

**EPA'S BRISTOL BAY WATERSHED ASSESSMENT:
A FACTUAL REVIEW OF A
HYPOTHETICAL SCENARIO**

HEARING
BEFORE THE
SUBCOMMITTEE ON OVERSIGHT
COMMITTEE ON SCIENCE, SPACE, AND
TECHNOLOGY
HOUSE OF REPRESENTATIVES
ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

AUGUST 1, 2013

Serial No. 113-46

Printed for the use of the Committee on Science, Space, and Technology



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**EPA'S BRISTOL BAY WATERSHED
ASSESSMENT:
A FACTUAL REVIEW OF A HYPOTHETICAL
SCENARIO**

THURSDAY, AUGUST 1, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Subcommittee met, pursuant to call, at 1:04 p.m., in Room 2318 of the Rayburn House Office Building, Hon. Paul Broun [Chairman of the Subcommittee] presiding.

LAMAR S. SMITH, Texas
CHAIRMAN

EDDIE BERNICE JOHNSON, Texas
RANKING MEMBER

**Congress of the United States
House of Representatives**

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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Subcommittee on Oversight

***EPA's Bristol Bay Watershed Assessment – A Factual Review of a
Hypothetical Scenario***

Thursday, August 1, 2013

1:00 p.m. to 3:00 p.m.

2318 Rayburn House Office Building

Witnesses

Mr. Lowell Rothschild, Senior Counsel, Bracewell & Giuliani LLP

Dr. Michael Kavanaugh, Senior Principal, Geosyntec Consultants, and Member,
National Academy of Engineering

Mr. Wayne Nastri, Co-president, E4 Strategic Solutions; Former Regional
Administrator, USEPA Region 9

Mr. Daniel McGroarty, President, American Resources Policy Network

**U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Oversight**

HEARING CHARTER

EPA's Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario

Thursday, August 1, 2013
1:00 p.m. – 3:00 p.m.
2318 Rayburn House Office Building

Purpose

On August 1, 2013, the Subcommittee on Oversight will hold a hearing titled, “EPA’s Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario.” The purpose of the hearing is to review the U.S. Environmental Protection Agency’s (EPA) draft Bristol Bay watershed assessment (BBWA) titled, “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska.”¹ According to the EPA, its focus relative to this document is on a “timely completion of a robust and technically sound scientific Assessment.”² The Committee will review the EPA’s timing and rationale for conducting the draft watershed assessment.

Witnesses

- **Mr. Lowell Rothschild**, Senior Counsel, Bracewell & Giuliani LLP
- **Dr. Michael Kavanaugh**, Senior Principal, Geosyntec Consultants, and Member, National Academy of Engineering
- **Mr. Wayne Nastri**, Co-president, E4 Strategic Solutions, and Former Regional Administrator, USEPA Region 9
- **Mr. Daniel McGroarty**, President, American Resources Policy Network

Background

By some estimates, the Bristol Bay watershed in Alaska, home to the Pebble deposit, contains the second largest reserves of gold and copper in the world. The watershed also supports the largest sockeye salmon fishery in the world. According to a recent *Washington Post* editorial, while this area “is one of the last unspoiled habitats in the world,”³ it is also “rich in other natural resources; billions of dollars sit under the ground there in one of the largest finds of

¹ Bristol Bay Assessment, available at: <http://www2.epa.gov/bristolbay>.

² Letter from EPA Associate Administrator Arvin Ganesan to House Science, Space, and Technology Committee Chairman Lamar Smith and Subcommittee on Oversight Chairman Paul Broun, April 4, 2013.

³ Editorial, “Bristol Bay Mining Proposal Must Be Thoroughly Studied,” *The Washington Post*, June 23, 2013, available at: http://www.washingtonpost.com/opinions/bristol-bay-mining-proposal-must-be-thoroughly-studied/2013/06/23/9c4c1a20-d9ec-11e2-9df4-895344c13c30_story.html.

copper, gold and molybdenum in the United States.”⁴ An economic study by IHS Global Insight indicates there are up to an estimated 107 million ounces of gold, 81 billion pounds of copper, and 5.6 billion pounds of molybdenum, within the Pebble deposit at Bristol Bay.⁵

In 2007, two mining companies joined together to form the Pebble Limited Partnership (PLP) to “design, permit, construct and operate a modern, long-life mine at Pebble.”⁶ With some estimating that the Pebble deposit could be worth \$500 billion,⁷ the PLP’s projected annual operating budget has been estimated at \$1 billion⁸ - even though it has not filed a mining permit.

In 2010, several Alaskan tribes and organizations wrote to EPA requesting that the agency “initiate a public process under Section 404(c) of the Clean Water Act, to protect waters, wetlands, fish, wildlife, fisheries, subsistence and public uses in the Kvichak and Nushagak drainages and Bristol Bay of Southwest Alaska from metallic sulfide mining, including a potential Pebble mine.”⁹ In response, EPA conducted a watershed assessment using its general research authority under Section 104(a) and (b) of the Clean Water Act.¹⁰

EPA completed and released the first draft of this assessment in May 2012. In August 2012, EPA convened a three-day meeting in Alaska for a twelve-member external peer review panel to evaluate the scientific and technical merit of the BBWA. Afterward, the peer reviewers submitted written comments to EPA in September 2012, and in November, the agency released the final peer review report.¹¹

In April 2013, EPA released a revised version of the assessment, which was made available for public comment at the same time as to the original twelve peer reviewers. The peer reviewers were tasked with evaluating the revisions EPA made to the first draft assessment. The comment period for this revised assessment ended on June 30, 2013, and it is EPA’s goal to “finalize the assessment in 2013 after reviewing additional public comments, consulting and coordinating with tribes and considering input from the expert peer reviewers.”¹²

⁴ Ibid.

⁵ “The Economic and Employment Contributions of a Conceptual Pebble Mine to the Alaska and United States Economies,” IHS Global Insight, May 2013, available at: <http://corporate.pebblepartnership.com/files/documents/study.pdf>; (hereinafter IHS Study).

⁶ The Pebble Partnership, available at: <http://corporate.pebblepartnership.com/about.php>.

⁷ Edward Lempinen, “Proposed Pebble Mine Has Alaskan Community Focused on Critical Science and Policy Issues,” American Association for the Advancement of Science, October 18, 2011, available at: http://www.aaas.org/news/releases/2011/1018arctic_div_pebble.shtml.

⁸ IHS Study, *supra*, note 5.

⁹ Joint letter from six Federally recognized Tribes to former EPA Administrator Lisa Jackson and EPA Region 10 Administrator Dennis McLerran, May 2, 2010, available at: <http://ourbristolbay.com/pdf/tribes-letter-to-epa-on-404-c.pdf>.

¹⁰ EPA Revised Draft Assessment, Executive Summary, available at: http://www.epa.gov/ncea/pdfs/bristolbay/bristol_bay_assessment_erd2_2013_vol1_exec_summary.pdf.

¹¹ “External Peer Review of EPA’s Draft Document – An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” September 17, 2012, available at:

<http://www.epa.gov/ncea/pdfs/bristolbay/Final-Peer-Review-Report-Bristol-Bay.pdf>; (hereinafter Final Peer Review Report).

¹² Bristol Bay Assessment Fact Sheet, April 2013, available at:

<http://www2.epa.gov/sites/production/files/documents/bba-update-rev-june-2013.pdf>.

Issues

Two Sides of the Debate

The discussion over Bristol Bay stems from groups with two different perspectives. Environmentalists generally believe the Bristol Bay region to be too important and too pristine to risk allowing any type of mining activity to take place in the area. According to one think tank:

“This remote wild region is off the electrical grid, and to heat and power their villages, the Alaska Native communities must either ship in fuel or harness renewable resources. Construction of the mine will therefore also require the building of significant amounts of supporting infrastructure, including roads, power plants, pipelines, and a port, and the resulting development would have destructive environmental impacts for hundreds of square miles.”¹³

The other side of the argument is that there may be a way for both to coexist, that “we can have mining in Alaska and protect the Alaska salmon.”¹⁴ According to a grassroots organization:

“EPA chose to examine a ‘hypothetical’ mine plan, one that had not even gone through their own review process, and then came to the rather obvious conclusion that it wasn’t safe enough. We all agree on the importance of preserving our environment, and protecting the health of the Alaska salmon fishery and related jobs, but there is already an established set of rules in place to do just that.”¹⁵

Peer Reviewers Concerns

Some members of EPA’s external peer review panel raised similar concerns about the scientific soundness of the draft assessment given its reliance on hypothetical mining scenarios. These include:

Dr. Dirk van Zyl:

“The failure likelihoods and consequences on salmonid fish are very dependent on the assumptions for the hypothetical mine. These uncertainties are neither clearly identified nor included in the evaluations. This is a major shortcoming of the present analysis.”¹⁶

¹³ Jessica Goad, Shiva Polefka, Michael Conathan, and Christy Goldfuss, “Mining in Alaska’s Bristol Bay Region Threatens a Sustainable Economy,” *Center for American Progress*, June 27, 2013, available at: <http://www.americanprogress.org/issues/green/report/2013/06/27/68127/mining-in-alaskas-bristol-bay-region-threatens-a-sustainable-economy-2/>.

¹⁴ Nansen Malin, “Pebble Mine: We Can Have Jobs and Salmon,” *Chinook Observer*, July 2, 2013, available at: <http://northwestopinions.com/chinook-observer/pebble-mine-we-can-have-jobs-and-salmon/>.

¹⁵ *Ibid.*

¹⁶ Final Peer Review Report, *supra*, note 11.

Dr. William A. Stubblefield:

“It is also unclear why EPA undertook this evaluation, given that a more realistic assessment could probably have been conducted once an actual mine was proposed and greater detail about operational parameters available.”¹⁷

Intent

EPA’s purpose for drafting the BBWA is unclear. The agency was asked to take preemptive action under Section 404(c) of the Clean Water Act prior to any mining permit application, but it elected instead to proceed with a watershed assessment under a different section of the Act. If EPA plans to base a significant federal decision on the basis of this watershed assessment, it is critical that the document be scientifically sound and beyond reproach. Dr. Michael Kavanaugh, one of the witnesses for today’s hearing, told the peer review panel in Alaska last year that the BBWA:

“fails to meet widely accepted quality standards that must be satisfied to produce a credible scientific and technical assessment. The report both significantly exaggerates both the probabilities of failures of all engineered mining components and the environmental consequences of these failure scenarios.”¹⁸

Timing

The speed with which EPA has completed this assessment has prompted some to comment that this is the “largest watershed assessment they’ve [EPA] ever done in the shortest amount of time.”¹⁹ This has prompted questions such as that raised by several Senators in a recent letter to EPA, “**What harm would result from EPA allowing Pebble Mine proponents to actually apply for a Clean Water Act permit before commenting on potential mining impacts, instead of the agency speculatively opining on hypothetical scenarios?**”²⁰ (Emphasis in original.)

¹⁷ Ibid.

¹⁸ Tim Bradner, “Both Sides of Pebble Find Fault with EPA Study,” Alaska Journal of Commerce, August 23, 2012, available at: <http://www.alaskajournal.com/Alaska-Journal-of-Commerce/August-Issue-4-2012/Both-sides-of-Pebble-find-fault-with-EPA-study/>.

¹⁹ Monica Trauzzi, “Bristol Bay: Pebble Mine’s Shively Discusses Future of Project, EPA’s Watershed Assessment,” *E&E News* – OnPoint Interview, June 13, 2013, available at: <http://www.eenews.net/eenewspm/stories/1059982823/search?keyword=shively>.

²⁰ Letter from Senators Vitter, Barrasso, Crapo, Wicker, and Boozman, to EPA Senior Policy Advisor Ken Kopocis, June 11, 2013, available at: http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=c5687274-ac36-434f-988e-0335fd9f9f6.

Chairman BROUN. The Subcommittee on Oversight will come to order.

Good afternoon, everyone. In front of you are the packets containing the written testimony, biographies, and Truth in Testimony disclosures for today's witnesses. I now recognize myself for five minutes for an opening statement.

The title of today's hearing is, "EPA's Bristol Bay Watershed Assessment: A Factual Review of a Hypothetical Scenario."

I would like to extend a particularly warm welcome to our witnesses and thank you all for joining us here today, and really appreciate your coming and testifying before the Committee.

Last year, the U.S. Environmental Protection Agency released a draft watershed assessment of the Bristol Bay area in Alaska at the request of several Alaskan tribes and organizations concerned about the potential of mining activity in the region. This assessment, which by some estimates has cost taxpayers a minimum of \$2.4 million, has undergone a peer review process and was re-released earlier this year as a second draft. However, EPA has not finalized the assessment, nor has it specified the ultimate purpose of the document. One concern—not denied by EPA—is that the assessment may be the basis of a preemptive veto where the agency would prohibit a mining company from even applying for mine permits. It is important to note that as of this point, no mining permits have been filed in Bristol Bay. That means that EPA's watershed assessment is based on hypothetical mining scenarios, and according to one mining supporter, "it is a fantasy for the government to say here is a mine plan."

