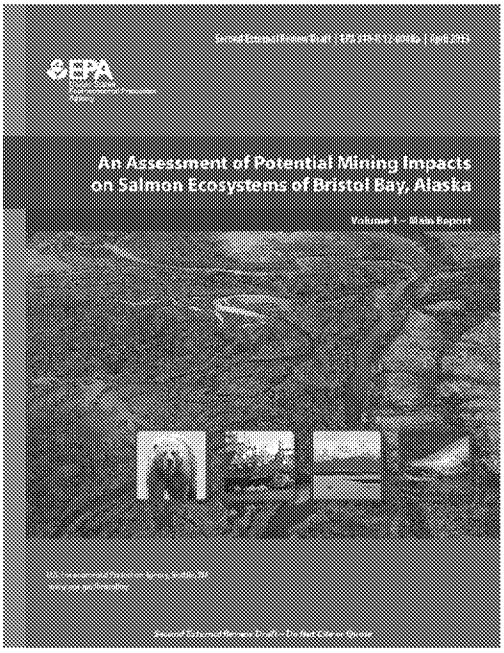
EPA Bristol Bay Revised Draft Assessment

May 14, 2013
Webinar for
Tribal Governments

In this Presentation We Will ....

- Review the purpose and scope of the revised draft assessment.
- Discuss changes made as a result of tribal input, public comment and peer review.
- Discuss risks that were evaluated
- Talk about next steps

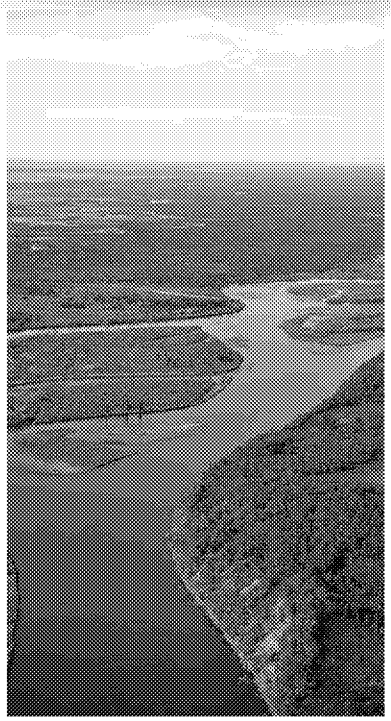


The purpose of this presentation is to give you a very brief overview of the revised draft watershed assessment and let you know where to find out more and provide input.

It has been two years since we began the assessment
Worked very hard to be accessible to stakeholders in the Bristol Bay region.
We have benefited from in formation provided by Tribal Leaders, Regional and Village corporations, fishermen, the Pebble Partnership and many interested groups.
Listened to your issues and concerns and are in the process of incorporating many of them into the assessment.

Throughout the presentation we will point out where to look in the revised assessment document for more information.

Review Why Did EPA Conduct an Assessment?



- Assessment provides EPA with needed information to make future decisions.
- Under the Clean Water Act, EPA is responsible for water quality.

EPA conducted this assessment in response to petitions from nine federally recognized tribes that we initiate a process under Section 404(c) of the CWA to protect Bristol Bay natural resources from the effects of large scale mining. We also heard from other tribes and stakeholders who support development in the Bristol Bay watershed and have requested we take no action and wait for typical permitting processes.

These requests from Tribal governments were well substantiated requests for EPA to follow a process that has been in our regulations since 1979. Given our Tribal Trust and Government to Government responsibilities they deserved a diligent and judicious response.Therefore, EPA performed this assessment to better understand the watershed and its resources, BEFORE making a decision on how to respond to these competing petitions. The assessment will inform our response to these requests and any future actions EPA may take.

There have been some questions about EPA's authority to do this assessment. The Clean Water Act gives EPA the authority to collect information to help us make decisions about protecting water.

Review The Draft Assessment is :

- ✗ **NOT** a regulatory decision
- ✗ **NOT** an assessment of ALL potential impacts from development.
- ✗ **NOT** a field investigation.
- ✓ **INTENDED** to provide information for decision-makers.

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We have had many questions about the assessment and want to answer some of those questions up front.

This assessment is not a proposal or decision to restrict mining. We have heard many comments about whether there should be restrictions on mining activities. We are not here to talk about that – we first want to make sure we have the best science and information before we make any decisions about our response to those who asked us to take action.

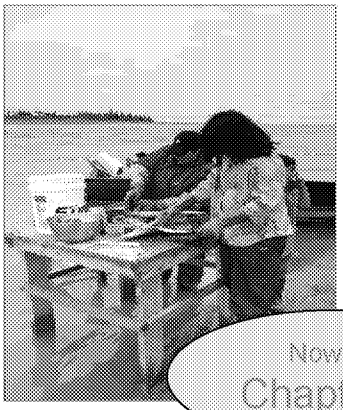
The assessment is not comprehensive. It only looks at large-scale mining activities, and only looks at mining activities that would involve dredging and filling streams or wetlands.

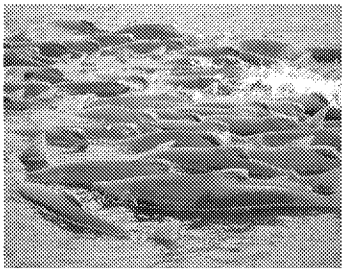
We have also heard many questions about how this assessment may restrict other activities in the region, including fishing. I want to make it very clear that this assessment is ONLY about possible effects from large-scale mining. We are not evaluating OR considering placing restrictions on any other activities, including fishing or community development activities such as airstrips, boat docks, or buildings.

We did not plan to collect environmental data for the assessment. We used data that was already available.

Review Scope of the Assessment:

- Potential impacts from large-scale mining…
- on salmon…..
- and salmon-related impacts on wildlife and Alaska Native culture.





