

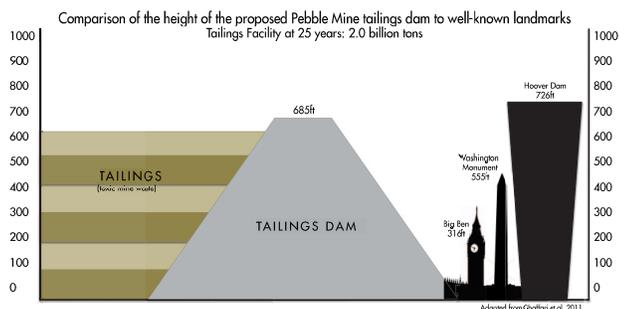


# THE PEBBLE MINE: An Unacceptable Risk to the Bristol Bay Wild Salmon Fishery

**The Bristol Bay wild salmon fishery** is at risk from plans to develop a massive open pit copper and gold mine at its headwaters. The proposed Pebble mine straddles the headwaters of the Kvichak and Nushagak Rivers – the world’s two most productive wild sockeye salmon rivers. Based on current ore projections, the Pebble Project will be the largest copper and gold mine in North America, with an estimated footprint covering 54.4 square miles of the Bristol Bay watershed.<sup>1</sup>

According to 2006 applications and the 2011 prefeasibility study, minimal mine plans would include:

- An open pit 2.5 miles wide and 2,000 feet deep.
- Generation of up to 10 billion tons of toxic mine waste, which would be permanently disposed of in an area that is currently productive salmon spawning and rearing grounds in the headwaters of Bristol Bay.<sup>2</sup>
- Construction of several mammoth earthen dams, at least one of which is projected to be roughly 700 feet high – larger than the Three Gorges Dam in China – built to store the acid-generating mine tailings in perpetuity.



- The annual removal of over 35 billion gallons of surface water from salmon habitat.
- Construction of an 86-mile road with four parallel pipelines (carrying diesel fuel, wastewater, mine slurry and natural gas) crossing important salmon habitat, and linking the mine to the port.<sup>3</sup>
- A 378 megawatt power plant.

A peer reviewed 2010 ecological risk assessment commissioned by The Nature Conservancy studied the impacts of such large-scale mining in the Bristol Bay region, and concluded that the risks to wild salmon populations are “very high,” and that it is cause for significant concern regarding the long-term abundance and sustainability of salmon in the region.<sup>4</sup> It identified serious risks associated with water pollution from acid mine drainage, loss of important wild salmon habitat, and the loss of water in important salmon streams.



**“Our findings remove any doubt that the construction of a mine will destroy salmon and salmon rearing habitat.”**

— DR. CAROL ANN WOODY,  
FISHERIES BIOLOGIST

In 2009, fisheries biologists conducted salmon surveys in 37 streams within and adjacent to the mine permit boundary.<sup>5</sup> Over a period of just one week, the team documented salmon streams directly over the Pebble ore deposit, which would certainly be affected by excavation of the open pit and other mine development.<sup>6</sup> “Our findings remove any doubt that the construction of a mine will destroy salmon and salmon rearing habitat.” — Dr. Carol Ann Woody

## Acid Mine Drainage (AMD):

- Acid mine drainage is expected during the proposed mine’s life and after.
- Instream pH levels from acid mine drainage below 5 could occur up to 30 miles from the mine.
- Low pH would result in fish kills and benthic community impacts.

► MORE NEXT PAGE



**EARTHWORKS**  
1612 K St., NW, Suite 808 Washington, D.C., USA 20006  
202.887.1872 • [lpagel@earthworksaction.org](mailto:lpagel@earthworksaction.org)  
[www.earthworksaction.org](http://www.earthworksaction.org)



# THE PEBBLE MINE:

## An Unacceptable Risk to the Bristol Bay Wild Salmon Fishery

► CONTINUED FROM FRONT

### Dewatering and Loss of Instream Flow (including groundwater discharge) and Loss or Alteration of Supporting Habitat

- 33 square miles of drainage area lost.
- Approximately 68 stream miles lost.
- 14 miles designated salmon streams lost.
- Reduced flow can result in higher temperatures: lower dissolved oxygen; restricted upstream migration.
- Potential effects to spawning and embryonic development.
- Up to 78 stream miles would exhibit some form of flow reduction in the three watersheds evaluated.



**Bristol Bay watershed.**

PHOTO: ROBERT GLENN KETCHUM

Because of the unacceptable risks to the wild salmon fishery, the proposed Pebble Mine is opposed by Alaska's commercial fishing industry, including the United Fishermen of Alaska, the Bristol Bay Regional Seafood Development Association, and the Alaska Independent Fishermen's Marketing Association.<sup>7</sup>

---

### Sources

- 1 Brief Bristol Bay Fact Sheet, Snyder, et.al., September 16, 2010
- 2 Current estimates indicate a total resource of 6.54 billion tons measured and indicated and 5.33 billion tons inferred, for a total of 11.9 billion tons. Obtained from Ghaffari et al. Preliminary Assessment of the Pebble Project, Southwest Alaska. Report of Wardrop Engineering Inc., a Tetra Tech Company to Northern Dynasty Minerals Ltd., Vancouver, BC., page 6. February 2011, page 6. Available at: [http://www.northerndynastyminerals.com/ndm/Prelim\\_A.asp](http://www.northerndynastyminerals.com/ndm/Prelim_A.asp)
- 3 Ibid.
- 4 Ecology and Environment Inc., "An Assessment of Ecological Risk to Wild Salmon Systems from Large-Scale Mining in the Nushagak and Kvichak Watersheds of the Bristol Bay Basin", October 2010. Available at [www.ourbristolbay.com/pdf/TNC-Pebble-Ecological-Risk-Assessment.pdf](http://www.ourbristolbay.com/pdf/TNC-Pebble-Ecological-Risk-Assessment.pdf)
- 5 Ibid.
- 6 Dr. Carol Ann Woody, "Fish Surveys in the Headwaters of Streams of the Nushagak and Kvichak River Drainages, Bristol Bay Alaska, April 28, 2009.
- 7 BBRSDA position statement, available at: [http://www.bbrsda.com/layouts/bbrsda/files/documents/bbrsda\\_pebble/Large%20Scale%20Mining%20Position%20-%20Final%20021808.pdf](http://www.bbrsda.com/layouts/bbrsda/files/documents/bbrsda_pebble/Large%20Scale%20Mining%20Position%20-%20Final%20021808.pdf); AIFMA position statement, available at: [http://www.aifma.org/AIFMA\\_pebble\\_mine\\_article.html](http://www.aifma.org/AIFMA_pebble_mine_article.html); UFA position statement, available at: <http://www.ufa-fish.org/doc/UFA%20Statement%20opposing%20Pebble%20Mine%20091807.pdf>



**EARTHWORKS™**

1612 K St., NW, Suite 808 Washington, D.C., USA 20006 202.887.1872  
[lpagel@earthworksaction.org](mailto:lpagel@earthworksaction.org) • [www.earthworksaction.org](http://www.earthworksaction.org)