Further, one of our witnesses today, Dr. Kavanaugh, a member of the National Academy of Engineering, states that EPA's assessment, "exaggerates the probability of failures, relies on worst-case scenarios to support a qualitative judgment on the potential impacts of these failures, does not adequately consider modern engineering, construction, operations and maintenance practices, and thus provides an unrealistic and unscientific assessment of the potential impacts of the hypothetical mining project."

I find that analysis troubling. A prospective decision of such magnitude by the EPA should be based on the best possible science, a point underscored in EPA's own Peer Review Handbook which states, and I quote, "Science is the foundation that supports all of our work here at EPA. Strong, independent science is of paramount importance to our environmental policies. The quality of science that underlies our regulations is vital to the credibility of EPA's decisions."

A preemptive veto by EPA would set a dangerous precedent, and could have a chilling effect on similar projects throughout the nation. Investors would be wary of funding projects if they believed that a Federal agency could just say no at any time to a company permit prior to even applications being made.

Let me emphasize that I am not an advocate for or against the development of the Pebble mine, in spite of what some people have claimed and charged. I understand the argument of mine proponents—that they be granted due process and allowed to make their case through existing law, which includes the Clean Water Act, the National Environmental Policy Act, as well as the Envi-

ronmental Impact Statement process, which would address the specific issues that are unique to this part of Alaska and exclusive to this mine proposal.

You all may also know that I am a long-term lifetime member of Trout Unlimited. I am an avid hunter and a fisherman, and I have been to Alaska many times. You can come to my office and you will see some critters that I was able to gather there. I, too, understand the concerns of the anti-mine people regarding the value of this inimitable and pristine environment.

Let me assure these folks: I care more about protecting that environment than any nonprofit organizations pushing a social agenda.

To me, the question at hand comes down to one of due process. This country was founded under the notion that citizens must be protected from tyrannical overreach, and I believe it is unconscionable for the Administration, any Administration, to deny U.S. citizens their day in court. In a similar vein, I would consider a preemptive denial by the EPA equivalent to denying the mining companies their day in court, having judged them guilty instead of presumed innocent.

Even The Washington Post, hardly regarded as a pro-mining mouthpiece, concluded in a recent editorial regarding the mining companies, "All they want, they say, is a fair and thorough evaluation of their claims. That is reasonable."

That is reasonable to me too, and I look forward to hearing all sides of our witnesses' testimonies today.

[The prepared statement of Mr. Broun follows:]

PREPARED STATEMENT OF REPRESENTATIVE PAUL C. BROUN, CHAIRMAN,
SUBCOMMITTEE ON OVERSIGHT

Today's hearing is titled, "EPA's Bristol Bay Watershed Assessment—A Factual Review of a Hypothetical Scenario."

Last year, the U.S. Environmental Protection Agency released a draft watershed assessment of the Bristol Bay area in Alaska at the request of several Alaskan tribes and organizations concerned about the potential of mining activity in the region.

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of funding projects if they believed that a federal agency could just say no at any time to a company prior to permit applications.

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To me, the question at hand comes down to one of due process. This country was founded under the notion that citizens must be protected from tyrannical overreach, and I believe it is unconscionable for the Administration, any Administration, to deny a U.S. citizens their day in court. In a similar vein, I would consider a preemptive denial by the EPA equivalent to denying the mining companies their day in court, having judged them guilty instead of presumed innocent. Even The Washington Post, hardly regarded as a pro-mining mouthpiece, concluded in a recent editorial that regarding the mining companies, “All they want, they say, is a fair and thorough evaluation of their claims. That is reasonable.”

That is reasonable to me too, and I look forward to hearing all sides of our witnesses’ testimonies today.

Chairman BROWN. And before I turn to the gentleman, my friend, Dan Maffei from New York, I will ask unanimous consent to enter for the record letters from various groups interested in our hearing, which have been shared with members of the minority. Hearing no objection, so ordered.

[The information appears in Appendix II]

Chairman BROWN. I now recognize the Ranking Member, my friend, the gentleman from New York, Mr. Dan Maffei, for an opening statement.

Mr. MAFFEI. I want to thank the Chairman.

My district in upstate New York has actually a unique connection to Alaska. It was the home to William H. Seward, who resided in Auburn, New York. Seward served as a Republican Governor, U.S. Senator and Secretary of State under Presidents Lincoln and Johnson, but Seward was most notably responsible for the purchase of Alaska from Russia in 1867. I won’t tell you for how much. It was a bargain. At the time, the Alaska purchase was unpopular. It was actually known as Seward’s Folly. Later in life, Seward was asked to name his greatest achievement, and he said, “The purchase of Alaska, but it will take the people a generation to find out.”

It is hard for me to look at the proposal to place a mine in the watershed feeding area of Bristol Bay and not consider what future generations might think of us. On the one hand is the prospect of great wealth from exploiting natural resources resulting from mining efforts. That will last a few decades, perhaps a generation, and then the mining company will be gone, potentially leaving behind a huge hole in the Earth and billions of tons of acid mine waste. Even if the company can do what so far no mining company has ever done in a wet environment and a dig a massive open pit mine that results in no leaks, no accidents, and no pollution, who can guarantee that the massive amount of waste left behind in the tailings dam will not leach out or that the dam itself will not fail?

In 2010, a tailings dam holding mining waste collapsed due to heavy rain releasing toxic sludge, flooding nearby towns, killing 10 and injuring 120. In 1998 in France, a tailings dam collapsed, releasing sulfur, zinc, copper, iron and lead into nearby farmland. A study of the incident estimated that about 5,000 jobs were lost in the dam's failure and aftermath. These are just a few examples of the potential failures that could occur in Bristol Bay.

On the other hand, we have the returning wealth of salmon. They feed the earth in one of the most pristine locations in the world. They feed the people of the region, the last truly sustainable salmon-based culture left in the United States. Through the efforts of commercial fishermen, we too all get a chance to share in that bounty. The salmon of Bristol Bay who spawn in the rivers there are a sustained resource that, if we do not destroy them, will be there for as long as we can see into the future. And although the area does compete with my beloved upstate New York for fishermen, it is a wonderful place to go fish.

Bristol Bay's clean water economy supports one of Alaska's most natural and bountiful resources—the salmon—and will yield economic returns and generate revenue for far beyond the short-term economic impact of mining, and that will support jobs today, tomorrow and in future generations, whereas mining and potentially its harmful environmental impacts will eliminate those future jobs supported by the fishing industry. If you hold these two prospects in the balance and weigh them in a scale for what is best for future generations, the question is very simple and the answer very clear: do we act for ourselves and then regret it after a generation, or do we embrace the sustained wealth of nature that returns every year for our use as long as people live on the Earth?

Now, I do want to respect the Chairman's process points, and they are well taken, and I do not dispute his positive motives in this matter, but I do want to make just a few other points. I want to remind the members that EPA has begun their risk assessment in response to local pressure for the EPA to intervene. EPA was asked to take up the 404(c) process, which under the Clean Water Act gives EPA the power to protect water quality by establishing standards that can virtually veto development. EPA might be chided for taking on a science-based watershed assessment rather than moving immediately to 404(c), but I think the agency was trying to show everyone involved that they were willing to listen and study the issue thoroughly before acting.

The draft assessment is solid science that demonstrates hardrock mining cannot coexist side by side with salmon without harm to the salmon, to the fishing and sportsmen economy, and to the native communities. Claims that some magical technology can make all this work out have been made many times and rarely does technology work the way it is promised. Mining is an inherently destructive and dirty business, and technology cannot make it clean and harmless. I certainly agree we need mining, and I am not an opponent of mining, but I think that we have to be honest with ourselves about where such projects can work and where they simply don't make sense.

Finally, I believe the EPA should complete their assessment and then promptly move to take up a 404(c), that gives everyone cer-

tainty that Bristol Bay and the surrounding rivers and lakes will remain pristine. If the EPA's 404(c) amounts to a preemptive veto of mining, then at least it will free up the mining companies and capital to turn to more promising locations for ore.

A contemporary of Seward described him as "one of those spirits who sometimes go ahead of public opinion instead of tamely following its footprints. I hope members of this Committee will be mindful of these words and of the example of William Seward as we explore the issues surrounding the development of the Pebble mine, and I yield back the remaining three seconds of my time.

[The prepared statement of Mr. Maffei follows:]

PREPARED STATEMENT OF REPRESENTATIVE DAN MAFFEI, RANKING MINORITY
MEMBER, SUBCOMMITTEE ON OVERSIGHT

Thank you, Mr. Chairman.

My district in Upstate New York has a unique connection to Alaska. It was home to William H. Seward, who resided in Auburn, New York. Seward served as a Republican Governor, U.S. Senator, and Secretary of State under President's Lincoln and Johnson. Seward most notably was responsible for the purchase of Alaska from Russia in 1867.

At the time, the Alaska purchase was unpopular and known as "Seward's Folly." Later in life Seward was asked to name his greatest achievement, and he said, "The purchase of Alaska, but it will take the people a generation to find out."

It is hard to look at the proposal to place a mine in the watershed feeding Bristol Bay and not think that Seward's words ring true more a century later.

On the one hand is the prospect of great wealth, great resources and all the jobs that flow from that pouring out of the mining efforts in that beautiful place. That will last a few decades, perhaps a "generation" as Seward stated. And then the mining company will be gone, leaving behind a huge hole in the earth and billions of tons of acid mine waste. Even if the company can do what no mining company has ever done in a wet environment, and dig a massive open pit mine that results in no leaks, no accidents, no pollution, who can guarantee that the massive amount of waste left behind in tailings dams will not leach out, or that the dam itself will not fail?

In 2010, a tailings dam holding mining waste collapsed due to heavy rain releasing toxic sludge flooding nearby towns, killing 10 and injuring 120. In 1998 in France, a tailing dam collapsed releasing sulfur, zinc, copper, iron, and lead into nearby farmland. A study of the incident estimated that about 5,000 jobs were lost in the dam failure's aftermath. These are just a few examples of potential failures that could occur in Bristol Bay.

A dam here must work for thousands of years—not just one generation from now but generations and generations and generations beyond counting. And it must work in a very wet environment that is one of the most seismically active on earth. It is simply not worth the risk.

On the other hand we have the returning wealth of the salmon. They feed the earth in one of the most pristine locations in the world. They feed the people of the region—the last truly sustainable salmon-based culture left in the U.S. Through the efforts of the commercial fishermen we too all get a chance to share in that bounty. The salmon of Bristol Bay, who spawn in the rivers there, are a sustained resource that—if we do not destroy them—will be there for as long as we can see into the future.

Bristol Bay's "clean water economy" supports one of Alaska's most natural and bountiful resources—Salmon—and will yield economic returns and generate revenue far beyond the short-term economic impact of mining. This "clean water economy" will support jobs today, tomorrow and for future generations, whereas mining and its harmful environmental impacts will eliminate all future jobs supported by the fishing industry.

If you hold those two prospects in the balance, and weigh them in a scale for what is best for future generations, the question is very simple and the answer is very clear. Do we gorge ourselves for a generation or two and then regret it or do we embrace the sustained wealth of nature that returns every year for our use so long as people live on this earth?

It is Seward's words that inform my perspective on the issue before the Committee today. If we allow this dangerous proposal to go forward today, will the next generation realize our folly?

Just a few other points:

I want to remind the Members that EPA has begun their risk assessment in response to local pressure for the EPA to intervene. EPA was asked to take up the 404(c) process, which under the Clean Water Act gives EPA the power to protect water quality by establishing standards that can virtually veto development. EPA might be chided for taking on a science-based watershed assessment rather than moving immediately to the 404(c), but I think the agency was trying to show everyone involved that they were willing to listen and study the issue thoroughly before acting.

The draft assessment is solid science that demonstrates hard rock mining cannot coexist side by side with salmon without harm to the salmon, to the fishing and sportsman's economy, and to the native communities. Claims that some magical technology can make this all work out have been made many times, and rarely does technology work the way it is promised. Mining is an inherently destructive and dirty business and technology cannot make it clean and harmless. I certainly agree we need mining and I am not an opponent of mining, but I think we have to be honest with ourselves about where such projects can work and where they simply do not make sense.

Finally, I believe that EPA should complete their assessment and then promptly move to take up a 404c that gives everyone certainty that Bristol Bay and the surrounding rivers and lakes will remain pristine. If the EPA's 404(c) amounts to a preemptive veto of mining, then that will free up the mining companies and capital to turn to more promising locations for ore.

A contemporary of Seward described him as "one of those spirits who sometimes will go ahead of public opinion instead of tamely following its footprints."

I hope the Members of this committee will be mindful of these words as we explore the issues surrounding development at the Pebble Mine. I yield back.

Mr. MAFFEI. Mr. Chairman, I also have a unanimous consent request. I have—

Chairman BROUN. Go ahead. The gentleman is recognized.

Mr. MAFFEI. I have a request that letters that I have already shared with the majority be attached to my statement. These are ones that we have already shared.

Chairman BROUN. Without objection, so ordered.

[The information appears in Appendix II]

Chairman BROUN. The Chairman notes the presence of my friend, Suzanne Bonamici, and Ms. Bonamici, do you want to participate? We need a unanimous consent request that you participate as if you are a member of the Committee, if you would like.

Ms. BONAMICI. Thank you, Mr. Chairman. I request unanimous consent that I be permitted to participate in the Subcommittee hearing. I am a Member of the full Committee but not of this particular Subcommittee.

