July 2012 | BBNC

PEBBLE WATCH

Impartial, educational, and fact-based content related to the development of Pebble mine

The last issue of Pebble Watch centered on public input and how to make your voice heard, leading up to public meetings conducted by the U.S. Environmental Protection Agency (EPA) on its draft Bristol Bay Watershed Assessment.

This issue considers topics raised in the watershed assessment related to the Bristol Bay fishery: salmon-based cultures of Bristol Bay and risks of large-scale copper mining to the fishery.

Bristol Bay Native Corporation

Bottom photo: Bristol Industries, LLC / Main photo: Todd Hardesty/Bristol Bay Native Corporation

AMONG THE LAST OF THE

Salmon-based cultures

For the people of Bristol Bay, wild fish and clean water are more than healthy food sources. They are a connection to the past, inspiration for art, shapers of language, and resources full of spiritual meaning.

The strong influence of salmon on cultural practices and belief systems makes the Dena'ina and Yup'ik among the last salmon-based cultures in the world. The U.S. Environmental Protection Agency (EPA) draft Bristol Bay Watershed Assessment includes a lengthy article about these cultures, written by Alan Boraas, Ph.D, and Catherine Knott, Ph.D, both anthropology professors at Kenai Peninsula College.

"Traditional Ecological Knowledge and Cultural Characterization of the Nushagak and Kvichak Watersheds, Alaska" includes information from multiple resources, and excerpts of interviews with 53 Elders and culture bearers from seven Bristol Bay communities.

Interviews illustrate that belief systems of the Dena'ina and Yup'ik peoples are tied directly to water and salmon. Common beliefs include:

- To be healthy, people need salmon and other wild foods.
- Salmon are shared with family and friends, and people feel good when they give or receive salmon.
- It is important for families to fish together.
- Salmon and streams both have spirits. When the first salmon of the season is caught, people give thanks through prayer and an offering.

Eating fish that is connected to fish their ancestors ate is important to Yup'ik and Dena'ina descendents living today, write Boraas and Knott. The researchers cite studies saying people can become genetically changed from eating the same salmon in as little as 3,000 years.

Salmon-based traditions go back thousands of years. Ancestors of the Yup'ik peoples relied on salmon as an important part of their diet as long as 4,000 years ago. "Evidence is building that Yup'iks are biologically adapted to salmon," wrote Boraas and Knott.

(cont. p. 2)

"We want to give to our children the fish, and we want to keep the water clean for them ... It was a gift to us from our ancestors, which will then be given to our children."

—Elder interview, Boraas/Knott report

SALMON-BASED CULTURES

(continued from front)

Moreover, an active subsistence lifestyle and high intake levels of omega-3 fatty acids from fish are important factors for good cardiovascular health. As one Elder noted, "If we don't eat fish, we won't have anything to eat. That is our health."

The Yup'ik and Dena'ina languages include very specific vocabulary related to fish and water, which further emphasizes their cultural importance. For example, in Yup'ik, the word *aciirturtet* means "the first group of king salmon running under the smelt." This is just one of several cultural terms included in the Boraas/Knott study. The Dena'ina language has similar descriptive terms about fish, and also explains physical directions in relation to streams. Instead of using markers like "north" or "south," the Dena'ina people would describe a location in terms of whether it was upstream or downstream of a particular spot on the river.

Connections to fish and water are seen through spiritual beliefs, such as reverence for nature and animals and the importance of sharing food with family, friends and even other villages in need. Over time, Alaska Native beliefs have blended with Russian Orthodox views, which put the "old beliefs" in a Christian context. Specific celebrations such as the "Blessing of the Waters" (keeping the water clean and free of contaminants) and the "First Salmon Ceremony" (sharing the first king salmon catch) are examples of spiritual activities that hold great meaning for these Native cultures.

As the Boraas/Knott study shows, the health of the Bristol Bay fishery supports the physical, economic, social and spiritual well-being of the people who live there.

Many salmon-based cultures in other areas — Japan, Russia, Canada and other parts of the U.S. — have had to adapt to nontraditional food sources due to overfishing and habitat destruction. Bristol Bay is one of the last strongholds for wild salmon.

risk factors

In the Pebble mine debate there is at least one point of agreement: There are potential risks to a project of this scope. Understanding these risks will help stakeholders join in the conversation when developer plans are finalized and submitted for permitting. Risks such as the following are likely to be addressed in the Environmental Impact Statement during the permitting process.