Now in Chapter 2

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Now let's talk about the draft assessment report.

As I said earlier, the draft assessment does not look at all possible effects of large scale mining. It's focus is the possible effects mining activities would have on salmon. It also considers what would happen to wildlife and Alaska Native cultures if salmon are affected by mining. It does not evaluate direct effects on wildlife or humans from mining development, only those related to effects on the fish.

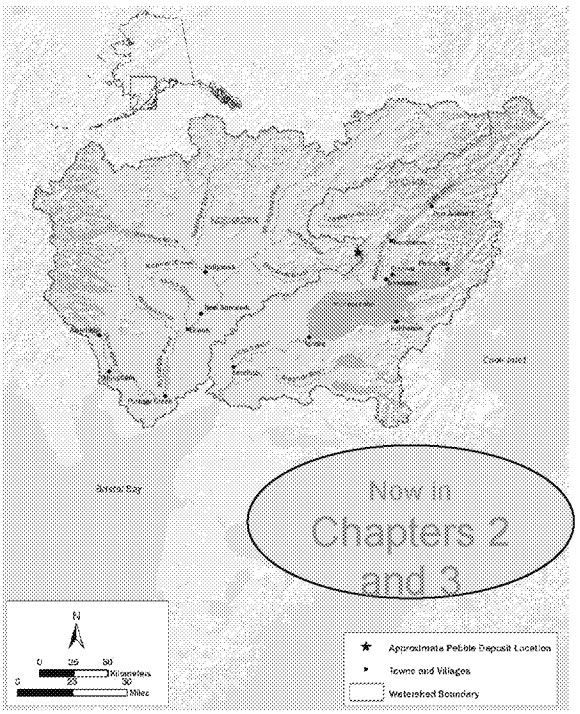
The assessment is not focused on other development or activities – only on large-scale mining.

Review

Assessment Time Frame and Area

- Development and operation of the mine for (25 – 100 years)
- Post-mining: would need to be monitored and managed forever

Now in Chapter 4



Next, we looked at the time frame for possible mining effects. Based on the mineral resources available, we looked at a long operational phase, and also considered that mine wastes would have to be managed forever after the closure of the mine.

We assumed that any mine would be designed and operated consistent with modern mining practices and that it would comply with all state and federal laws.

In the revised report, we identified five different spatial scales. The Nushagak and Kvichak watersheds are the focus of the assessment because they are open for mining development. We also look at information from the larger Bristol Bay and from the smaller watersheds draining the Pebble deposit site.

Public involvement and peer review

- EPA has conduct an open and transparent assessment process
- EPA has incorporated traditional knowledge and local information
- Peer review experts reviewed draft to ensure we are using the best available science
- Public comment was invited from May 18 to July 23, 2012
- Peer reviewers met for open deliberations in Anchorage in August

Public Comment Opportunity in Anchorage, Alaska

Anchorage

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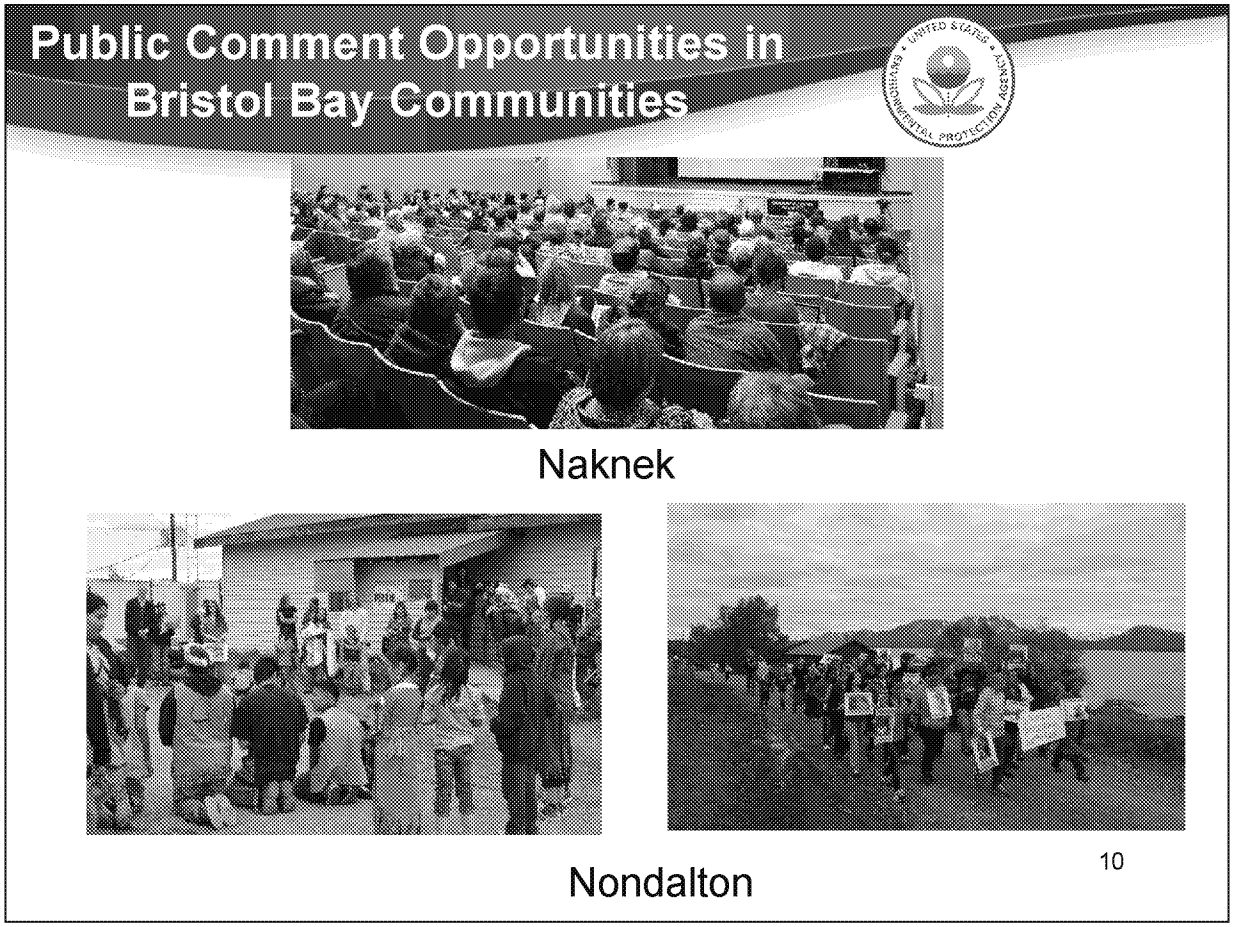
Anchorage was our largest public meeting and the 900 seat capacity of the auditorium at the University of Anchorage campus was filled to overflowing. Many people came and told us exactly what they thought.