Chairman BROUN. Hearing no objection, so ordered, and thanks for joining us.

If there are Members who wish to submit additional opening statements, your statements will be added to the record at this point.

Now, at this time I would like to introduce our panel of witnesses. Our first witness is Mr. Lowell Rothschild, Senior Counsel at Bracewell and Giuliani. Is that how you pronounce that?

Mr. ROTHSCHILD. Giuliani.

Chairman BROUN. Giuliani. Well, whatever. I am a southerner and I can't pronounce words like that. I don't know Italian.

Our second witness is Dr. Michael Kavanaugh, Senior Principal at Geosyntec Consultants and a Member of the National Academy

of Engineering. Our third witness is Mr. Wayne Nastri, Co-president of E4 Strategic Solutions, and former Regional Administrator of EPA Region 9. Our final witness is Mr. Daniel McGroarty. Is that correct?

Mr. MCGROARTY. Yes.

Chairman BROUN. Okay, President of the American Resources Policy Network. We welcome all of you.

As our witnesses should know, spoken testimony is limited to five minutes each, after which members of the Committee will have five minutes each to ask you questions. Your written testimony will be included in the record of the hearing.

It is the practice of this Subcommittee on Oversight to receive testimony under oath. Do any of you all have an objection to taking an oath of truthfulness? Let the record show that all of the witnesses indicated that they do not mind taking the oath. If you would please stand? Raise your right hand. Do you solemnly swear or affirm to tell the whole truth and nothing but the truth, so help you God? You may be seated. Let the record reflect that all the witnesses participating have taken the oath.

I now recognize our first witness, Mr. Rothschild, for five minutes.

**TESTIMONY OF MR. LOWELL ROTHSCHILD, SENIOR COUNSEL,
BRACEWELL & GIULIANI LLP**

Mr. ROTHSCHILD. Chairman Broun, Ranking Member Maffei, Members of the Committee, thank you very much for inviting me to testify today. My name is Lowell Rothschild, and I am Senior Counsel at the law firm of Bracewell and Giuliani. I have practiced exclusively in the area of environmental law for almost 20 years with my primary focus on the laws affecting land development like those related to wetlands, endangered species and environmental review, like NEPA. I have extensive experience in the permitting and litigation of major projects under these laws, and I am also the co-author of the Environmental Law Institute's Wetland Deskbook.

The Committee has asked me to testify today on the NEPA Environmental Impact Statement process as it relates to mining activity and how that process compares to assessments EPA undertakes under Clean Water Act sections 104(a) and (b) like the one for Bristol Bay. My view, as I discuss in greater detail in my written testimony, is twofold. EPA's Bristol Bay study is both more general and more limited than an EIS would be. It covers far fewer subjects than would be analyzed in an EIS and lacks the detail needed to fully understand the impacts of an eventual project, even for the resource impacts it does examine. As a result, EPA's assessment is not an adequate substitute for an EIS, and even for the resources it does analyze, its impact assessment is less informed and therefore less useful than the analysis which would occur under a project-specific EIS.

The reason for these conclusions relates to both the intent of the study and to its timing in the permitting process. EPA, as you all have said, has selected three hypothetical mining scenarios and analyzed the direct impacts which they then would cause on salmon in the Bristol Bay watershed and its sub-watersheds. It also analyzes a few of the indirect impacts that would result from those

salmon impacts. This approach is intentionally more limited than an EIS would be. A typical EIS for a large mining project analyzes impacts to approximately 20 different resources including strictly natural environmental ones like air, noise, groundwater and endangered species impacts as well as human environmental ones like economic, socioeconomic and environmental justice impacts. In contrast, the assessment is specifically limited to analyzing a subset of direct wildlife impacts—those to salmon species—along with several of the indirect impacts that result from those impacts to salmon. Thus, the assessment isn't intended to be and it is not a substitute for an EIS.

The assessment's second limitation relates to its timing in the process. Since it is being undertaken before an application has been submitted, it is not able to utilize the important project-specific information which would be generated for the application. As a result, even for the impacts it does analyze, the assessment's analysis isn't as useful as that which would be undertaken in an eventual EIS. That is because to comply with the wetland permitting laws, a permit applicant must submit an application that identifies the practicable measures it will take to avoid, minimize and mitigate the project's impacts to wetlands. These measures are very difficult to identify in the abstract. They often involve small modifications to a project, even though they can result in significant decreases in impacts. But these modifications cannot be identified until you understand the on-the-ground resources to a high degree of detail. For example, one possible minimization measure would be moving the footprint of the project so that the wetlands impacted are lower quality than those originally planned. To do this requires an assessment of the quality and the specific location of the wetlands in the project area. This wetland assessment is something an applicant will do before it submits its application but only once the applicant has the specific information can it provide the avoidance, minimization and mitigation alternatives. And this is just one example of minimization—moving the project footprint—and only for one resource—wetlands. Other types of similar measures can be proposed both for wetlands and for the dozen or so major resources analyzed in the EIS. These types of detailed facts have not been developed for the Bristol Bay assessment, not for wetlands or for other resources. As a result, detailed avoidance and minimization modifications do not appear to be a part of the Bristol Bay assessment. Depending on the nature of such modifications that are included in the project application, an eventual EIS impact assessment could be quite different from EPA's current assessments.

I should also note that once the permit application process begins, EPA will have significant statutory rights under both NEPA and the wetland permitting laws, which will allow it to provide extensive input to the process and to affect its ultimate outcome. Until then, the assessment is too limited to be an adequate substitute for an EIS and too general to provide specific information about the impacts of any eventual mining project, even for the resources it has analyzed.

I look forward to answering any questions you may have. Thank you very much.

[The prepared statement of Mr. Rothschild follows:]

Testimony of Lowell Rothschild, Senior Counsel, Bracewell & Giuliani LLP
House Committee on Science, Space, and Technology, Subcommittee on Oversight
“EPA’s Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario”
August 1, 2013

Members of the Committee –

Thank you very much for inviting me to testify today. My name is Lowell Rothschild, and I am Senior Counsel at the law firm of Bracewell & Giuliani LLP here in Washington, where I practice environmental law. I have practiced exclusively in the area of environmental law for almost 20 years, both in law firms and in-house, with my primary focus on the laws affecting land development, like those related to wetlands, environmental review (NEPA) and endangered species. I have represented governmental, quasi-governmental and private clients in permitting and litigation over major projects with significant wetland impacts and NEPA analyses. I am also the co-author of the Environmental Law Institute’s *Wetland Deskbook*.

As requested, my testimony today focuses on the NEPA Environmental Impact Statement process as it relates to mining activity and how that process compares to assessments EPA undertakes under Clean Water Act Section 104(a) and (b), like the one for Bristol Bay. For background, I’ll also discuss the context of how NEPA and EPA’s Bristol Bay Assessment fit into the wetland permitting process under Section 404 of the Clean Water Act.

NEPA

Starting with the National Environmental Policy Act, NEPA was the first major US environmental law. It is purely procedural, requiring only that a federal agency, before undertaking a major action that may significantly affect the environment, analyze the impacts of, and the alternatives to, its proposed action. By “purely procedural,” I mean that NEPA does not require any specific result. It does not, for example, mandate environmental protection. A federal agency could do a NEPA analysis of an action that would have major adverse environmental consequences and, as long as it adequately looked at the impacts of and alternatives to that action, there is nothing in NEPA that would prevent it from taking that action. There would likely be other laws that would prevent it, because they have substantive limitations, but NEPA wouldn’t.

But since it is purely procedural, NEPA has a lot of process and it involves a very thorough analysis of impacts and alternatives. Before authorizing a major project, like most mines, the authorizing agencies must finalize an Environmental Impact Statement or “EIS.” The EIS process begins with a high-level determination of the nature of the proposed project, the geographic and physical environment it might impact and what, exactly, the EIS should examine – in other words, the “scope” of the EIS. This scoping process is a public one – notice of scoping is published by the agency, and the public has a right to comment on the scope of the document.

Following scoping, a draft EIS is prepared covering the range of impacts and alternatives. The number of alternatives varies from EIS to EIS, but it always includes at least two - the proposed

project and what is called the “no action” alternative, which is the alternative under which the agency doesn’t issue its authorization and therefore no project is undertaken. The agency also typically looks at a number of other alternatives.

The number of different resources examined in the impact analysis is rather large. For example, in the most recent mining EIS on which I worked, related to mining in central Florida, the US Army Corps of Engineers analyzed impacts to 20 different categories of resources, well beyond wetlands, water quality and wildlife. These included

1. Surface Water Resources
2. Groundwater Resources
3. Water Quality
4. Aquatic biological communities
5. Wetlands
6. Wildlife Habitat
7. Species listed under federal and state species protection laws
8. Economic Resources
9. Socioeconomics
10. Environmental Justice
11. Radiation
12. Cultural Resources
13. Historic Properties
14. Surface geology and soils
15. Air Quality
16. Noise
17. Land use
18. Cumulative effects
19. The relationship between short-term use of the environment and long-term productivity; and
20. Irreversible and irretrievable commitment of resources

The degree of analysis required for each resource area varies, but in all cases, the nature of the analysis is the same: The agency uses current science to identify the existing condition of that resource – called “the baseline” – and then the impacts which will occur to that resource under the various different alternatives.

This analysis is compiled into a Draft EIS, which, when completed, is released for public review and comment, typically for a minimum of 45 days but often longer. Comments are solicited from individual members of the public as well as federal, state and local governmental agencies and non-governmental organizations that have an interest in the proposed project or expertise in certain resource areas. After the close of the comment period, the comments are reviewed and any changes required because of those comments (or for other reasons) are incorporated into a Final EIS. The FEIS also typically contains a section responding to all of the comments made on the DEIS.

Then the FEIS is released for public comment. Those comments are received and reviewed and, after a waiting period, a final decision can be made on the proposed project.

For large projects, the EIS can be fairly time-consuming and expensive, often taking several years to complete and costing millions of dollars. As it is not feasible for the government to fund all the necessary studies, EIS funding is almost always the responsibility of the project proponent. The federal agency typically ensures the independence of the NEPA process by contracting directly with a consultant for the preparation of the document and acting as the primary point of direction for that consultant. The project proponent's responsibility is solely to fund the EIS, not to direct it.

EPA's role in the NEPA process

EPA has two different roles in the NEPA process. First, it has the same role as all other agencies, in that the action agency asks it for, and it typically provides, comments on the Draft and Final EISes as to subjects on which it has particular expertise and/or interest. Given its regulatory mission, those comments often cover a wide range of the EIS's impact analysis. EPA's comments are usually given significant credence by the action agency and third parties.

In addition, EPA has a unique role in the NEPA process. Congress has required that EPA review and comment on the environmental impacts of all major federal actions and, if it determines that the environmental impacts of any action is unsatisfactory, it is to refer the matter to the Council on Environmental Quality (CEQ). As a result, EPA receives a copy of every DEIS and it comments on both the environmental impacts of the project and the adequacy of the DEIS, assigning the DEIS a grade in both categories.

The wetland permitting process under CWA Section 404

As I mentioned before, NEPA is purely procedural, but there is usually a substantive statute at play, too. For wetlands permitting, that statute is the Clean Water Act.

Section 404 of the Clean Water Act authorizes the Corps to issue permits allowing the filling of wetlands. Most of the wetland fill projects undertaken in the US involve relatively small amounts of wetland fill and are authorized by general permits, which allow for certain low-impact projects to proceed under specific terms and conditions identified in advance. Bigger projects, which are generally those with more than ½-acre of wetland impact per project, require an individual permit from the Corps.

The individual permitting process is similar to the NEPA process, but it is also different in a few critical ways. It is similar in that the Corps receives a permit application from a project proponent, undertakes a preliminary analysis of the project and solicits comments from the public. After reviewing and, in some cases, responding to those comments, it decides whether or not to issue a permit.

However, there are a number of significant differences between the wetland permitting process and NEPA analysis. For the purpose of describing the matters about which I was asked to testify, the most critical differences involve, first, the fact that the wetland permitting process is substantive, not procedural, and second, that EPA has two statutory points of influence over the process.

Substance versus procedure

As I said, Clean Water Act Section 404 mandates a substantive requirement. The Corps must select the “Least Environmentally Damaging Practicable Alternative.” That phrase is continually parsed and fly-specked, but I will limit the parsing for my testimony to noting that it includes a requirement that a project proponent *avoid* impacts to the maximum extent practicable, take appropriate and practicable steps to *minimize* any adverse impacts that cannot be completely avoided and then provide appropriate and practicable *mitigation* for impacts which remain after avoidance and minimization.

This three-pronged approach of undertaking all appropriate and practicable avoidance, minimization and mitigation measures is required of all permit applicants. It is very difficult to analyze these measures in the abstract, since what is appropriate and practicable varies from case to case. For example, practicable avoidance measures changes over time, as new technologies and practices become available which make certain actions practicable today that weren’t practicable yesterday. Minimization is incredibly fact-specific, since it often involves small modifications to projects to avoid impacts to high-quality wetlands, if the project can then avoid impacts to a similar number of acres of low-quality wetlands. That type of avoidance is dependent on an analysis of the functions and values of particular wetlands in the project area. As a result, the 404 permitting analysis and decision are specific to each individual application.