Photo: Bristol Industries, LLC

These risks have all been raised in the EPA draft Bristol Bay Watershed Assessment. Note the chapter and page number of the assessment where they are discussed in detail.

Water use – The area for mining would have to be "dewatered" to operate effectively. Water taken out could be used in other mine operations. However, a main feature of the Bristol Bay environment is its strong connection between ground and surface waters. Take away enough of one, and you affect the other. Groundwater is important for salmon spawning, as it helps regulate water temperature over the winter months, providing a nurturing location for salmon eggs. Sufficient groundwater is also necessary to ensure that salmon larvae and juvenile salmonids do not get stranded without enough streamflow. *(Ch. 4-26, 7-12).*

Acid mine drainage – Copper mining in particular creates a lot of waste rock, since the percentage of actual copper extracted from the surrounding rock is quite low. Certain types of waste rock, when exposed to air, can create sulfuric acid that will dissolve metals. This material, called "acid mine drainage," is harmful to salmon habitat if not contained properly. Waste rock is typically kept under water in a "tailings pond" to avoid this type of oxidation. Risks include leaking or overflow of tailings ponds. *(Ch. 6-41)*

Pollutants from day-to-day mine operations – Potential contaminants include fuels, metals, salts from de-icing, and dust from mining and milling operations. Negative effects could occur if these pollutants accumulate in salmon-spawning areas. *(Ch. 5-62)*

Population growth – If enough people move into rural areas for jobs at the mine or even due to easier access to the area, it is possible that these areas could be reclassified as "urban." This classification could affect the subsistence privileges of local residents. *(Appendix D, p. 91)*

Earthquakes – Seismic activity could affect stability of tailings ponds, which need to be maintained in perpetuity. *(Ch. 4-43)*

Sedimentation – In the case of a tailings pond failure, large amounts of sediment, or tailings "fines," could be deposited throughout nearby rivers and streams, adversely impacting spawning and overwintering of salmon. *(Ch. 6-7)*

Find out more about Bristol Bay culture, subsistence and way of life

- Read the full Boraas/Knott study at www.pebblewatch.com/documents.
- Watch for an analysis of data on subsistence and traditional knowledge from 20 Bristol Bay communities to be published by the Pebble Limited Partnership as part of its Environmental Baseline data.
- Explore resources provided by Bristol Bay Native Corporation, including www.dayinourbay.org. There you can view *Day in Our Bay*, a 15-minute crowd-sourced film that features footage from Bristol Bay residents who shared the people, places and cultural practices most important to them. Also visit www.BBNC.net and www.BBNCblog.net.

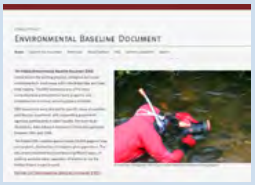
documents demystified

Want more information about Bristol Bay and the proposed Pebble mine? You can find enough online to keep you reading for days. Pebble Watch provides this guide for you to key in on the Big Four: documents that are integral to understanding the environment in Bristol Bay and how a large-scale mine like Pebble could impact it. Who wrote them? Why are they important? How are they connected? Find links at www.pebblewatch.com/documents.

Reading tip: *Viewing documents online in PDF format allows you to search for a term and jump to that place quickly. This helps if you have a specific location or topic you want to research.*

available now

Pebble Environmental Baseline Document (EBD)



prepared by: Pebble Limited Partnership

Describes the Bristol Bay (mine site) and Cook Inlet (transportation corridor) areas where Pebble development would occur. No discussion is included of risks, impacts or how to avoid/reduce impacts (mitigation).

Why it matters: The EBD provides a basis for creating a workable mine plan, as developers need to take into consideration current conditions and how mine activities might affect those conditions. Information from the EBD will be included in the Environmental Impact Statement (EIS) as well: The topics included in the EBD are typically addressed in Chapter 3 of the EIS, "Affected Environment."