Meeting rooms in all six villages we visited were all filled to overflowing. At many of these meetings, we heard from elders with the assistance of translators. No matter what opinions were held about EPA or large-scale mining development, the people of Bristol Bay made us feel welcome in their communities.



Here are a few more pictures taken during our week of public meetings. Villages and tribes shared their food and culture with EPA staff.

Peer Review

- 12 reviewers representing a wide range of scientific disciplines were selected by an independent contractor
- The peer reviewers met in Anchorage during August, including public input and public viewing of deliberations
- Peer review was posted on the EPA website in November 2012
- Supplemental peer review was requested for scientific literature submitted during the public comment period
- The revised assessment is currently being reviewed by these expert peer reviewers.
- EPA will provide a response to peer review comments when the final assessment report is released

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Peer review is an essential part of a highly significant scientific assessment like the one conducted in Bristol Bay. An independent contractor selected 12 expert peer reviewers. We provided an opportunity for the public to nominate peer reviewers for potential inclusion on the peer review panel.

The peer reviewers had expertise in many areas of scientific inquiry that are important to the draft assessment, including metals mining (particularly porphyry copper) , fisheries biology, hydrology, aquatic ecology, biogeochemistry, seismology, ecotoxicology, wildlife ecology, and/or (9) indigenous Alaskan cultures.

The peer reviewers met in Anchorage for three days in August. They listened to public testimony on the first day and their discussion on the second day was observed by the public.

The peer review report was posted on the EPA website on November 9, 2012. The charge questions that framed the peer reviewers work were developed with input from the public.

Tribal Consultation and Coordination

- Invited federally recognized tribes to enter formal consultation with EPA
- Coordinated with tribal corporations and associations when requested

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We initiated the assessment at the urging of many Bristol Bay tribes and continuing coordination as well as formal consultation from those of you who request it is an integral part of our work.

Information Used To Revise The Assessment

- 233,000 comments from the public by e-mail, mail and public meetings
  - Bristol Bay residents
  - commercial fisherman
  - seafood processors
  - the mining industry
  - sportsmen
  - members of the faith-based community
  - conservation organizations
  - many others
- Expert peer review comments
- Tribal consultation and coordination

What Changed?

- The assessment was reorganized to better reflect the ecological risk assessment approach
- The purpose and scope of the assessment were clarified - Chapter 2

The assessment is now organized to start with background information on the region and its resources (Chapters 1-4), then present the endpoints, in this case the fish resources (Chapter 5). Chapter 6 presents the mining scenarios, and Chapters 7 through 14 discuss the risks from large-scale mining to the fishery.

In response to peer review comments, we added information about the scope of the assessment in Chapter 2.

How the Revised Assessment Is Organized – Volume 1

- Description of the region – Chapter 3
- Type of development – Chapter 4
- Assessment Endpoints – Chapter 5
- Mine scenarios – Chapter 6
- Mine Footprint – Chapter 7
- Water Collection, Treatment and Discharge – Chapter 8
- Tailings Dam Failure – Chapter 9
- Transportation Corridor – Chapter 10
- Pipeline Failures – Chapter 11
- Fish Mediated Effects – Chapter 12
- Cumulative Effects of Large Scale Mining – Chapter 13
- Integrated Risk Characterization – Chapter 14

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This shows you the topics of each chapter. As you can see, we expanded the chapters on risk so that each one addresses a specific topic. Chapter 7 looks at effects from the mine footprint alone – we previously called this the "no failure" scenario. The following chapters look at risks from various mining activities during normal operations and if there are accidents or failures.

We received lots of comments on effects on Alaska Native cultures and on wildlife from possible changes in fish. We now give this a separate chapter and include more information on these topics.

We would especially like your input on Chapter 12, which discusses risk to AN cultures, and Chapter 5, which describes local population characteristics and culture.

How the Revised Assessment Is Organized – Volume 2

Volume 2 – Appendices A - D

- Fishery Resources of the Bristol Bay Region – Appx A
- Non Salmon Freshwater Fishes of the Nushagak and Kvichak River Drainages – Appx B
- Wildlife Resoures of the Nushagak and Kvichak River Watersheds – Appx C
- Ecological Knowledge and Cultures of the Nushagak and Kvichak Watersheds – Appx D

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The appendices have all been updated based on public and peer review comments, although there are no large-scale changes to the information. The conclusions about the Bristol Bay resources remain the same as in the draft report.

We especially would like your input on Appendix D, which is focused on Alaska Native cultures.