EPA’s statutory rights

The other notable difference between NEPA and wetland permitting is the statutory rights that EPA has in the wetland permitting process. As the Committee may know, when Congress passed the Clean Water Act, there was a fair amount of discussion over which agency – the Corps or EPA – should have authority to issue permits for wetland fills. The Corps had previously had authority over similar activities in open water under the River and Harbors Act, but EPA had also had similar authority, regulating the discharge of chemicals and other pollutants under the Clean Water Act’s point-source discharge permitting program. Congress’ solution was essentially to split the baby. It gave the Corps the authority to issue permits, but EPA the authority to veto them. Thus, under Clean Water Act Section 404(c), after consulting with the Corps, EPA can “prohibit the specification of any defined area as a disposal site” which meets certain criteria.

Knowing that wetland permitting affected a number of other agencies’ authorities, including not just the Corps and EPA, but also USDA, DOI and DOT, and that its splitting of the baby between the Corps and EPA might create duplication, Congress also required, under 404(q), that these agencies enter into agreements with the Corps to minimize duplication, needless paperwork and delays. This resulted in a Memorandum of Agreement between EPA and the Corps outlining certain steps that the agencies must take to coordinate, elevate policy issues, and elevate individual permit decisions. It is this ability to elevate from the local, district and regional level to the headquarters level the decisionmaking on specific, contentious permits, that provides EPA its second, significant, statutory right in the wetland permitting process.

As the Committee might surmise, these statutory rights not only afford EPA significant influence over permitting at the end of the process, but also significant leverage during the early stages.

Since the Corps knows that EPA has the ultimate authority to reject a permit, it has every reason to take seriously any concerns EPA raises early in the process, to help ensure that permits can be issued smoothly, without threat of elevation or veto. This process has been quite effective – EPA has only vetoed 13 projects in the 41 years since 404(c) was enacted and has only vetoed two projects in the last 24 years.

Clean Water Act Sections 104(a) and (b)

The other statutory provisions on which the Committee asked me to comment are Clean Water Act Sections 104(a) and (b). These provisions give EPA authority generally related to extensive, programmatic efforts and for the research, investigations, monitoring and technical assistance undertaken in support of those efforts. These provisions also give EPA broad authority to study, investigate and monitor water pollution.

In fact, these authorities are so broad, it isn't really possible to discuss in the abstract how they compare to the NEPA EIS process – it's really necessary to compare a particular EPA action taken under 104(a) and (b) to the EIS process. So I'll turn to EPA's Bristol Bay Assessment ("the Assessment") for that comparison.

EPA's Bristol Bay Assessment

Given EPA's broad authority under Sections 104(a) and (b), it certainly appears that EPA is well within its authority to have undertaken the Assessment. The question is how that the Assessment compares to an EIS undertaken under NEPA. As described above, the EIS process involves extensive analysis of impacts to numerous resources from a proposed project and at least one alternative to that project.

EPA's assessment is more general and more limited than an EIS would be. EPA has selected three hypothetical mining scenarios and analyzed their impacts by conducting an "ecological risk assessment" focusing on the Bristol Bay watersheds and on several sub-watersheds. The Assessment's Executive Summary provides a good synopsis of the parameters of EPA's study. It notes that "the primary focus of the assessment is on the abundance, productivity and diversity" of the region's salmonids. "[W]ildlife and Alaska native cultures in Bristol Bay are also considered as assessment endpoints" "but only as affected by changes in salmonid fisheries."

The Assessment "is not an in-depth assessment of a specific mine," but analyzes "scenarios that reflects the expected characteristics of mine operations at the Pebble deposit." "It is intended to provide a baseline for understanding the impacts of mine development throughout the studied watersheds."

With this background, it appears that EPA's Bristol Bay Assessment is both more generic and more limited than an eventual EIS would need to be, although as to some resources, it is duplicative of what would be required in the EIS, if that study were being currently undertaken.

More limited than an EIS

EPA's Bristol Bay Assessment is intentionally more limited than an EIS would be. It is only intended to be – and therefore only is – a portion of the eventual analysis required under an EIS. As I described in discussing the Corps' EIS for mining in central Florida, there are approximately 20 resource areas analyzed in an EIS, from air, noise and endangered species resources, to economic, socioeconomic and environmental justice impacts. The Assessment is specifically limited to a microcosm of the factors that would be analyzed in an EIS.

General nature of the Assessment as compared to an EIS

The Assessment is also more generic than an EIS would be in that it is analyzing hypothetical scenarios. Its limitations here are less obvious than those related to not looking at certain impact areas. The scenarios EPA analyzes are by definition less specific than those that would be reviewed in an EIS that was analyzing the impacts of a specific project application and this difference can be significant. A wetland permit application is a good example. As described above, a wetland permit applicant must avoid, minimize and mitigate the impacts of its project on wetlands. It is often difficult to know in the abstract what those avoidance, minimization and mitigation measures are, for several reasons.

First, the project applicant can often move the footprint of the project in order to avoid certain quantities of impacts or certain high-quality wetlands. Avoiding certain quantities of wetlands is an obvious way to avoid impacts – instead of impacting ten acres, the project only impacts eight. Avoiding certain high-quality wetlands is less obvious and can't really be done until project-specific information is gathered. At the time of a project application, the project proponent will have completed an assessment of the functions and values of the wetlands in the project area and is often able to shift the project so that even though the same number of acres is impacted, those impacts are to lower-quality wetlands. These facts and the resultant possible modifications do not appear to be part of the Bristol Bay Assessment.

A second reason that abstract analysis of avoidance, minimization and mitigation is also not very fruitful is because it is difficult for an agency to know what the most current avoidance and minimization measures are that can be undertaken by a project developer. The dynamic nature of business means that new methods are always being developed that can avoid and minimize impacts. Not all the methods result in significant impact reductions, but some do, and it is difficult for a federal agency to stay current with an industry's current best practices. And this is just a wetland example – there are similar ways to avoid and minimize impacts to groundwater, surface water, wildlife, air and other resources. As a result, being able to rely on a specific project application significantly aids the federal agency in undertaking its analysis.

Duplicative

That is not to say that the Assessment is completely without value, it is just to say that that value is limited. To the extent that that the Assessment provides baseline information on certain resources, it provides some analysis which would need to be undertaken in the EIS. It is likely that a good bit of the baseline information may translate, but it is less clear exactly how much of the impact analysis would.

Information on the baseline – the current status of the resources in the area – will have to be prepared for an EIS. Thus, to the extent that EPA has already prepared it, it could be used for the EIS. It's possible, depending on the scope and timing of the application that even this information will need to be supplemented. That being said, much of the baseline information gathered for and presented in the Assessment would likely be of use for EIS baseline purposes.

It is less clear how much of the Assessment's impact analysis would be useful for purposes of an eventual EIS's impact analysis, even for the limited resources studied in the Assessment. That is largely the result of the avoidance, minimization and mitigation measures that will be incorporated into the project. If such measures are sufficiently different from the hypothetical scenarios described in the Assessment, some degree – perhaps even a large degree - of the impact information in the Assessment will likely not be useable in the EIS. The reason is that impact assessment varies widely with the extent of the impacts. Impacts are not always linear and relatively small changes can sometimes make significant differences. Similarly, EPA consistently allows projects to go forward after the project proponent makes relatively small, incremental reductions in impacts. This is because a large percentage of the avoidance and minimization EPA thought was necessary had already been accomplished – it just wanted to see an incremental additional effort.

As a result, it is not possible to understand the resource impacts and if they are acceptable - and if they are unacceptable how close they are to acceptable - until an actual project is analyzed. Thus, the resource impacts analyzed in EPA's Bristol Bay Assessment are of limited value to any eventual EIS. How limited will depend on the specifics of the permit application and how much the avoidance, minimization and mitigation measures it contains differ from EPA's hypothetical scenarios.

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EXPERIENCE

Lowell Rothschild advises clients on environmental compliance, enforcement, public policy and government relations issues. With a strong background in environmental review, natural resources and land development, he guides clients through the challenges of energy development, infrastructure projects and mining, including environmental review and other impact analyses, wetlands, mitigation and habitat conservation, as well as associated permitting, internal and external investigations, and litigation.

Prior to joining the firm, Mr. Rothschild was the primary environmental counsel for The Mosaic Company, the world's largest integrated phosphate and potash (fertilizer) supplier. His practice covers the range of federal, state and local environmental laws related to infrastructure development, natural resource extraction, complex governmental investigations and manufacturing. These include wetlands, environmental review, endangered species, water quality and quantity, hazardous and solid waste, legacy remediation, radiation, air, hazardous chemicals, mining, occupational safety and health, and wildlife control matters. He is extremely well versed in managing the challenges facing companies whose operations cause significant land impacts, particularly in connection with, National Environmental Policy Act, wetlands, Endangered Species Act and Clean Water Act matters.

Mr. Rothschild has handled NEPA and wetland compliance, permitting and enforcement matters for over 15 years for a variety of clients, including timber, mining, and development companies; state highway departments; airport authorities; and private contractors across the full range of actions, including permitting, internal and external investigations, litigation and settlement negotiations.

Chairman BROUN. Thank you, Mr. Rothschild.
Now, Dr. Kavanaugh, you are recognized for five minutes.

**TESTIMONY OF DR. MICHAEL KAVANAUGH,
SENIOR PRINCIPAL, GEOSYNTEC CONSULTANTS,
AND MEMBER, NATIONAL ACADEMY OF ENGINEERING**

Dr. KAVANAUGH. Mr. Chairman and Members of the Committee, thank you for the opportunity to speak at this hearing today. My name is Michael Kavanaugh. I am a Senior Principal with the firm of Geosyntec Consultants, an independent midsized U.S. consulting, engineering and geoscience firm.

Geosyntec was retained by Northern Dynasty to conduct an independent, impartial review of the scientific and engineering credibility of the 2012–2013 draft EPA Bristol Bay watershed assessment reports. I am a registered professional engineer in California and a board-certified environmental engineer with 40 years of consulting engineering practice in several technical areas relevant to an assessment of the potential environmental impacts of mining projects. I have a Ph.D. in civil environmental engineering from U.C. Berkeley, and in 1998 I was elected into the National Academy of Engineering. I have served on many independent peer-review panels and I currently serve on the Report Review Committee of the National Academies that oversees the peer-review process for all National Academy reports. I was the principal in charge of Geosyntec's technical reviews of the assessment reports. Selected Geosyntec experts under my direction focus primarily on an evaluation of the scientific and engineering credibility of the failure scenarios selected by EPA for tailing storage facilities, or TSFs, water collection and treatment systems, pipelines, roads and culverts and the appropriateness of environmental impact analyses conducted by EPA for their failure scenarios for a hypothetical mine.

Both assessment reports fail to meet widely accepted quality and peer-review standards that must be satisfied to produce a credible scientific and engineering assessment. The reports significantly exaggerate both the probability of failures of engineering mining components and the environmental consequences of the failure scenarios. In fact, the 2013 assessment essentially assumes that all engineering components of the hypothetical mine will ultimately fail and then proceeds to assess more or less qualitative the impacts of these failure scenarios. This risk analysis is flawed because it gives equal weight to all failure scenarios including worst-case scenarios. EPA has assumed failure scenarios for some of the engineered components that are of such low probability that to assess the consequences only provides an alarmist portrait of a hypothetical mining scenario that could never be permitted in Alaska. By failing to properly consider modern engineering and design mitigation methods that would be required for an acceptable permit application and that would both reduce the probability of system failures as well as mitigating the consequences of potential failures, the assessment lacks credibility as a useful risk analysis.

Several examples of our concerns include the following. The assessment estimates failure probabilities of TSFs based on case studies of 135 failed dams from around the world, many of which are older, poorly designed and unregulated. This database is irrele-

vant to a modern TSF. The assessment uses a TSF failure scenario based on overtopping, a failure mode that can be easily avoided by proper design of sufficient capacity and freeboard to manage a probable maximal precipitation event. The assessment assumes that easily repairable breakdowns in water and wastewater treatment processing equipment will result in long-term discharges of untreated wastewater, a situation that would violate permit requirements and would be easily addressed with standard mitigation measures.

The assessment contains inaccurate calculations that significantly overestimate consequences of hypothetical system failures such as a worst-case pipeline failure scenario that significantly overstates the potential volume of discharge released to a creek. Finally, the assessment reflects a general lack of consideration of engineering and design mitigation measures for a modern mine all systems would be designed with appropriate safety factors, meeting permit requirements and design to minimize the consequences of potential failure events.

EPA traditionally sets a high bar for the quality of scientific documents considered to be highly influential scientific assessments, quote, unquote, as outlined in their Peer Review Handbook. Unfortunately, they have only partially followed their own guidance on conducting the peer review process for the 2013 assessment, failing to provide the degree of transparency required for such an important document.

Having served myself on several EPA peer-review panels on EPA's Science Advisory Board for Water and the ORD's Board of Scientific Counselors, I am fully aware of the high caliber of scientific efforts that EPA scientists have achieved in the past. It is thus discouraging to see the many limitations on their reliability and credibility of the 2013 assessment, and as a consequence, it is our opinion that the 2013 assessment fails to meet scientific standards that would permit the assessment to be used to inform future decisions on mining projects in the Bristol Bay watershed.

