



Beatson Mine

Latouche Island, Prince William Sound

April 2016

Point of Contact:
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Site History

The former Beatson Mine is located on the west side near the north end of Latouche Island in Prince William Sound. The Beatson-Bonanza claims were discovered by the Beatson Copper Company in 1897, and production of a copper sulfide ore at the Beatson Mine began in 1904. The "Alaska Syndicate" (J.P. Morgan and the Guggenheim family) purchased the mine in 1907, and then, in 1910, the mine was purchased by the Kennecott Copper Corporation, later renamed the Kennecott Utah Copper Corporation in 1989, when it was purchased by Rio Tinto. At its peak, in 1917-1918, there were about 300 people working at the Beatson Mine and about 4,000 people living on Latouche Island. The mine closed in 1930, reportedly due to low copper prices and little remaining high quality ore. Total copper production from the mine is reported as 182,600,000 pounds.

The Kennecott Copper Corporation, then owned by British Petroleum, owned the Beatson Mine property until 1962 when they sold the surface rights to James Sumpter. The mine-related structures were demolished in the 1960s-early 1970s. James Sumpter, operating as Latouche Island Development Corporation, owned the land until 1976 when he sold it to Basil and Elizabeth Bolstridge and Alfred and Agnes Derkerverkian. In 1978, the property was sold to Donald Marino, operating as Rare Earth, Inc. Mr. Marino subdivided the property, built roads and an airstrip using waste rock, and began selling parcels for residential or recreational use. In 2007, the ownership of the unsold parcels transferred to Laura Schafer Marino. Additional parcels were sold to private parties. According to information on the Alaska Department of Natural Resources Recorder's Office, there are approximately 106 property owners of former mine property. Additional roads have been developed using waste rock and several cabins have been constructed. The State of Alaska owns the intertidal lands. The land on Latouche Island outside of the former mining claims area is owned by the Chugach Alaska Corporation.

In 2013, the Alaska Department of Environmental Conservation (ADEC) learned that potential contamination was present at the former Beatson Mine property. ADEC researched the mine history and identified Rio Tinto as the current corporate owner of the former mine company. In August 2015, ADEC and Department of Law staff accompanied Rio Tinto representatives on a site visit. In December 2015, Rio Tinto submitted a draft site characterization work plan for ADEC review and comment. ADEC provided comments on that draft work plan. Rio Tinto is currently finalizing the work plan and plans to conduct the field work in Summer 2016.

Past Environmental History and Sampling

The principal ore body consists of chalcopyrite (copper-iron sulfide), pyrrhotite, and pyrite (both iron sulfides) scattered through the altered country rock and in small veinlets associated with quartz. Copper was found at 5-10% in small loads of ore. The surface oxidizing of the iron sulfide (pyrite and pyrrhotite) released small quantity of sulfuric acid (H₂SO₄). This process, due to weathering, is increased by the former mining activities, which may increase the acidity of surrounding waters and soil. Crushing of the host rock increases the surface exposed to weathering and subsequently the rate of acid formation. Acid mine drainage is visible throughout the area and consists of yellow and orange precipitates in the surface water.

In 2007, the U.S. Geological Survey (USGS) documented their fieldwork results of soil, sediment, and biota samples collected at three abandoned copper mines, one of which was the Beatson Mine (*Chemical Data for Rock, Sediment, Biological, Precipitate, and Water Samples from Abandoned Copper Mines in Prince William Sound, Alaska*. U.S. Geological Survey: U.S. Geological Survey Open-File Report 2007-1359. <http://pubs.usgs.gov/of/2007/1359/of2007-1359.pdf>). At the Beatson Mine, USGS soil samples collected from 'mine dumps' and sulfide bearing rocks contained elevated concentrations of several metals. During the 2015 site visit, Rio Tinto also collected a limited number of soil samples from various locations, including dump, road and air strip. The following table shows the elevated metals concentrations found by USGS and Rio Tinto as compared to the ADEC regulatory cleanup levels. The difference in the concentrations between the two studies is likely due to variations based on sample locations.

ADEC has developed cleanup levels for metals in soil which are considered protective for adults and children in two different residential exposure scenarios, including migration to groundwater (where groundwater is used for drinking water) and direct contact. This information is provided as a reference since cleanup levels for the site have not been determined and may be different than those noted below as these levels do not take into account Alaska Water Quality Standards or protection of ecological receptors.

	USGS sample range of concentrations	Rio Tinto sample range of concentrations	ADEC Migration to Groundwater cleanup levels	ADEC Direct Contact cleanup levels²
Arsenic	22 - 9,100	18 - 220	3.9	3.7
Cadmium	3 - 153	<0.04 - 7.4	5	65
Chromium	69 - 105	8.8 - 38	25	250
Copper	10,400 - 155,000	542 - 25,400	460	3,300
Lead	27 - 4,510	93 - 1,110	--	400
Mercury	0.8 - 1.9	0.2 - 2.2	1.4	13/25 ³
Selenium	16 - 280	3.7 - 85.5	3.4	410
Silver	6.4 - 64	0.9 - 37	11	410
Zinc	1,170 - 57,000	81 - 1,830	4,100	24,900

Notes:

1. All results are in milligrams per kilogram (mg/kg).
2. Direct Contact cleanup levels are based on the Over 40" of Precipitation Climate Zone.

3. Mercury is the only metal for which a cleanup level for an additional exposure pathway, Outdoor Inhalation, has been calculated. The Outdoor Inhalation cleanup level is 13 mg/kg and the Direct Contact cleanup level is 25 mg/kg.

The USGS also collected sediment samples from the intertidal area. ADEC does not have cleanup levels for sediment, but instead relies on screening levels for ecological receptors from the National Oceanic and Atmospheric Administration (NOAA). Concentrations of arsenic, barium, cadmium, chromium, copper, nickel, lead, and zinc were found in excess of NOAA screening levels. USGS also collected limited samples of mussels and barnacles at three abandoned mines in their study. The sample results for those biota collected at the Beatson Mine were compared to those from the other two mines, as no samples from a background (or undisturbed) location were collected. In mussels, concentrations of barium, copper, lead, vanadium, and zinc were found to be higher at the Beatson Mine than the other mines, and, in barnacles, concentrations of barium, cerium, manganese, lead, rubidium, and strontium were found to be higher at the Beatson Mine than the other mines.

Current Environmental Investigation Activities

In June 2015, ADEC requested that Rio Tinto conduct a site characterization in order to determine the nature (type of contaminants) and extent of contamination at the site. Rio Tinto plans to conduct the field work for that investigation in Summer 2016. Rio Tinto will be collecting soil, sediment, surface water, and groundwater samples across the site. They will also be collecting similar samples from “background” locations that are believed to be not impacted by past mining activities. Rio Tinto will also conduct an evaluation of risk to both human health and ecological receptors using ADEC guidance and policies.

Rio Tinto will prepare a report of the site characterization activities which will likely be available in Spring 2017. However, due to the size and complexity of this project, additional sampling during several field seasons may be necessary to fully characterize the site.

For More Information, Contact:

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Tailings and waste rock looking out to Prince William Sound. 8/2015



Waste rock at the former Beatson Mine. 8/2015



Waste rock in front of the water-filled Glory Hole. 8/2015