How the Revised Assessment Is Organized – Volume 3

Appendices E – J

- Baseline Levels of Economic Activity and Values – Appx E
- Bristol Bay Marine Estuarine Processes, Fish and Marine Mammal Assemblages– Appx F
- Foreseeable Impacts of Road and Pipeline Development – Appx G
- Geologic and Environmenal Chracteristics of Porphyry Copper Deposits – Appx H
- Conventional Mitigation Practices for Mine Design, Construction, Operation and Closure – Appendix I
- Compensatory Mitigation and Large Scale Hardrock Mining – Appendix J

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We added one appendix in response to public and peer review comments. Appendix J has information on compensatory mitigation – that is, restoration of wetlands, streams, or other aquatic resources that would be required to offset any impacts to those resources.

What Changed?

- We added details about water loss and water quality impacts on stream reaches, drainage of waste rock leachate to streams, and mine site water balance to the assessment of potential mine impacts - Chapter 8

- We added an appendix to describe potential methods for compensating for impacts to wetlands, streams and fish – Appendix J

Commenters thought we did not pay enough attention to the water loss from mining and from leakage from waste rock piles and tailings storage to groundwater and streams. Therefore, we added more information about these risks.

We added one appendix in response to public and peer review comments. Appendix J has information on compensatory mitigation – that is, restoration of wetlands, streams, or other aquatic resources that would be required to offset any impacts to those resources.

Review Mine Scenarios

- Mining scenarios define a set of possible future activities. (Underground was not analyzed)
- Included:
  - Open pit mine
  - Waste rock pile
  - Tailings storage facilities
  - Ore processing facility
  - Water collection and treatment system

Now in Chapter 6

The assessment describes the elements of a typical copper mine at the Pebble deposit. Any mine in this area would include the mine itself, as well as areas to store a large quantity of waste rock and mine waste, or tailings.

What changed?

Now in Chapter 6

We clarified that the mine scenarios:

- Were based on worldwide industry standards for porphyry copper mining
- Drew from specific preliminary mine plans submitted to state and federal agencies by the Pebble Limited Partnership and Northern Dynasty Minerals **and current mining industry information.**
- Incorporated modern convention mining practices and assumes that they are in place and working property

In the draft assessment, we used two mining scenarios at the Pebble deposit. In response to comments, we added more information about the assumptions of our mining scenarios and the information we used for the scenarios.

We clarified that we used information from the preliminary mine plan submitted to state and federal agencies by the mining company and published information about porphyry copper mining.

We confirmed that our scenarios use modern conventional mining practices, would be operated under standard industry practices, and have mitigation measures in place to protect the environment.

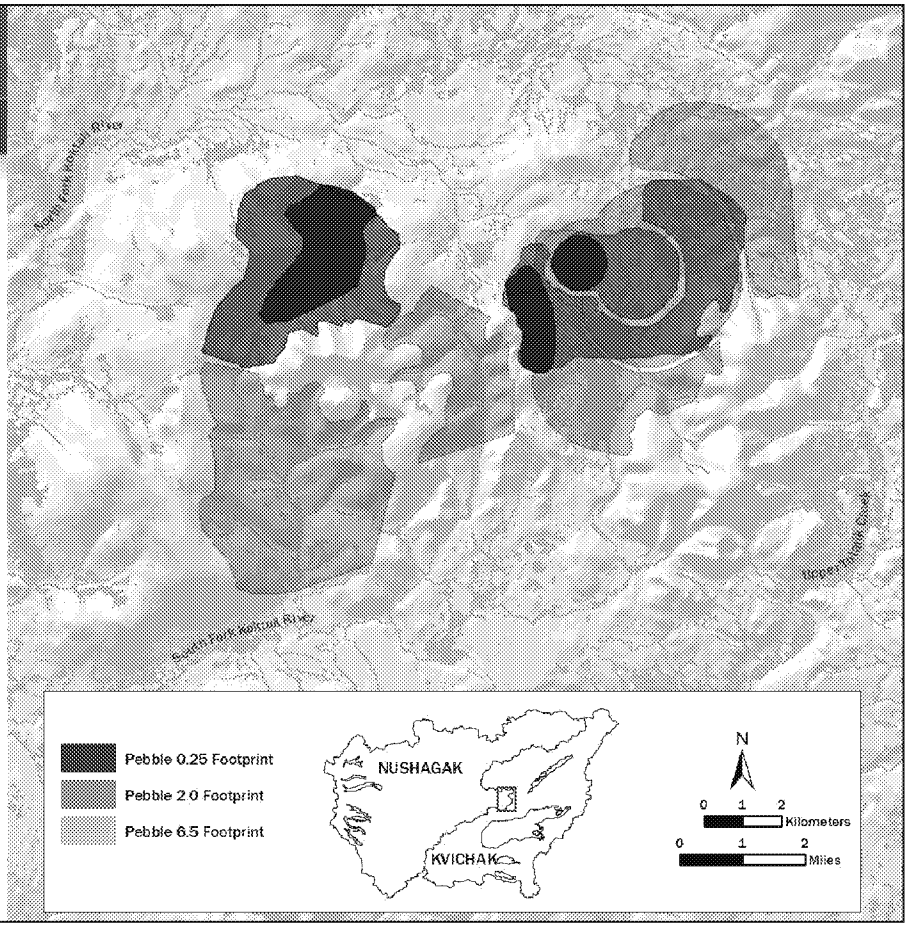
We used the Pebble deposit because there is more information about it and it is the most likely to be developed in the short term. In the revised assessment, we included more information about other deposits in the watershed and the potential risks from mining at those deposits (Chapter 13).

We do not need a detailed mine plan or design, since our purpose is to look at possible effects from the footprint of a mine and mining activities on the salmon ecosystem.