Thank you for your attention, and I welcome any questions.

[The prepared statement of Dr. Kavanaugh follows:]



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29 July 2013

Rep. Paul Broun, M.D.
 Chairman, Subcommittee on Oversight
 Committee on Science, Space and Technology
 House of Representatives
 2321 Rayburn House Office Building
 Washington DC 20515-6301

**Subject: Written Statement of Dr. Michael Kavanaugh for August 1, 2013 Hearing on
 "EPA's Bristol Bay Watershed Assessment – A Factual Review of a
 Hypothetical Scenario"**

Dear Representative Broun:

In the summer of 2012, Geosyntec Consultants, Inc. (Geosyntec) was retained by Steptoe and Johnson (Steptoe) on behalf of Northern Dynasty Minerals, Inc (NDM), to provide an independent assessment of the quality of the scientific foundations used by Region 10 of the US Environmental Protection Agency (USEPA) in preparation of the draft report, "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" (USEPA, May, 2012)¹. At the time, that document, designated by the USEPA as a "watershed assessment" (referred to herein as the Bristol Bay Watershed Assessment (BBWA or "2012 Assessment")²) was available for public comment. Geosyntec submitted its independent technical review of the 2012 Assessment to Steptoe on 18 July 2012³ (referred to herein as the "2012 Review").

At approximately the same time, the USEPA had convened an Independent Peer Review Panel consisting of eleven scientists and one engineer to review the same document. The Peer Review

¹ USEPA. 2012. *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. External Review Draft. EPA 910-R-12-004a. Seattle, Washington. May 2012.

² For this report, the term "BBWA" will refer to the watershed assessment as a whole. "2012 Assessment" will refer to the first draft of the report. "2013 Assessment" will refer to the second draft of the report.

³ Geosyntec. 2012. *Technical Review of May 2012 Draft Report EPA 910-R-12-004a, An Assessment of Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. Prepared by Geosyntec Consultants, 18 July 2012.

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Panel's comments were compiled by Versar, a USEPA contractor, in a Final Peer Review Report dated 17 September 2012⁴. Following receipt of the Peer Review Panel Report, which included a summary of comments received during the public comment period, the USEPA revised the BBWA and on 26 April 2013 released the second external review draft ("2013 Assessment")⁵. Geosyntec was again retained by Steptoe on behalf of NDM to review the revised BBWA, and submitted its independent technical review of the 2013 Assessment to Steptoe on 22 May 2013⁶ (referred to herein as the "2013 Review"). Both of these reviews were subsequently submitted to USEPA by NDM.

To perform our reviews, Geosyntec established a team of internal experts with expertise on key technical issues raised in the BBWA, with a particular focus on the engineering components of water and residuals management as described in the document (see Attachment A for a brief overview of Geosyntec, website at www.Geosyntec.com). Each team member was asked to review the BBWA and supporting documents and to assess the scientific credibility and quality of the analysis prepared by USEPA regarding risks to the environment from possible failures of these engineering components. Geosyntec undertook this analysis as an independent entity. Please be advised that Geosyntec has no commercial contracts dependent on the outcome of our evaluation.

This written statement presents a summary of key elements of Geosyntec's independent technical reviews of the 2012 and 2013 Assessments. Note that while USEPA issued the 2013 Assessment as a second draft, it is for all practical purposes a new document compared to the 2012 Assessment. Volume 1 alone almost doubled in size from 339 pages in 2012 to 618 pages in 2013 and many additions have been made to the appendices. This expansion resulted from a complete reorganization of the report, removal of a limited amount of material, and addition of significant new technical content, including new and updated analyses. Even with all of this additional content, in our 2013 Review we found that a substantial majority of our 2012 comments were still valid and in general, had not been adequately addressed in the revised document.

⁴ Versar. 2012. Final Peer Review Report, External Peer Review of EPA's Draft Document, An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska. Prepared by Versar, Inc., 17 September 2012.

⁵ USEPA. 2013. *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. Second External Review Draft. EPA 910-R-12-004Ba. Seattle, Washington. April 2013.

⁶ Geosyntec. 2013. *Assessment of USEPA Response to Geosyntec's Comments on the Bristol Bay Watershed Assessment*. Letter to Mr. Thomas C. Collier, Steptoe & Johnson, 22 May 2013.

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The BBWA document essentially describes the potential consequences of a project where major “failure” of one or more of the engineered systems is considered by USEPA to be inevitable over the lifetime of the project. By failing to adequately consider that such a mining project could be engineered using best modern practices to reduce any major failure scenario to a very low probability event, with controllable and repairable consequences, and by often relying upon historical data on failures of engineered systems not applicable to a modern mine, the BBWA does not meet the standards of a credible and independent scientific analysis. Failure to meet established criteria for a credible assessment or risk analysis, even of hypothetical mining scenarios, reduces the utility of the BBWA to a catalogue of issues that will be addressed during the rigorous engineering design and mine permit review process.

The sections that follow present a commentary on the Peer Review process and the risk assessment approach applied to the BBWA, followed by general themes and specific examples identified by Geosyntec during both reviews that raise significant concerns on the scientific credibility of the BBWA and the appropriateness of using this document to inform stakeholders on the future of mining in the Bristol Bay watershed.

1. USEPA’S LATEST PEER REVIEW FAILS TO MEET FEDERAL CRITERIA FOR A CREDIBLE PROCESS

The reported objective of the BBWA is to inform decision making on the future of large scale mining in the Bristol Bay watershed. The 2013 Assessment represents USEPA’s assessment of the potential impacts of hypothetical mining scenarios in the Bristol Bay watershed. Both the 2012 and 2013 Assessments have been subjected to external peer review as described on the EPA website⁷. While the peer review process conducted during the review of the 2012 Assessment met most of the criteria established by USEPA and other federal agencies required for a credible peer review process, the peer review process currently in progress for review of the 2013 Assessment fails to meet those criteria on several accounts.

USEPA first published a formal policy on peer review of major EPA scientific assessments in 1993. The details of conducting formal peer reviews were documented in the *Peer Review*

⁷ <http://www2.epa.gov/bristolbay>

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Handbook (3rd Edition, USEPA, 2006)⁸. The handbook provides explicit directions for external peer reviews when the work product is considered “influential scientific information” (ISI), or “highly influential scientific assessments”. The BBWA clearly falls in the latter category. The preamble in USEPA’s Peer Review Handbook establishes the key criterion for publication of a credible scientific document:

“Science is the foundation that supports all of our work here at EPA. Strong, independent science is of paramount importance to our environmental policies. The quality of science that underlies our regulations is vital to the credibility of EPA’s decisions and ultimately the Agency’s effectiveness in protecting human health and the environment. One important way to ensure decisions are based on defensible science is to have an open and transparent peer review process.”

Both USEPA and the Office of Management and Budget (OMB) provide clear definitions of what constitutes “open and transparent peer review process”. For example, OMB states (OMB, 2004)⁹, that for peer review of “highly influential scientific assessments”, transparency requires that the “agency shall prepare a written response to the peer review report explaining (a) the agency’s agreement or disagreement with the views expressed in the report, (b) the actions the agency has undertaken or will undertake in response to the report, and (c) the reasons the agency believes those actions satisfy the key concerns stated in the report (if applicable). The agency shall disseminate its response to the peer review report on the agency’s website.”

This criterion was only partially met during the review of the 2012 Assessment, with only limited responses to peer committee or public comments, and only limited information available on the website. Furthermore, USEPA’s peer review process for the 2013 Assessment does not meet the criterion for an “open” process. Even though the 2013 Assessment nearly doubled in size, with major organizational changes and substantial amounts of new information, no opportunities have been provided to allow for public interaction with the external peer review panel. Neither the charge to the external peer committee in this latest round, nor procedures to respond to committee questions have been made available on USEPA’s website. As OMB (OMB, 2004) points out: “Without access to the comments of reviewers, the public is incapable

⁸ USEPA. 2006. Peer Review Handbook, 3rd Edition. Prepared for the U.S. Environmental Protection Agency by Members of the Peer Review Advisory Group, for EPA’s Science Policy Council. EPA/100/B-06/002.

⁹ Office of Management and Budget (OMB), 2004. Final Information Quality Bulletin for Peer Review. December 2004.

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of determining whether the government has seriously considered the comments of reviewers and made appropriate revisions.”

In addition, following peer review of the 2012 BBWA, USEPA undertook additional external peer review of seven documents selected by the agency as relevant to mining activities in Alaska. This component of the peer review process was not done in a transparent manner, with little information provided on how or why these seven documents were chosen, how the peer reviewers were selected, and how the USEPA responded to the comments prepared by the reviewers of these seven reports. The lack of transparency on this aspect of the peer review process is disturbing since the documents were widely quoted in the 2013 BBWA. Such lack of transparency on these highly relevant documents undermines the credibility of the final document.

The lack of an open and transparent external peer review process for review of the 2013 Assessment and other documents relied upon by USEPA seriously erodes the credibility of the Assessment and the validity of basing any future management decisions on mining in the Bristol Bay watershed on the findings of the BBWA.

2. COMMENTARY ON RISK ASSESSMENT APPROACH APPLIED TO A HYPOTHETICAL MINING SCENARIO

USEPA undertook the BBWA in response to concerns raised by numerous stakeholders on the potential impacts of future mining operations in the watershed. The fundamental flaw in the BBWA is the use of a “hypothetical” series of mining scenarios to establish the baseline conditions in attempting to assess the impacts of potential failure scenarios for selected components of a “hypothetical” mine. Such an approach is inherently speculative because the technical details of the mine have not yet been proposed. Both the footprint impacts as well as potential impacts from mine operation are unknown until an actual project is proposed. An actual mine proposal would contain extensive detail on all aspects of a large mining project, including assessment of the reliability of all engineered systems, and extensive presentations on mitigation measures designed to ensure that all systems would likely meet regulatory requirements and standards of safety for a mine in Alaska. Thus, the reliance on these hypothetical scenarios is technically invalid and contradicts requirements normally associated with assessments such as an ecological risk assessment or an environmental impact analysis. Both of these processes can only be applied to known or proposed conditions related to an actual

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project. There is thus no precedence or guidance followed by USEPA in conducting the BBWA, and the assessment relies on assumptions of the authors, which raises serious issues on the scientific validity of the methodology applied. The reliance on hypothetical mining scenarios was criticized by many of the peer reviewers of the 2012 BBWA; however the 2013 BBWA continues to rely on these scenarios.

The methodology for conducting the BBWA is purportedly based on USEPA guidelines for ecological risk assessments (ERAs) published in 1998 (USEPA, 1998)¹⁰. USEPA guidance documents for ERAs are primarily focused on Superfund sites where releases of hazardous substances have occurred and not on “hypothetical” hazardous waste sites. The outcome of such an ERA is used to inform decisions on the extent to which remedial measures need to be implemented to reduce the ecological risks associated with past and any future potential releases from the contaminated site. The use of this methodology to assess the “potential impacts” of a hypothetical project is inconsistent with the intent of the CERCLA process at Superfund sites since no releases have yet occurred.

The BBWA developed a set of conceptual models of sources, stressors and end points or receptors to conduct an ERA of two primary hypothetical mining scenarios: (i) mine operations without system failures; and (ii) mine operations with various major failures of the engineered systems required for normal mining operations. The stated purpose of the assessment is to inform USEPA on whether any mining proponents should be allowed to submit an application for a permit to construct and operate a mine in the Bristol Bay watershed at some time in the future.

The conclusions of such an assessment are only valid for decision making, however, if the assumptions and analyses used in the development of the conceptual models can meet criteria that represent an unbiased evaluation of the hypothetical mining scenario. Such criteria should include:

- Site data and case studies of other mining operations that are applicable to the likely conditions at the hypothetical mining scenario;
- Appropriate characterization of the probabilities of failure of any given component of mine operations;

¹⁰ U.S. Environmental Protection Agency (USEPA). 1998. *Guidelines for Ecological Risk Assessment*. EPA Document No. 630-R-95-002F. April 1998.

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- Appropriate use of available data to assess the magnitude and consequences of system failures; and
- Full consideration of appropriate application of modern mining design, construction, operations and maintenance strategies to prevent potential system failures and control or mitigate adverse consequences of such failures.

Geosyntec undertook the review of the BBWA to evaluate whether the assessment met these criteria as applied to the engineering components of the hypothetical mining scenario. Our primary focus was on the scientific and engineering credibility of USEPA's assessments of failures for the mine tailings storage facilities (TSFs), water collection and treatment systems, pipelines, roads and culverts. Our focus was also on the appropriateness of USEPA's analyses related to the potential impacts of these failure scenarios. The examples that follow will show how in each of these areas, the BBWA fails to satisfy these criteria. In particular, the Assessment is fundamentally flawed because the hypothetical mine scenarios would not satisfy known permitting requirements in Alaska for a large scale mining operation. The limitations in attempting a risk analysis based on a binary ("no failure" vs. "major failure") hypothetical mining scenario are readily apparent. The BBWA exaggerates the probability of failures, relies on worst case scenarios to support a qualitative judgment on the potential impacts of these failures, and thus provides an unscientific assessment of the potential impacts of the hypothetical mining project.