Reading tip: *The EBD can be viewed online, with full chapters and technical summaries available for most categories. The entire document nears 30,000 pages, so preview the contents to help you find a topic of interest. There is also an executive summary of the document: "The Pebble Environment."*

available now in draft form

U.S. EPA Bristol Bay Watershed Assessment

PUBLIC COMMENT

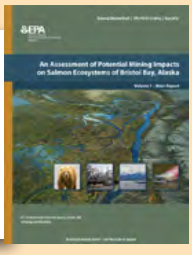
Through July 23, followed by peer review meetings; final document due in Fall 2012.

prepared by: U.S. Environmental Protection Agency

Describes the Nushagak and Kvichak watersheds and typical risks and impacts associated with large-scale copper mining in this area. Uses a hypothetical mine scenario to describe risks of day-to-day operations, as well as risks from mine failure/accidents.

Why it matters: The EPA has stated that the assessment will inform its decision whether to use a 404(c) authority to place restrictions on large-scale mining in this area of Bristol Bay. This is the only document currently available that addresses risk factors from large-scale mining here.

Reading tip: *The assessment tops 1,000 pages, including the appendices. For a quick overview, EPA produced a 32-page executive summary. Pebble Watch provides an overview of each chapter in its own 8-page guide at www.pebblewatch.com.*



in progress now - tentative release in Fall 2012

Pebble mine plan

prepared by: Pebble Limited Partnership

Will describe the Pebble project, with information on type of mine, infrastructure, pipeline and port details and procedures for extracting ore and handling waste rock.

Why it matters: The plan is highly anticipated, particularly since the Pebble Limited Partnership has asked the public to hold off on criticisms of the project before a plan is released. The mine plan would factor greatly into the permitting process and Environmental Impact Statement, as it would let agencies know exactly what activities are being considered.

There is no official mine plan, but readers can get a preview of possible mining strategies through Northern Dynasty Minerals' February 2011 report to its investors about the project, "Preliminary Assessment of the Pebble Project." The EPA used this document when preparing a hypothetical mining scenario for its draft watershed assessment.

comes much later

Environmental Impact Statement (EIS)

prepared by: multiple agencies, led by U.S. Army Corps of Engineers

An EIS is required by the National Environmental Policy Act (NEPA) for federal government agency actions "significantly affecting the quality of the human environment." The Pebble mine will need a Section 404 Permit, which is a federal permit required under the Clean Water Act administered by the U.S. Army Corps of Engineers. Therefore, the Corps will be the lead federal agency managing the EIS process. An EIS typically contains four sections: 1) Purpose and Need, 2) Proposed Action and Alternatives, 3) Affected Environment, and 4) Environmental Effects.

Why it matters: The EIS does not include decisions on whether a project should or should not go forward. However, it does describe anticipated effects from the project. This information helps agencies decide whether to grant individual permits, and gives the public a chance to comment before permitting decisions are made.

PEBBLE WATCH
Bristol Bay Native Corporation
111 W. 16th Avenue, Suite 400, Anchorage, AK 99501

In this issue:

- **Among the last of the salmon-based cultures:** Read how the lives of Dena'ina and Yup'ik peoples of Bristol Bay are integrally connected with fish and water.
- **Risk factors:** What are the risks of large-scale copper mining to the Bristol Bay fishery?
- **Documents demystified:** Simple guide to documents related to development of the proposed Pebble mine.

"Like" Pebble Watch on Facebook for regular updates, and visit www.pebblewatch.com for more in-depth stories, a calendar of relevant events, and links to helpful resources.

U.S. EPA Draft Bristol Bay Watershed Assessment

Written comments

MONDAY, JULY 23
deadline for written input

Docket #: **EPA-HQ-ORD-2012-0276**

Submit online: regulations.gov

Send an email: ORD.Docket@epa.gov
(Include docket number in the subject line.)

Send a fax: (202) 566-1753
(Include docket number in the subject line.)

Send a letter:
Office of Environmental Information (OEI)
Docket (Mail Code: 2822T)
Docket # EPA-HQ-ORD-2012-0276
U.S. EPA
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Peer review process

TUESDAY, AUGUST 7

Peer Review panel meets in Anchorage; the public may address the panel on this day.

WEDNESDAY, AUGUST 8

Peer Review panel deliberates in Anchorage; public invited to observe but not participate.

You must sign up by July 23 in order to observe or comment. For details, visit www.pebblewatch.com.

Coming soon ...

Watch for the next issue of *Pebble Watch Explores*, which gives an overview of studies on fish and aquatic invertebrates from the Pebble Limited Partnership. The fact sheet explores factors impacting fish habitat, and explains the State of Alaska's Anadromous Waters Catalog.