

**ANNUAL MEETING, SALT LAKE CITY, UTAH, 22 APRIL 2010
RESOLUTION OF THE WESTERN DIVISION AMERICAN FISHERIES SOCIETY
(WDAFS)**

RECOMMENDING A FORMAL INDEPENDENT SCIENTIFIC REVIEW AND SURVEY OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES OF LARGE-SCALE MINERAL EXTRACTION IN THE BRISTOL BAY WATERSHED

WHEREAS the mission of the American Fisheries Society (AFS), the oldest and largest professional society representing fisheries scientists and managers, is to improve the conservation and sustainability of fisheries resources and aquatic ecosystems by advancing fisheries and aquatic science;

WHEREAS, Alaska clearly needs to use both renewable and nonrenewable resource development for economic support; and

WHEREAS revenue derived from responsible use of fish, oil, mineral, and timber resources provides employment and an improved quality of life for many Alaskans; and

WHEREAS the Constitution of the State of Alaska requires the legislature to provide for use, development, and conservation of all State-owned natural resources for the peoples' maximum benefit; and requires that renewable resources such as fish, forests, and game belonging to the State be developed and managed sustainably¹; and

WHEREAS the debate over the development of the Pebble copper deposit in the headwaters of Bristol Bay pits two of Alaska's most important industries against each other with each side claiming science will support its case; and

WHEREAS the Pebble claim in the Bristol Bay watershed is part of a massive low grade porphyry copper sulfide deposit estimated to contain about 94,000,000 ounces of gold, 72,000,000,000 pounds of copper, and 4,800,000,000 pounds of molybdenum², the development of which may require: an open pit mine³ (~2 mi long X ~1.5 mi wide X ~1,600 ft deep); an underground mine; dams at or above 700 ft in height³; a ~ 100 mile long road; development of a port facility on Cook Inlet for fuel and concentrated mineral storage⁴, and an estimated 294 million gallons of water annually⁵; and

WHEREAS the region that contains the Pebble copper deposit has porous alluvial soils⁶; abundant ground and surface water⁷; interconnected watersheds; undefined seismic faults; significant seismic activity⁸; is not well buffered⁷ and contains a high proportion of acid-generating sulfides⁹, which can cause acid mine drainage¹⁰; and

WHEREAS slight increases in dissolved copper concentrations in water as low as 2-10 ug/L above background can alter the olfactory-mediated survival and migration of salmonids¹¹; and

WHEREAS Bristol Bay is home to the world's largest wild sockeye salmon fisheries; and sustains healthy productive fisheries on other salmonids, herring, and crab; the seafood industry there employs about 10,000 people annually; gross earnings reported in 2007 were over \$US 100 million in international sales¹²; and

WHEREAS the rivers and groundwater draining the Pebble copper deposit are essential to spawning, incubating, rearing and migrating salmon and non-salmon fishes and drain into waters supporting diverse Bristol Bay fisheries; and

WHEREAS Alaska Native peoples have relied on annual salmon returns to the rivers draining the Pebble copper deposit for subsistence for thousands of years and today salmon still comprise 60% to 80% of their total subsistence harvest¹³ which for the last 20 years has averaged over 100,000 salmon annually from the Nushagak and Kvichak drainages alone¹⁴; and

WHEREAS the Pebble copper deposit lies under state land straddling both the Nushagak and Kvichak drainages, is adjacent to Lake Clark National Park and Preserve, is about 15 miles upgradient of Lake Iliamna where millions of sockeye fry rear annually, and is in headwaters of the Nushagak, a major Chinook salmon producer; and

WHEREAS a 2007 study of sportfishing economic impacts by the Alaska government indicated expenditures to be \$1.4 billion dollars generating 15,879 jobs; of which, \$989 million and over 11,000 jobs were attributed to the Southcentral region which includes Bristol Bay¹⁵; and

WHEREAS the Alaska Department of Fish & Game estimates the Bristol Bay exvessel commercial salmon fishery as having an average annual value of \$65 million (\$113.3 million in 2008)¹⁶; and the Nushagak and Kvichak River drainages containing the Pebble copper deposit have produced about 50% of all commercially harvested sockeye salmon from Bristol Bay for 125 years¹⁷; and

WHEREAS open pit mining requires rigorous scientific studies for design, execution, and mitigation of environmental impacts; including careful consideration of potential negative environmental consequences, including effects on water quantity, quality, and fishery resources¹⁸; and