3. THEMES OF GEOSYNTEC 2012 AND 2013 REVIEWS

3.1 Failure to Consider Modern Mining Practices

The BBWA focuses on "potential impacts" of the Pebble Project on the ecological resources of the Bristol Bay watershed. These "potential impacts" include impacts that may occur during normal development and operation of the mining project, as well as those that may occur should any specific engineering system (e.g. TSF or pipelines) incur partial or total failure. Considerable effort was expended in the BBWA to predict the effects of these potential failures on the ecological resources in the watershed, with particular attention given to the salmonid fish populations. In both the 2012 and 2013 Assessments, the authors failed to consider that modern mining practices are designed to reduce the probabilities of failure of these engineered systems to some established standard of safety, and to minimize the consequences of any failure scenario through the use of modern monitoring systems, contingency planning as part of a mining

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operations plan, and the establishment of response systems and strategies to control quickly any releases of potentially harmful materials at the mine site. By failing to consider the implications of applying modern mine operating best practices that are (i) designed to reduce the probability of failures and (ii) mitigate quickly the consequences of any such failures, the BBWA unfairly and negatively biases the project by implicitly assuming that “worst case” outcomes for operation of most of the engineered systems at the future mine site are inevitable.

3.2 Zero-Risk Framework – A Misapplication of Engineering Design Principles

The BBWA is misleading in addressing the likelihood of system failures through the use of data on past mining operations that are not applicable to a modern, engineered mining project. USEPA has applied this approach for all system elements evaluated in the BBWA, including TSFs, pipelines, culverts, water collection and waste water treatment systems and post closure residuals management systems. The assessment fails to consider modern engineering design principles that would be applied under stringent regulatory oversight, particularly when such a significant project is implemented in a sensitive ecosystem. The BBWA consistently postulates scenarios for each of the main engineered systems that would not be allowed under existing threshold requirements for a modern mine in Alaska. In other words, the hypothetical mining scenario evaluated by the USEPA would not be permitted.

Today, properly engineered systems are designed to meet appropriate safety standards commensurate with the nature and consequences of failure and these systems include appropriate mitigation strategies should such events occur. Systems are designed to reduce the probability of failures to as low a level as is technically achievable in the context of potential consequences of credible scenarios. However, in no circumstances are engineered systems designed or constructed to eliminate the complete possibility of failure. The “zero-risk” framework in the BBWA is apparent in the use of historical data to suggest that failure of all engineering systems at the hypothetical mine are inevitable. The BBWA implies that because failures of TSFs and other engineered systems have occurred elsewhere in the past, such failures are an inevitable outcome of any future mining operation. Use of case studies of past failures of engineered systems to predict the probabilities of future failures is inherently flawed, however, because of different project histories, variability in site characteristics, and the evolution and application of improved engineering design, construction monitoring, contingency, and mitigation practices based on improving engineering technology, more stringent regulations, and “lessons learned” from previous projects.

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4. EXAMPLES OF INADEQUACY OF 2012 AND 2013 ASSESSMENTS

4.1 Improper Use of Case Histories of Tailings Dam Failures

The BBWA references case histories of tailings dam failures, illustrating that tailings dams can fail and thus raising fears that such failures are inevitable during the life cycle of any mine. The most widely quoted reference in relation to the historical record of tailings dam failures is the 2001 ICOLD¹¹ report which documents accidents and failures at 220 tailings dams from around the world reported between 1917 and 2000. The tailings dams in these case histories failed from various causes, including overtopping, poor embankment materials, or inadequacies in foundation preparation, seepage control, freeboard, or earthquake resistance. A close examination of the ICOLD report reveals that each of the tailings dam failures could have been avoided by proper design and construction. The rigorous mine permitting process in the state of Alaska requires hydrologic and geologic investigations, tailings dam design with a high factor of safety against all modes of failure, and oversight during construction, operations, and maintenance. By comparison, the mine tailings failures referenced in the ICOLD report are from a global database and typically represent older dams, some unregulated and many designed using outdated dam engineering and construction techniques. Such a dam would not be permitted in the current regulatory environment in Alaska or any other state in the U.S.

The ICOLD report, while instructive, is not appropriate for estimating the probability of a tailings dam designed, constructed, operated, and maintained using modern practices. Regulators, engineers, scientists, and owners learn from the mistakes of others in the past. We have shown in our analysis (Geosyntec, 2012) that none of the 135 case histories of TSFs included in the BBWA are applicable to the design of a TSF at a modern mine. All of the failure mechanisms described in case histories can be mitigated with proper investigation, design, construction, operations, maintenance, and oversight. Consistent with the intent of the ICOLD (2001) report, we consider that it is more appropriate to use these case histories of failures *“to learn from them, not to condemn.”*

¹¹ ICOLD (International Commission on Large Dams). 2001. *Tailings Dams, Risk of Dangerous Occurrences, Lessons Learned from Practical Experiences*. United Nations Environmental Programme, Bulletin 121.

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4.2 Unreliable Dam Breach Analysis

4.2.1 Overtopping as Cause of Failure

As the BBWA correctly points out, one potential mode of failure for mine tailings dams is overtopping, leading to erosion of the dam embankment material and dam breach. The overtopping mode of failure is considered in detail during the design and permitting of modern tailings dams. However, this mode of failure is readily mitigated by providing sufficient freeboard distance between the maximum water level in the dam and the dam crest consistent with regulatory requirements.

According to the BBWA, runoff from a probable maximum precipitation (PMP) storm event may be the catalyst for a dam breach from overtopping. The PMP is defined as “the theoretically greatest depth of precipitation for a given duration that is physically possible over a particular drainage area at a certain time of year,” (American Meteorological Society, 1959)¹². With the Pebble 2.0 TSF scenario in the 2013 Assessment, the PMP, which is clearly an extreme precipitation event, would increase the water surface elevation behind the TSF by 0.36 m (0.2% of the TSF dam height of 209 m). This freeboard requirement to manage the runoff generated from the PMP will be far exceeded in design and operation of the TSF dam, where freeboard will likely be maintained at a magnitude of several meters. The probability of overtopping would be extremely small for a modern TSF of this size and importance. Such an extremely small probability does not warrant the alarmist dam breach analysis included in the 2013 Assessment.

4.2.2 Dam Breach Analysis

Geosyntec’s 2012 Review pointed out that the model used for the dam breach analysis in the 2012 Assessment was likely flawed, resulting in an over prediction of flow depth and velocities following the overtopping of the hypothetical TSF. A table with questionable data from the 2012 Assessment that was referenced in the Geosyntec comment was removed from the 2013 Assessment, but that was the limit of the changes made in response to our 2012 Review on this issue.

In fact, the maximum flow depths in the overtopping failure scenario increased dramatically between 2012 and 2013. One set of assumptions was made in 2012. A very different set of assumptions was made in 2013, with very different results. For example, in the 2013

¹² American Meteorological Society. 1959. *Glossary of Meteorology*, Boston, MA.

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Assessment, the maximum discharge rate from the dam breach for the Pebble 2.0 scenario increased over twelve-fold, from 11,915 cubic meters per second (m^3/s) in 2012 to 149,300 m^3/s for what is presumably the same failure scenario. Given the limitations of the model, the coarse nature of the inputs to the model, and the sensitivity of the model to changes in parameters, it is clear that neither result is a reasonable representation of what would actually happen in the very unlikely event of a dam breach due to overtopping. Either full details of the model should have been provided in an appendix to the report for proper peer review, or the model results should not have been included in the report.

4.3 Seismic Considerations

4.3.1 Overstated Uncertainty of Seismic Environment

The BBWA gives significant attention to the seismic environment within the project vicinity. Seismic criteria are a critical component of design of major infrastructure projects within seismically active areas such as the Bristol Bay region of Alaska. However, many of the concerns raised in the BBWA are overstated and inconsistent with a modern understanding of seismic risks to engineered structures such as the TSF. The most significant seismic hazard in the project vicinity is likely from the potentially active Lake Clark Fault. As stated in the 2013 Assessment:

“The USGS has concluded that there is no evidence for fault activity or seismic hazard associated with the Lake Clark Fault in the past 1.8 million years, and no evidence of movement along the fault northeast of the Pebble deposit since the last glaciations 11,000 to 12,000 years ago (Haeussler and Waythomas, 2011).” (Pg. 3-33)

Following these statements of findings from the literature on the Lake Clark Fault which present a case of relatively low seismic risk, the 2013 Assessment overstates the uncertainty of the seismic environment:

“Although there is no evidence that the Lake Clark Fault extends closer than 16 km to the Pebble deposit, and there is no evidence of a continuous link between the Lake Clark Fault and the northeast-trending faults at the mine site, mapping the extent of subsurface faults over long, remote distances is difficult and has a high level of uncertainty.” (Pg. 3-35)

“Not all earthquakes occur along the mapped sections of faults. In some instances, stresses build up and cause earthquakes in rock outside of known pre-existing faults. Earthquakes

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can occur on previously unidentified, minor, or otherwise inactive faults, or along deeper faults that are not exposed at the surface.” (Pg. 3-35)

“Large earthquakes have return periods of hundreds to thousands of years, so there may be no recorded or anecdotal evidence of the largest earthquakes on which to base future predictions.” (Pg. 3-35)

As required in the design of a project of this magnitude, the extent of the Lake Clark Fault and its potential seismic risk to the project is being considered in detail. The Wardrop (2011)¹³ report indicates that the TSF design will be conservatively based on the Maximum Credible Earthquake (MCE). The MCE, as defined by the Alaska Department of Natural Resources (ADNR, 2005)¹⁴ is “the greatest earthquake that reasonably could be generated by a specific seismic source, based on seismological and geologic evidence and interpretations.” As such, every potential fault that could impact a project has its own MCE, and the design must consider the most critical fault(s) for the project. Once the MCE for a site is identified, the engineered structures are designed to withstand the anticipated level of seismic shaking with an acceptable degree of certainty.

None of this is meant to downplay the hazards associated with earthquakes in Southwestern Alaska and at the Pebble Project. Seismic shaking, deformation, liquefaction, landslides, seiche and other seismic hazards are real and must be accounted for during design. However, based on our review of the Wardrop (2011) report and the Environmental Baseline Document (PLP, 2011)¹⁵, indications are that the project engineers are aware of those hazards, and current design standards provide means to mitigate the impact of seismic events. The formal permit review process should be sufficient to ensure that seismic hazards are being considered sufficiently and designed for accordingly.

4.3.2 Recent Record of Successful Tailings Dam Performance

Performing a review of tailings dams that are successful is challenging, as the literature focuses more on problems than success stories. However, the literature does provide documentation related to several recent earthquakes that have subjected modern tailings dams to significant

¹³ Wardrop. 2011. Preliminary Assessment of the Pebble Project, Southwest Alaska. Prepared for Northern Dynasty Minerals Ltd., February 15, Prepared by Wardrop (A Tetra Tech Company), Vancouver, BC.

¹⁴ ADNR (Alaska Department of Natural Resources). 2005. *Guidelines for Cooperation with the Alaska Dam Safety Program*. Dam Safety and Construction Unit, Water Resources Section, Division of Mining, Land, and Waters. 230 pp.

¹⁵ PLP (Pebble Limited Partnership). 2011. Environmental Baseline Document 2004 through 2008. Anchorage, AK.

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stresses. The following four case histories of large active tailings dams, while certainly not an exhaustive review, do indicate that analogies to seismic risks at the Pebble site exist showing that applying modern design, construction, and operations and management practices can result in successful performance under significant stress with no, or minimal, damage reported.

- **Tranque Ovejeria and Tortolas, Chile:** These dams are located approximately 230 miles north of the epicenter of the February 2010 Magnitude 8.8 Chilean earthquake. No damage was observed at the dams (GEER, 2010)¹⁶.
- **Tranque Caren, Chile:** This tailings dam is located 150 miles north of the epicenter of the February 2010 Magnitude 8.8 Chilean earthquake. Dam raising was in progress at the time of the February earthquake. After the earthquake, some minor (e.g. millimeter wide) transverse cracking was visible near each abutment (GEER, 2010). Such minor cracking can be readily repaired.
- **Antamina Copper-Zinc Mine Tailings Dam, Peru:** Construction of this TSF began in 2001 and the structure has undergone several dam raisings to approximately 705 ft tall. It is located 275 miles from the epicenter of the August 2007 Magnitude 8.0 Peru earthquake. No damage was observed at the dam (Chanjaroen, 2007)¹⁷.
- **Fort Knox Gold Mine Tailings Dam, Alaska:** Construction began in 1995 and is planned to reach ultimate height of approximately 360 ft in 2013. It is located 100 miles from the epicenter of the November 2002 Magnitude 7.9 Denali earthquake. No damage was observed at the dam (ADNR, 2007)¹⁸.

4.4 Unreasonable Pipeline Release Scenario

The BBWA considers the potential impact of a concentrate pipeline failure along the proposed road alignment, which includes several creek crossings. Statistical methods used in the assessment of piping failure rates are of questionable validity. Failure statistics are taken primarily from oil and gas industry literature, which are not likely to be consistent with pipeline failures in the mining industry. The statistics are then developed inappropriately, using an

¹⁶ GEER. 2010. *Geo-Engineering Reconnaissance of the February 27, 2010 Maule, Chile Earthquake*. Version 2: May 25, 2010. By Geo-Engineering Extreme Events Reconnaissance (GEER) team.