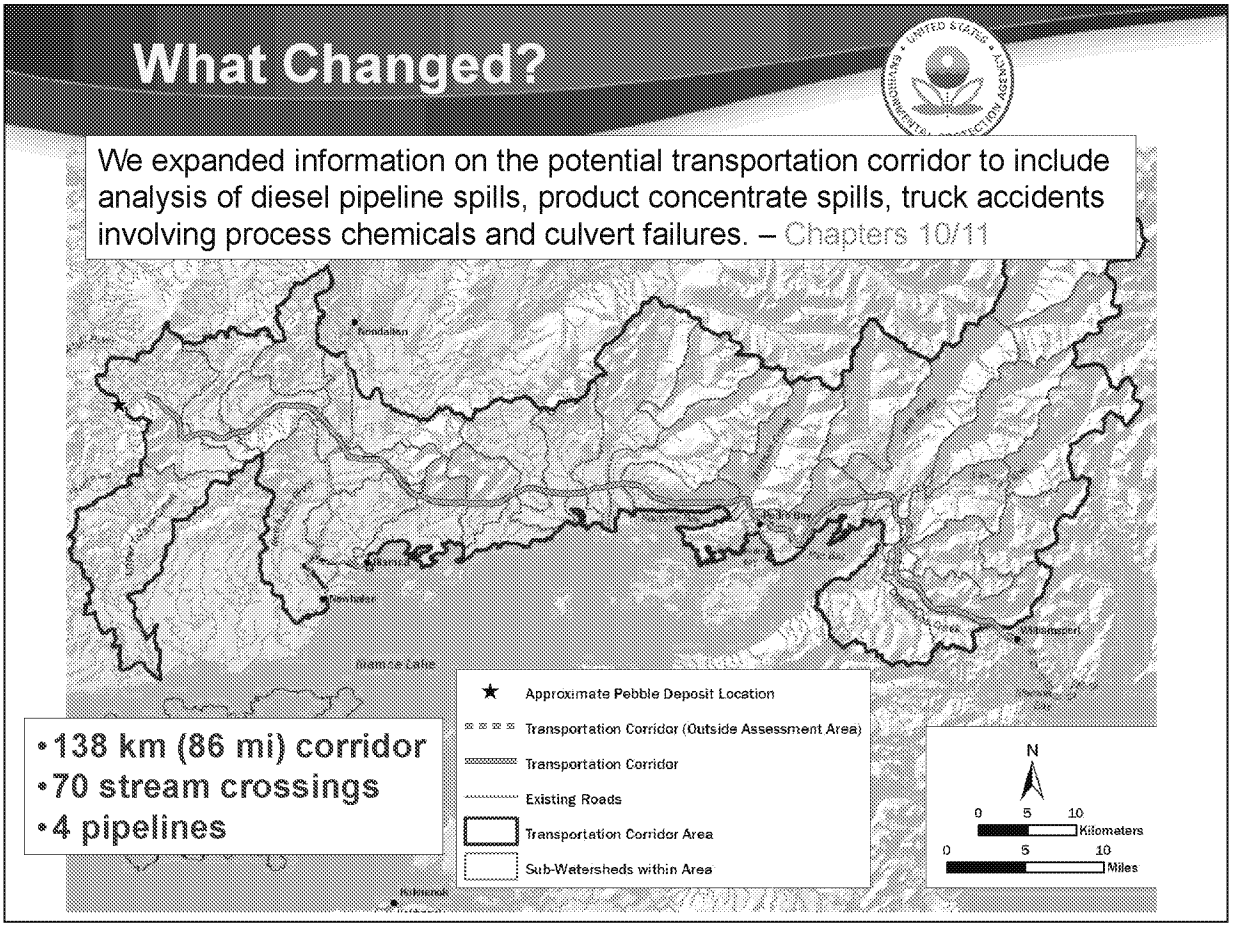
We recognize that a mine plan submitted by a mining company may be different, but will still have the basic elements in our scenario.

Mine Scenarios

We added a third realistic mine scenario to make sure we could assess risk for a range of mine sizes and operating conditions



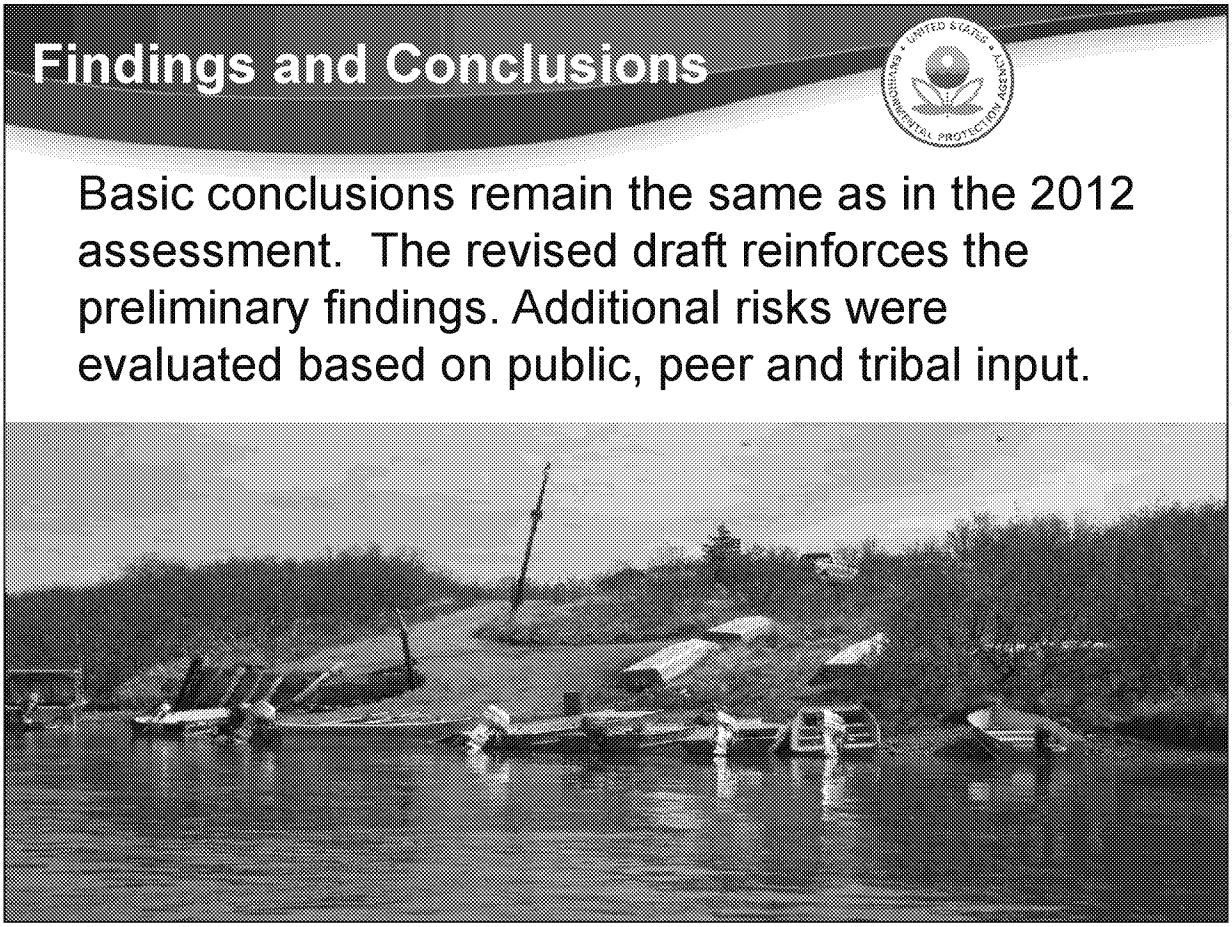
We also added a smaller mining scenario at the suggestion of the peer review comments. While this size may not be economically feasible at the large Pebble deposit, it allows us to look at effects of smaller mines in other areas of the watersheds.