WHEREAS: the U.S. Environmental Protection Agency estimates that there are 500,000 abandoned mines in the U.S. and that 40% of western watersheds are polluted from mining¹⁹; clean up costs are estimated to be from \$32 - 72 billion²⁰; many mines slated for clean-up require long-term or perpetual water treatment; and such extensive ongoing water contamination threatens both the Nation's drinking water supplies and valuable fisheries resources; and

WHEREAS the U.S. EPA has developed and implemented a statistically and ecologically rigorous environmental monitoring and assessment program for the inland waters of the U.S.^{21,22,23}; and the states of Oregon²⁴, Maryland²⁵, Idaho²⁶, California²⁷ and Washington²⁸ have used intensified versions of the EPA protocol to assess status and trends in salmon and trout populations and aquatic biological condition; and

WHEREAS AFS Policy 13 on Surface Mining encourages (1) “diligent regulation of all surface mining by local, state, provincial, and federal government to provide adequate protection (of) aquatic resources” and (2) “its members to become involved in this process by providing technical information essential for protection and continued propagation of fishery resources to policy makers so decisions are made on a scientific, rather than emotional or political, basis”; and

WHEREAS it is important that the Alaska Legislature, and State and Federal resource managers have the best possible information with which to base policy decisions regarding the potential for development of the Pebble mineral deposit, together with the potential environmental consequences of that development;

NOW, THEREFORE, BE IT RESOLVED that the WDAFS recommends application of carefully designed, robust, and statistically defensible sampling be conducted relative to both surface and groundwater quality and quantity for consideration in applicable regulatory processes including the National Environmental Policy Act (NEPA) process; that careful attention be afforded to the design of a long term monitoring program for waters draining the prospect; that control sites should be included to enable long-term monitoring for change resulting from mine development with particular emphasis on water budgets and water quality, and their effects on aquatic resources; and

BE IT FURTHER RESOLVED that the WDAFS recommends that results of all scientific studies relevant to the Pebble copper prospect be provided in the form of standard citable scientific technical reports to the public via a website, to relevant resource managers, and a team of independent scientific experts, such as the National Academy of Sciences for peer review; and

BE IT FURTHER RESOLVED that the WDAFS recommends an independent, interdisciplinary expert assessment of the known and probable cumulative environmental and socioeconomic consequences of development of the Pebble mineral deposit prior to mine development with a focus on hydrological systems, water budgets, water quality, geochemistry, and fishery resources, with identification of any major data gaps in the preceding information; and that such an assessment should include all infrastructure necessary to implement the project.

AND, BE IT FURTHER RESOLVED that this resolution be sent by the WDAFS to the parent society level of the American Fisheries Society for consideration and to relevant decision makers, scientific agencies, and regulatory agencies including, but not limited to, the following:

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2) Sean Parnell, Governor
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10) Nancy Sutley, Chair
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11) Suzette Kimball
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<http://www.legis.state.ak.us/cgi-bin/folioisa.dll/acontxt>

- 1) <http://www.northerndynastyminerals.com/ndm/home.asp>
- 2) <http://www.dnr.alaska.gov/mlw/mining/largemine/pebble/2006/damaap.pdf>
- 3) <http://www.dnr.alaska.gov/mlw/mining/largemine/pebble/2006/swutorig.pdf>
- 4) <http://www.dnr.alaska.gov/mlw/mining/largemine/pebble/2006/gwsfkfinal.pdf>
- 5) HDR Alaska and CH2Mhill. 2008. Report Series C-Surface Geology: Report C1, Surficial Geologic Map of the Pebble Project;
- 6) HDR Alaska and CH2Mhill. 2008. Report Series F: Groundwater and Surface Water Quality, Report F-2, Mine area-surface water 2004-2007.
- 7) <http://earthquake.usgs.gov/eqcenter/recenteqsus/Maps/special/Alaska.php>
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- 14) <http://www.sf.adfg.state.ak.us/Statewide/economics/>
- 15) 2008 Bristol Bay Salmon Season Summary (commercial harvest) <http://www.cf.adfg.state.ak.us/region2/finfish/salmon/bbay/brbpos08.pdf>
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- 17) <http://dnr.alaska.gov/mlw/mining/largemine/index.htm>
- 18) <http://www.abandonedmines.gov/ep.html>
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