¹⁷ Chanjaroen. C. 2007. "BHP Says No Impact on Antamina Copper Mine from Peru Earthquake." August 16, 2007. <http://www.bloomberg.com/>

¹⁸ ADNR (Alaska Department of Natural Resources). 2007. State Agency Response to Public Comments on Draft Authorizations for the Fort Knox Mine Heap Leach Project. July 3, 2007.

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exponential distribution to model pipeline failures, and assumptions of constant failure rate along the length of a pipe. The failure rates thus derived (98% chance of line failure over 25 years) are misleading at best.

Armed with these misleading statistics, the BBWA then develops a failure scenario resulting in significant release of concentrate to a creek. Geosyntec's 2012 Review pointed out that the pipeline release scenario, which incorporated an assumption of 14 km separation between pipeline isolation valves, resulted in unrealistically high release volumes as 14 km worth of concentrate was considered to drain by gravity into the creek. Proper design would include more frequent and strategically placed isolation valves, which would work in concert with automatic leak detection and shutdown capability to minimize potential leakage along critical stretches of the pipeline. The 2013 Assessment removes this 14 km scenario. In its place, they include the following scenario:

"In the concentrate pipeline failure scenarios, a single complete break of the pipeline would occur at the edge of the stream, just upstream of an isolation valve. These valves would be placed on either side of major crossings (Ghaffari et al. 2011) and could be remotely activated. Pumping would continue for 5 minutes until the alarm condition was assessed and an operator shut down the pumps. The estimated total slurry volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and local high point in the pipeline (i.e., the nearest watershed boundary) (Table 11-2). During the entire spill, gravity drainage governs the flow rate based on calculations for free-flowing pipes." (Pg. 11-8)

The 2013 Assessment replaces one unjustified scenario with another. The assumption that the "volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and the local high point in the pipeline (i.e. the nearest watershed boundary)" disregards proper planning and design for the stream crossings. By forcing the failure upstream of the isolation valve and still allowing all of the spilled material to enter the creek, the existence of the isolation valves and any other features that might be designed to protect the streams from failures on land are made obsolete. If the topography and alignment are such that this extreme scenario could exist, unlikely as it may be that a failure would occur in exactly the worst place for the creek, other engineering and/or operational controls would logically be established as part of the design to mitigate the consequences of the potentially harmful release scenario.

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4.5 Improper Use of Case Histories of Culvert Failures

The 2013 Assessment identifies as many as 35 stream crossings along the proposed road alignment, an increase from 14 stream crossings in the 2012 Assessment. Road culverts would be used to cross these streams, where properly designed and maintained culverts would allow for the unimpeded passage of salmonid fish under the roadway, while improperly designed and maintained road culverts would obstruct the passage of fish.

The BBWA cites literature supporting culvert failure rates of 30-58%, using these values to indicate the near certainty of fish passage obstruction. One study showing the 58% failure rate (Langill and Zamora, 2002)¹⁹, focused on 50 small culverts in Nova Scotia that only needed a notification prior to construction and not a permit, and hence were never inspected prior to the study. In each of the referenced studies the authors note that the issues observed could have been prevented with proper design, construction and/or maintenance. Therefore a project being designed and constructed under current regulations in Alaska with stringent environmental standards and regulatory oversight should be expected to be executed with much greater care such that fish passage standards would be met at each crossing.

4.6 Overstated Water Treatment System Failures

According to permit requirements for modern mines, all runoff and water used in mine operations must be treated before being released to the environment. The BBWA presents failure of the water management systems as a certainty. For example, the 2013 Assessment states the following:

“There are innumerable ways in which wastewater treatment could fail under the mine scenarios in terms of failure type (e.g., breakdown of treatment equipment, ineffective leachate collection, wastewater pipeline failure), location, duration, and magnitude (e.g., partial vs. no treatment). Box 8-1 presents an example wastewater collection failure, and mechanisms of treatment failure are discussed in Box 8-2. To bound the range of reasonable possibilities, we assess a serious failure in which the WWTP allows untreated water to discharge directly to streams. This type of failure could result from a lack of storage or treatment capacity or treatment efficacy problems. Chronic releases would

¹⁹ Langill, D. A. and P. J. Zamora. 2002. *An Audit of Small Culvert Installations in Nova Scotia: Habitat Loss and Habitat Fragmentation*. 2422, Canadian Department of Fisheries and Oceans, Habitat Management Division, Dartmouth, Nova Scotia.

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occur during operation if a lengthy process were required to repair a failure. We evaluate potential effects of this type of failure using the following assumptions...Duration of a release could range from a few days to several months, depending on the nature of the failure and difficulty of repair and replacement.” (Pg. 8-19)

Although a range of outcomes is presented, the relative likelihood of each is not given weight in the Assessment. Based on our experience with industrial facilities, most equipment breakdowns would be resolved within hours, while some might require a few days for replacement parts to arrive at the site. The only malfunctions that take months to remedy are those that depend on suitable weather to facilitate the repair; these are quite rare and usually temporary measures are constructed to manage the situation during the interim period.

The scenario described in the 2013 Assessment is considered extremely unlikely given the multiple redundancies that will be incorporated within the treatment plant system design, and the proposed operational approach where untreated water will be stored in the TSF such that if the treatment plant were to go offline, water would be stored either at the TSF or in storage at the plant until the plant was brought back into service.

The 2013 Assessment goes on to state the following:

“The USEPA has observed that some operators continue to operate when they know that treatment is ineffective and not meeting standards. Hence, the record of analogous mines indicates that releases of water contaminated beyond permit limits would be likely over the life of any mine at the Pebble deposit.” (Pg. 8-22)

Such an event is of low probability for the redundant treatment systems and practices anticipated for the Pebble Project. Additionally, this latter scenario based on analogy to other mines and without any documentation beyond anecdotal evidence, would constitute direct violation of wastewater discharge regulations with severe penalties imposed. To call this “likely over the life of any mine at the Pebble deposit” is a mischaracterization of wastewater treatment practices at modern mines. The Assessment is misleading because it leaves the reader with the impression that the long-term release of untreated waters and leachates is a certainty, even during routine operations.

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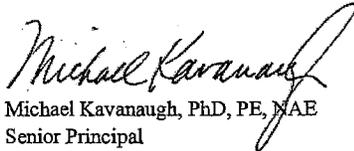
5. CONCLUSIONS

Geosyntec's primary focus in reviewing the 2012 and 2013 Assessments was the scientific and engineering credibility of assessments of failures for the TSFs, water collection and treatment systems, pipelines, road, and culverts, and the accuracy of analyses related to potential impacts of the potential failure scenarios considered by USEPA for the hypothetical mining scenarios considered. Our findings were that the BBWA exaggerates the probability of failures, relies on worst case scenarios to support a qualitative judgment on the potential impacts of these failures, does not adequately consider modern engineering, construction, operations, and maintenance practices, and thus provides an unrealistic and unscientific assessment of the potential impacts of the hypothetical mining project.

Although the BBWA conceptualizes the important engineered components of a large mining project, it fails to consider design and operational mitigation measures essential for permitting of a modern large scale mine in Alaska. The risk analysis presented for the hypothetical mine scenarios by the USEPA is fundamentally flawed because: a) it is not based on data applicable to a mining scenario that would be permitted, b) it does not incorporate appropriate estimates of the low probabilities of failure for selected mine components, and c) it does not account for modern mining design and permitted operations strategies that would reduce both the probability and consequences of the low probability failure events hypothesized.

Geosyntec considers that these limitations raise significant concerns on the scientific credibility of the 2013 BBWA and the appropriateness of using this document to inform stakeholders on the future of mining in the Bristol Bay watershed.

Sincerely,



Michael Kavanaugh, PhD, PE, NAE
Senior Principal

Attachment: Geosyntec's Review Team

Attachment – Geosyntec’s Review Team

Geosyntec (www.Geosyntec.com) is a 1000 person independent consulting engineering and science company, owned by the employees, with core competencies in geoenvironmental sciences and engineering disciplines, with particular expertise in geotechnical engineering and water resources management. Founded in 1983, Geosyntec, based on 2012 data, is ranked as number 62 in the Engineering News Record (ENR) listing of the top 500 engineering design firms in the US (ENR, April 24, 2013).

To perform the reviews of the 2012 and 2013 Assessments, Geosyntec established a team of internal experts on key technical issues raised in the BBWA, with a particular focus on the engineering components of water and residuals management as described in the document. Each team member was asked to carefully review the BBWA and supporting documents and to assess the scientific credibility and quality of the analysis regarding risks to the environment from possible failures of these engineering components.

The list of primary contributors to Geosyntec’s reviews include:

| <u>Name</u> | <u>Primary Review Responsibilities</u> |
|------------------------------------|--|
| Dr. Michael Kavanaugh, P.E., BCEE. | Principal-in-Charge Environmental Engineering |
| Dr. Christopher Hunt, P.E., G.E. | Project Manager Geotechnical & Earthquake Engineering |
| Dr. Patrick Lucia, P.E., G.E. | Geotechnical Engineering |
| Dr. Jennifer Donahue, P.E. | Geotechnical Earthquake Engineering |
| Dr. Robert Annear, P.E. | Hydrology & Hydraulics |
| Mr. Eric Strecker, P.E. | Water Quality & Hydraulics |
| Mr. Michael Harding, CPESC | Sediment & Erosion Control |
| Mr. Len deVlaming, P.E. | Pipelines |
| Mr. David Ellis, P.E. | Water Collection and Treatment |

Michael C. Kavanaugh

Dr. Kavanaugh is a Senior Principal with Geosyntec Consultants, Inc., a 1000 person professional services firm specializing in environmental sciences, and environmental and geotechnical engineering. He is a chemical and environmental engineer with over 40 years of consulting experience, providing a broad range of consulting services to private and public sector clients worldwide. His areas of expertise include hazardous waste management, site remediation with particular focus on groundwater remediation, industrial waste treatment systems, risk and decision analysis, fate and transport of contaminants in the environment, water quality management, water and wastewater treatment, potable and non-potable water reuse, and strategic environmental management.

Dr. Kavanaugh has been project engineer, project manager, principal-in-charge, technical director or technical reviewer on over 200 projects conducted in the U.S. and internationally covering a broad range of environmental problems. He has authored or co-authored more than 40 peer reviewed technical papers, edited and contributed to five books on water quality, water treatment, groundwater remediation, and aquifer restoration. He has also made over 170 presentations to technical audiences as well as public groups including testimony before congressional and state legislative committees. Dr. Kavanaugh also has extensive litigation experience, both as a testifying expert (six trial testimonies, 30 deposition testimonies) and as a consulting expert on engineering and hydrogeologic issues related to hazardous waste site remediation as well as on other issues related to his areas of expertise. He also has participated on more than ten mediation and arbitration panels as a neutral technical expert as well as being a sole facilitator/mediator/arbitrator and a court appointed neutral expert. He has served on more than 25 peer review panels throughout his career.

In addition to his consulting practice, Dr. Kavanaugh has completed several invited assignments with the USEPA and the National Research Council (NRC), the operating arm of the National Academies. In 2003, Dr. Kavanaugh co-chaired an EPA sponsored committee addressing the issue of groundwater restoration in the presence of organic liquid contaminants. Between 1988 and 1991, Dr. Kavanaugh chaired the Water Science and Technology Board of the NRC. From 1996 to 2000, he chaired the Board on Radioactive Waste Management. Between 1992 and 1994, he was chair of the NRC committee on alternatives for ground water cleanup. He also serves on the National Academies Report Review Committee, which oversees the quality program for all NRC reports. For his contributions to water quality and hazardous waste management, Dr. Kavanaugh was elected into the National Academy of Engineering (NAE) in 1998. Dr. Kavanaugh currently (2009 – 2014) serves on the Board of Directors of the Environmental Law Institute (ELI), providing a science and engineering perspective to this non-profit organization which promotes the role of legal strategies to achieve balance between economic growth and environmental stewardship.

Dr. Kavanaugh is a registered chemical engineer in California, and a Board Certified Environmental Engineer (BCEE) by the American Academy of Environmental Engineers. He is certified in three specialty areas, hazardous waste management, water and wastewater treatment and sustainability. He is also a consulting professor of Environmental Engineering in the Department of Civil and Environmental Engineering at Stanford University. He has a Ph.D. in civil/environmental engineering from the University of California at Berkeley, and B.S. and M.S. degrees in chemical engineering from Stanford and UC Berkeley, respectively.

Chairman BROUN. Thank you, Dr. Kavanaugh.
And now, Mr. Nastri, you are recognized for five minutes.

TESTIMONY OF MR. WAYNE NASTRI, CO-PRESIDENT, E4 STRATEGIC SOLUTIONS; FORMER REGIONAL ADMINISTRATOR, USEPA

Mr. NASTRI. Thank you, Mr. Chairman, and thank you, Ranking Member Maffei, for inviting me here to testify before you.

My name is Wayne Nastri, and I am the President of E4 Strategic Solutions, and previously I served as Regional Administrator for U.S. EPA Region 9 during the entire George W. Bush Administration.

I am testifying on my own behalf today, but I wish to note that I currently consult with the Bristol Bay Native Corporation and formerly consulted with Trout Unlimited on Clean Water Act issues.