We also looked at possible effects from building an 86 mile road and moving the processed ore to Cook Inlet through pipelines along the road.

In response to comments, we added more information about the transportation corridor and looked at risks from diesel pipeline spills, product concentrate spills, and truck accidents.

While a mine plan may not have a transportation corridor in this exact location, any road or pipeline in this area would have to cross wetlands and salmon streams, so risks would be similar.



Overall, there is more detailed information in this draft, and some additional risk scenarios were included. However, our basic findings remain the same as the first draft.

We appreciate the input we got from the public, tribal governments, and the peer reviewers – it has helped us improve the assessment.

Risks: Mine Footprint

Assuming there are <u>no failures</u> during normal operations, a single large mine is likely to cause:

- Loss of tens of miles of stream habitats and thousands of acres of wetlands due to mine pit, waste rock, and tailings storage facilities.
- Loss of additional stream habitat downstream of mine site is likely due to changes in hydrology.
- Loss of stream and wetland habitats will adversely impact local fish populations, alter wildlife, and impact subsistence hunting.

Now in Chapter 7

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Now we will give an overview of our assessment of effects from large-scale mining to the fishery.
These are the effects just from the footprint of the mine and the mine waste facilities.

NEED TO VERIFY IF NUMBERS CHANGED (updated)

The footprint and operation of a single large-scale mine in the headwaters will result in:
Loss of 24 – 90 miles of streams and 1200 to 4800 acres of adjacent wetlands due to mine footprint alone.
Because water will be withdrawn for the mine operations, it will change the hydrology of the watershed and there will be degraded habitat in an additional 9.3 – 34 mi beyond the footprint of the mine.

These effects will reduce the fish and wildlife populations around the mine site.

Risks: In the event of accident or failure

Some type of failure is likely during the life of the mine and during the centuries-long post closure period.

- We evaluated **risks from**:
  - Leakage of acidic drainage and other contaminated waters from the waste rock, pit walls and tailings to surface water and groundwater. (Likely) –**Chapter 8**
  - Water treatment failures. **(Likely) – Chapter 8**
  - Failures of road culverts that block streams supporting anadromous fish. (Likely) – **Chapter 10**
  - Pipeline failures that release toxic slurry **or diesel**. (Likely) – **Chapter 11**
  - Failures of tailings dams. (Low annual probability) – **Chapter 9**

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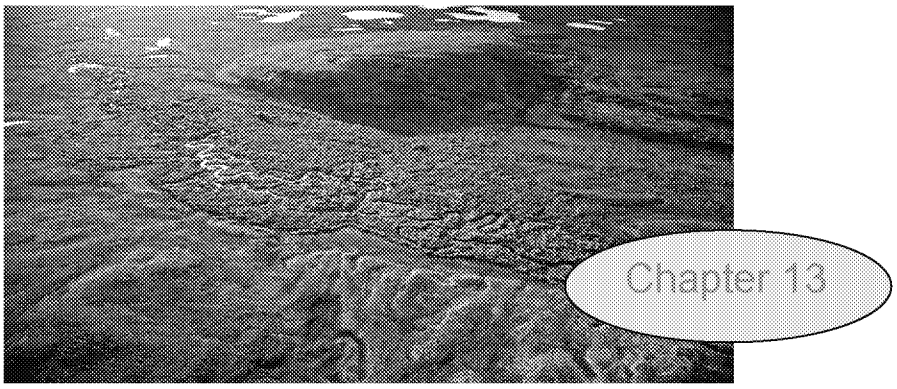
We looked at some common failures, which could happen during the operation of the mine, or for centuries after the mine is closed:

Drainage or leakage from the mine wastes.
Failures of road culverts.
Failures of the pipelines carrying diesel to the mine site or ore to the port.
And
Failure of a tailings dam.

We evaluated each of these scenarios, and the risks to salmon they represent.

Cumulative Risk From Large Scale Mining

- Draft assessment considers development of mines at several different mineral deposits.
- Discusses induced development from mining.
- Risks from multiple mines would increase habitat loss.



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The Pebble deposit is the largest, but not the only mineral deposit in the watershed. If mines were developed at each of these deposits, they would have similar effects.

