way toward compensation and/or mitigation if their environmental health and cultural livelihoods are at risk with this proposal. This contingent valuation study could also provide a better compensation and mitigation strategy for the Pebble Partnership if its operations affect the subsistence livelihood of the indigenous peoples of Bristol Bay. This valuation must be conducted fairly among the different indigenous communities in Bristol Bay, especially in the villages where they heavily rely on subsistence resources for traditional and cultural purposes.

The Pebble Partnership can also do its part in further ensuring that environmental health and justice concerns are met for indigenous peoples. Although the partnership states that it has already hired a lot of local and Alaska residents, they must provide detailed information as to whether these people have lived in Alaska for more than one year. This is because the trend in the Alaska oil industry shows that many of its employees were just residents for a few months, and oil companies were able to claim that they were hiring Alaskans. If this data is provided, the people of Bristol Bay can be assured that long term residents are being hired by the Pebble Partnership. Further, the Pebble Partnership should provide statistics of how many indigenous people are hired,

what their job positions are compared to non-resident employees, and to ensure indigenous residents hired by the Pebble Partnership are gaining upper-level management and decision making jobs. If these upper-level management and decision making jobs are not being offered to indigenous people due to educational impediments, the Pebble Partnership should increase its efforts to educate the local and indigenous peoples of Bristol Bay.

### Conclusion

Looking back at the question, if the proposed Pebble Mine will meet the Environmental health and justice concerns of the indigenous peoples of Bristol Bay, I conclude that environmental justice concerns by the Pebble Partnership are trying to be addressed, as well as at the government regulatory systems at the federal, state and local levels. Compliance though has been an issue for mining companies in keeping their promises and agreements. Enforcement of regulations has been challenging, especially in developing countries and indigenous areas. The mining industry is changing, and technology and stakeholder/local relations are improving in areas where they can be held accountable. There are many ways to improve this industry though, and many more ways for the Natives of Bristol Bay to have their concerns addressed.

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