If each individual mine effects local salmon populations, genetic diversity of the salmon stock could be decreased.

Our new Chapter 13 provides more details about other possible mines and risks from those mines.

Next Steps

EPA's goal is to finalize the assessment in 2013 after:

- Consulting and coordinating with tribes
- Considering input from expert peer reviewers
- Reviewing additional public comments

A separate document providing responses to all comments will accompany the final assessment report when it is released later this year.

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The project team is currently going through all the input from the peer reviewers and also all of the input we received from the public.

We decided to do a follow-up with the original peer reviewers to make sure that the revised assessment addresses their concerns.

We plan to have the assessment completed in 2013.

The final assessment will include a document that provides a response to all public comments and a response to the peer review comments.

I know many people would like to hear more about the changes, but we don't want to take things out of context or jump to conclusions. We want to insure that this is the best science available and we want to make sure we get things right.

We would value your feedback on:

- Endpoints for Salmon and Other Fishes, Wildlife and Alaska Natives - Chapter 5
- Fish mediated effects on wildlife and Alaska Natives – Chapter 12
- Integrated Risk Characterization – Chapter 14
- Ecological Knowledge and Cultures of the Nushagak and Kvichak Watersheds – Appendix D

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I am very humbled when I talk to tribes, since your knowledge of Bristol Bay salmon goes back thousands of years further than our involvement in the watershed. Because of your intimate understanding of this area, we would value your input on the parts of the assessment that address culture and ecological knowledge

Questions?

For More Information

- **Rick Parkin**, Senior Management Lead, 206-553-8574, parkin.richard@epa.gov
- **Judy Smith,** Community Involvement Coordinator, 503-326-6994, smith.judy@epa.gov
- **Tami Fordham,** Tribal Coordinator, 907-271-1484, fordham.tami@epa.gov

www.epa.gov/bristolbay

END

Supporting and extra slides
Beyond this point

Review Information Used in May 2012 Assessment

- EPA collected existing information about fish, wildlife, indigenous cultures, fishery economics, marine resources, and mineral resources.
- The only new information collected was interviews with 53 Tribal Elders in seven villages.
- EPA used some information from the Pebble Limited Partnership.
- All sources are identified in the report.

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We looked at as much credible scientific and technical information as we could find.

We wanted to get additional Tribal perspectives, so we did some interviews with Tribal Elders, which are described in the report appendices.

We used some information collected by the Pebble Limited Partnership. All of our sources of data are clearly identified in the report.

We are also providing the report to an independent scientific review panel to make sure we have the science right before we finalize the report.

Review Assessment Approach

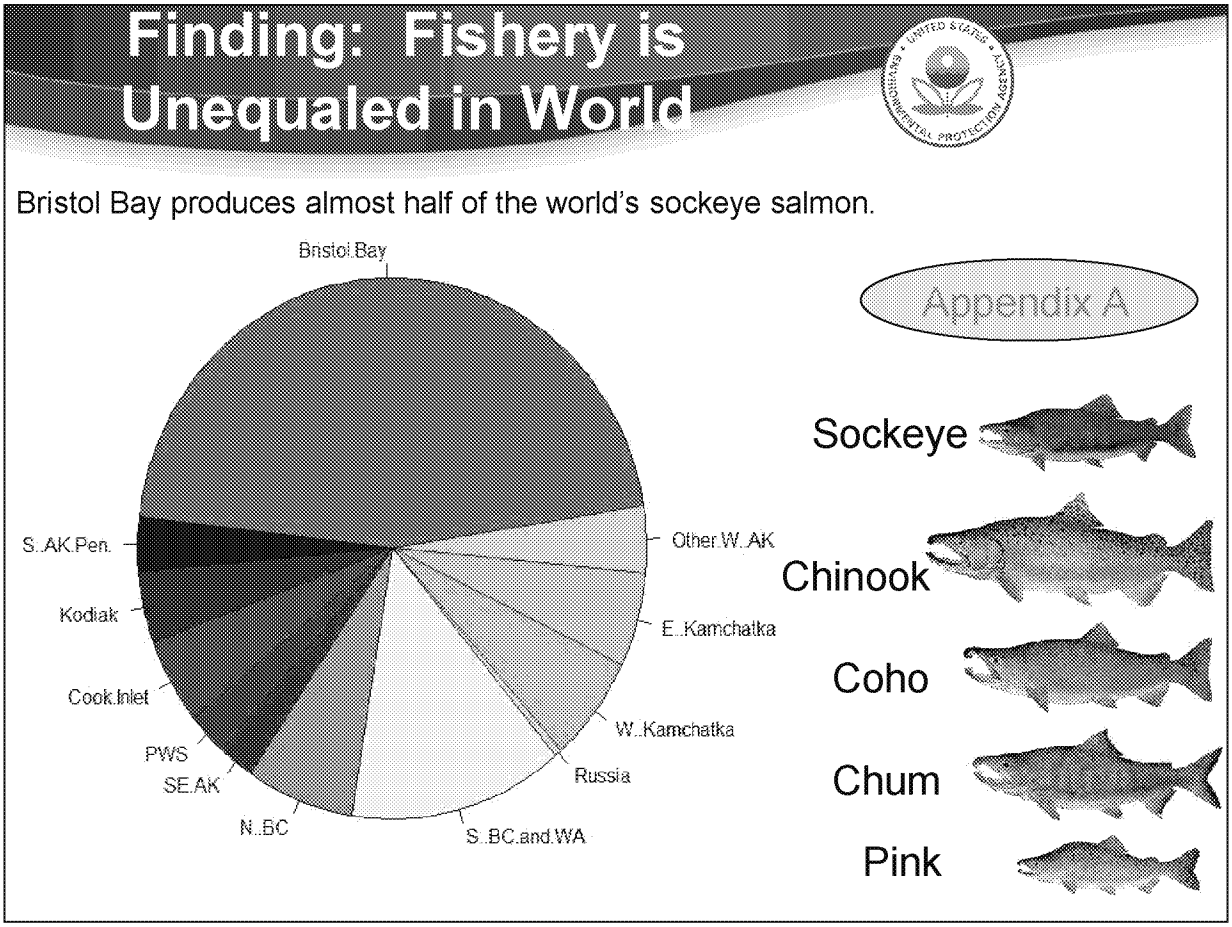
- Collected information about watersheds. Chapter 3* and Appendices
- Described elements of large-scale mine (mine scenario). Chapter 6*
- Looked at possible effects from large-scale mining in these watersheds. Chapters 5-8
- EPA Released the Draft Assessment in May 2012

We first collected and reviewed a great deal of scientific and technical information about the watersheds. EPA had help from the US Fish and Wildlife Service, who provided a report on wildlife in the area; the National Oceanic and Atmospheric Administration, who provided a report on marine resources; and the US Geologic Survey, who provided information on the geology and mineral resources.

We also hired experts to review information and report on salmon, other fish, economics, indigenous culture, and roads. All of these reports make up the appendices of the draft assessment. As mentioned, we also interviewed Tribal Elders and collected traditional knowledge.

We then looked at how a modern mine would be developed in the area, considering the type of mineral resources and the need to store large quantities of waste materials.

After that, we evaluated risks, or possible effects, from large scale mining.



Now let's look at the general conclusions of the assessment.

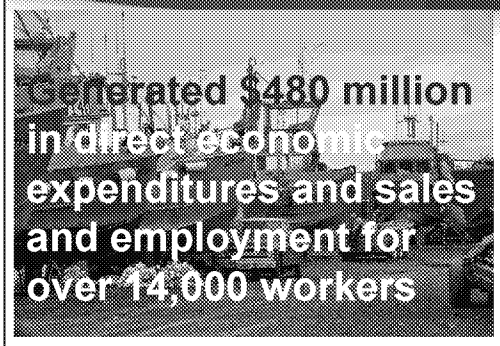
First we will look at the current status of the watershed. We confirmed that the Bristol Bay fishery is extremely valuable and unique.

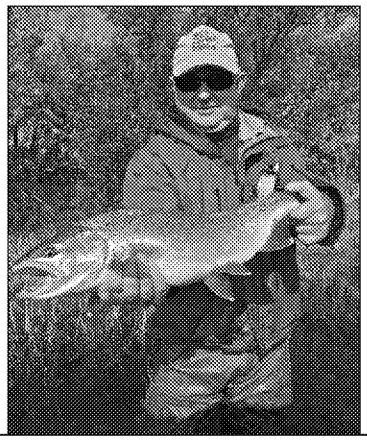
As you can see here:

Bristol Bay supports all five North American Pacific salmon species.
Bristol Bay produces almost half of the world's sockeye salmon.
Half of that production comes from the Nushagak and Kvichak Rivers.
Kvichak River is largest producer of sockeye salmon in the world.
Nushagak River is the 4th largest producer of chinook salmon in N.A.
The fishery in Bristol Bay is robust and intact, compared to the western US, where 29% of salmon populations are extinct and another third are threatened or endangered.

Economic Importance of Fishery

Appendix E





Commercial Fishery
- Value: Nearly $300 million
- Full/part-time jobs: over 11,000

Sport Fishery - 29,000 fishing trips
- Generates $60 million/year
- Full/part time jobs: over 800

Subsistence
- Cash contribution of $6 million/year
- Does not include replacement value

Sport hunting and sightseeing
- Sport hunting $8 million / 100 jobs
- Tourism $100 million/ 1,700 jobs

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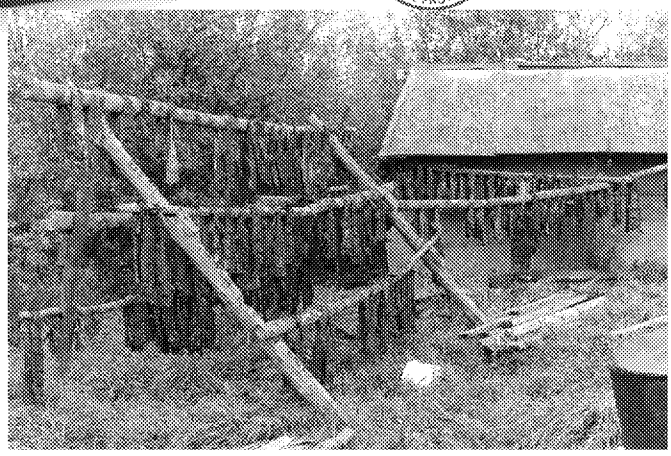
The assessment included an evaluation of the value of the salmon fishery including commercial, recreational, and subsistence.

The assessment did not include any kind of cost/benefit analysis of fishery and mineral resources. It is difficult to compare the value of a sustainable long-term resource such as fishing, with a finite resource such as mining.

Indigenous Cultures

One of the last intact, sustainable salmon-based cultures in the world.

Salmon and other wild foods have been valued and protected for over 4,000 years.



Salmon are nutritionally, socially, spiritually, and culturally integral to the Alaska Natives in the Bristol Bay Watershed.

Appendix D

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One of the major reasons EPA is doing this assessment is to respond to the Federally Recognized Tribes in the watersheds, who have requested our involvement.

The draft assessment includes documentation about the current status of the Alaska Native Cultures in the area, as well as what would happen to these cultures if the salmon population is affected by large-scale mining.

Subsistence Resources

- 98% of households use and share wild foods.
- Residents get 80% of their protein from subsistence.
- Salmon account for 52% of subsistence harvest.

Appendix D

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These watersheds are used by Alaska Natives and other local residents as a source of food. Our draft report documents the general extent of subsistence.