In my written testimony, I reviewed EPA's Bristol Bay watershed assessment, and I found its conclusions are sound, and if anything, conservative, and that is further supported by an independent letter signed by 300 scientists that were supportive of EPA's process.

I would like to focus on just a few main points this afternoon. First, it is important to note that EPA was requested to take action in Bristol Bay by Alaskans who sought assistance on an issue that threatens their sustainable economy, their jobs, their culture and their ability to live in the areas they have for thousands of years, and we are very fortunate today to have two village elders, Tommy Tilton and Bobby Andrew, in the audience. All of this is based on the incredible wild salmon resource of Bristol Bay. Nine federally recognized tribes, the Bristol Bay Native Corporation, the commercial and sport fishing industries and others petitioned EPA to initiate a 404(c) action. These groups, based on information derived from PLP filings that describe the location, the quantity and the type of ore, understood quickly the threat that large-scale hardrock mining poses to Bristol Bay.

Instead of initiating 404(c) action, EPA sought to better understand the region's salmon resources and potential threats by performing an ecological risk assessment. And during its review, EPA identified what many in the region have known for years, and that is, economically viable mining of the Pebble deposit would result in one of the largest mines in the world, and in fact, be larger than all other mines in Alaska combined, and you can actually see this in the visual in front of you.

The basis of EPA's mining analysis is based on Northern Dynasty Minerals', an owner of the Pebble Partnership own documents and submissions to the investment community and to the SEC. It is also admitted as part of the record, and I have a copy of that plan right here today.

These submittals, as described in the wardrop report, describe mines that could be more than 2,000 feet deep and 2 miles wide, require the construction of tailings reservoirs that hold as much as 10 billion tons of potentially acid-generated tailings, and all of this would be at the headwaters of one of the most valuable commercial and sport fisheries, provides half of the world's wild red salmon, ac-

counts for nearly 14,000 jobs and hundreds of millions of dollars of economic activity according to EPA's conservative estimates. Northern Dynasty described the mining scenarios detailed in this report, and I quote, "as economically viable, technically feasible and permissible." Again, the details I described are drawn directly from that 575-page report, which is far from the hypothetical or fantasy claim that we have heard before.

With regards to authority to conduct the assessment, EPA clearly has it under section 104(a), (b), and importantly, the support of this assessment is astounding. Nearly 75 percent of all commenters supported the assessment and 95 percent of commenters from Bristol Bay support that assessment. In my experience, and looking forward, EPA needs to finalize its watershed assessment and address the original request for 404(c) action.

The uniform complaint that I heard as a regional administrator from project proponents on 404(c) matters was, why didn't EPA get involved more upfront in the very project instead of waiting at the very end and delaying what they saw as much investment and time. So in that light, I believe it is wholly appropriate for the Federal Government to make clear upfront what its expectations are of permit applicants, especially for projects of the magnitude that we are discussing today. And I believe EPA should, at a minimum, use its Clean Water Act authority to restrict any 404 discharge to meet the following performance standards which are well founded in EPA and Army Corps practice, and they are: no discharge of fill materials to wild salmon in spawning and rearing habitat, no discharge of toxic material to waters of the United States, and no discharge of fill materials that would require treatment in perpetuity.

EPA has adhered to strict scientific standards in preparing the watershed assessment and undergone extensive outreach to ensure that the documents can inform future decisions by policymakers. The watershed assessment identifies significant adverse impacts to the fishery and is a key trigger for 404(c) action. EPA has the opportunity to provide clarity and certainty to those who live and work in the Bristol Bay region by initiating such action.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Nastri follows:]

Statement for the Record

Before the U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Written testimony for the Subcommittee on Oversight hearing titled
“EPA’s Bristol Bay Watershed Assessment – A Factual Review of a
Hypothetical Scenario”

Submitted by:
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July 29, 2013

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I. INTRODUCTION

Thank you for the opportunity to provide written testimony to the subcommittee on the important topic of Bristol Bay and EPA's Bristol Bay Watershed Assessment (BBWA). As a former Regional Administrator for USEPA Region 9 (2001-2009), I have extensive experience working on hard-rock mining issues, especially regarding permitting, enforcement and clean-up per the Clean Water Act (CWA), Clean Air Act (CAA), Comprehensive Environmental Recovery, Compensation, Liability Act (CERCLA), and the National Environmental Policy Act (NEPA).¹ I present this testimony on my own behalf, and it is based on my experience and review of the BBWA and documents supporting and commenting upon it, including from both supporters and opponents of the proposed Pebble mine. I would also like to note that I currently consult with the Bristol Bay Native Corporation, and formerly consulted with Trout Unlimited, on matters related to understanding how CWA §404 (c) issues are addressed by the US Government and how CWA §404(c) might apply with regard to Bristol Bay.

Copper mining in the Bristol Bay region is driven by, but not limited to, three key factors:

1. Location of the deposit
2. Size of the deposit
3. Grade of the ore

These parameters are well known and documented in a variety of submittals to state and federal agencies (e.g., Wardrop Report submitted by Northern Dynasty to the Securities and Exchange Commission). In light of what was known at the time, six federally recognized tribes, the Bristol Bay Native Corporation, the commercial and sport fishing industries of Bristol Bay and numerous conservation groups, requested EPA initiate a CWA §404(c) action. EPA subsequently initiated the watershed assessment by conducting an ecological risk assessment to better understand the environment and resources and the potential impact to the environment posed by large-scale hard rock mining in the Bristol Bay watershed.

EPA's revised draft BBWA describes the resources and a range of potential impacts based on available information in the public record, including detailed mining plans and scenarios put forward by the companies behind the proposed Pebble mine. The draft BBWA also addresses issues raised during the first public comment period by both the general public and those of the peer review panel. The potential adverse impacts are appropriately qualified relative to their likelihood and effect.

Although a draft, the BBWA makes it clear that the location and type of ore associated with the Pebble deposit and the massive size necessary to economically mine it inevitably means that mining the deposit will result in severe and unacceptable adverse impacts to the salmon fishery, and in consequence, to the Eskimo, Indian, and Aleut peoples who live in the area and rely on a subsistence lifestyle. The draft BBWA demonstrated the tremendous value of the commercial, sport and subsistence fisheries in Bristol Bay. Combined with the value of hunting and tourism in the region, the report estimated the economic activity attributable to the watershed to be

¹ See Wayne H. Nastri, Curriculum Vitae, attached as Enclosure 1.

valued at \$480 million in 2009, a conservative estimate based on subsequent studies taking account for the full downstream value of the fishery. The BBWA also showed that Bristol Bay sustained 14,000 jobs during that time. Clearly, Bristol Bay is home to a highly valuable American fishery.

My testimony first reviews in detail EPA's Bristol Bay Watershed Assessment, demonstrating that its scientific conclusions are sound and, if anything, conservative. I also review EPA's peer review process, as well as its government and public participation processes, concluding that, to date, EPA has structured and followed an impressive path that will further bolster the strength and credibility of its final findings. Finally, I address EPA's legal authority to conduct the assessment, as well as to follow it up with appropriate EPA action to protect Bristol Bay.

My testimony will also refute some of the arguments against a 404(c) action. Consider the following:

- The EPA's BBWA is based on reasonable mining scenarios contained in plans publicly submitted in an official capacity. While final plan details may change slightly, what won't change are the size, scope, and location of the mine in a highly sensitive aquatic habitat and ecosystem that maintains a vibrant commercial fishery.
- The EPA has an obligation to use its 404(c) authority whenever it deems our nation's waters would suffer an "unacceptable adverse effect;" even the conservative draft BBWA makes it clear that Bristol Bay will be adversely impacted by large scale hard rock mining. By conducting the BBWA, the EPA has done its due diligence in Bristol Bay. Waiting to initiate the NEPA process will only further delay the inevitable and create even more economic uncertainty for those who initially petitioned the EPA.
- As authorized by Section 404(c), EPA action can take many forms, from an outright prohibition on permits to the placement of restrictions on future permits to ensure that Bristol Bay is protected. In my view, a reasonable path forward would be for EPA to use proactive restrictions in the form of performance standards to protect Bristol Bay from the proposed Pebble mine.
- Issuing a 404(c) ruling in the near future will provide the Alaska Natives, commercial and sports fishing industries, and others who rely on Bristol Bay the certainty they all deserve. Further, it will provide companies with very clear parameters under which they could operate. The EPA has made clear that a 404(c) action is *preferable* before the Corps or state issues a permit. During my time as an EPA regional administrator, developers expressed similar up-front preferences as a way to avoid needlessly wasting precious capital and resources.

Further, in my years as EPA's Region 9 Administrator, the largest Superfund sites that we dealt with included numerous mining operations. Every one of these mines paled in comparison to what the proposed Pebble mine would look like, and none were in such an ecologically sensitive area that supported vibrant subsistence, commercial and sport fisheries. The fact is that the general size, extremely sensitive location and potentially acid generating type of ore associated with the proposed Pebble mine are all known today. EPA's Bristol Bay Watershed Assessment makes clear that this mine would have unacceptable adverse impacts on the legendary Bristol Bay wild salmon fishery.

The Riley/Yocom Report (2011), “Mining the Pebble Deposit: Issues of 404 Compliance and Unacceptable Environmental Impacts”, describes a set of actions that EPA could initiate proactively under CWA § 404(c) authority. These restrictions include: 1) a prohibition on discharge of dredged or fill material into salmon habitat; 2) a prohibition on the discharge of dredged or fill material that does not meet testing requirements demonstrating that such material is not toxic to aquatic life; and 3) a prohibition on the discharge of dredged or fill material runoff or seepage from which would require treatment in perpetuity.² As Riley/Yocom demonstrate, these restrictions are rooted in well-established precedents and long-standing practices and policies within the CWA 404 program, and thus routinely are applied to 404 permits in the Pacific Northwest and elsewhere. Asserting these restrictions proactively furthers the goals of the Clean Water Act by providing certainty, and associated time and money savings, to industry and the public, including the indigenous peoples of the region to whom the United States has a trust responsibility, as to what will be required of any proposed plan to mine that deposit.

EPA, in its role as a risk manager along with its responsibilities under the Clean Water Act, now has the information and duty to fulfill the Congressional mandate to protect our nation’s waters. EPA should finalize the BBWA as soon as possible, and should move forward with CWA § 404 action to protect Bristol Bay.

II. THE BRISTOL BAY WATERSHED ASSESSMENT RELIES ON SOUND SCIENCE, DATA, AND METHODOLOGIES

A. PROPER USE OF AN ECOLOGICAL RISK ASSESSMENT

An Ecological Risk Assessment evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors. It is a flexible process for organizing and analyzing data, information, assumptions and uncertainties to evaluate the likelihood of adverse ecological effects. Ecological risk assessments provide a critical element for environmental decision-making by giving risk managers an approach for considering available scientific information along with the other factors they need to consider (e.g., social, legal, political, or economic) in selecting a course of action. It is common that assumptions and specific analytical methods are challenged via the public review process and re-visited, re-analyzed in a subsequent draft. Inevitably there will be discussions among experts, and that discourse strengthens the final product.

B. PROPER USE OF MINING SCENARIOS AND DATA

An extensive amount of previously published, peer-reviewed papers were utilized in the development of the BBWA as can be seen in the BBWA’s 66 pages of references³ Further, the

² William M. Riley and Thomas G. Yocom, *Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts*, Prepared for the Bristol Bay Native Corporation and Trout Unlimited, Executive Summary (December 2011), available at <http://www.savebristolbay.org/sites/www.savebristolbay.org/files/documents/TU%20Riley%20Yocom%20mining%20the%20deposit%20report.pdf> and attached as Enclosure 2.

³ See EPA, *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska, Second External Review Draft* at Ch. 15.

BBWA is based on real mining scenarios and data to conduct its ecological assessment. These scenarios are drawn directly from the report on the Pebble deposit prepared by an independent third party, Wardrop, for Northern Dynasty Minerals. Northern Dynasty describes the mining scenarios in the report as “economically viable, technically feasible, and permissible.”⁴ This legal document, filed with the Securities and Exchange Commission in 2011, is precisely the detailed mining plan on which the EPA based its evaluation.

In developing the BBWA, EPA also relied on Pebble Limited Partnership permits filed with the State of Alaska in 2006, which provide hundreds of pages of information, data, maps, and descriptions of the Pebble mine. These applications specify the location of the Pebble deposit and the overall mine plans and infrastructure including the location of the proposed open pit, two proposed tailings storage facilities, water treatment facility, drainage ditches, transportation and road corridor, deep water port, and water transmission routes.⁵

Finally, as the EPA makes clear in its Watershed Assessment, even “final” plans developed under NEPA are subject to change between assessments and actual development: “Even an Environmental Assessment of a proposed plan by a mining company would be an assessment of a scenario that undoubtedly would differ from the ultimate development.”⁶

Although Pebble Limited Partnership (PLP) attempts to reject EPA’s BBWA mining scenarios as a “fantasy,”⁷ EPA has clearly based its scenarios on reliable data and plans from PLP’s own parent company. Indeed, PLP’s attempt to obfuscate this fact has led Senator Maria Cantwell to request that the Securities and Exchange Commission investigate whether Northern Dynasty Minerals is misleading investors, stating “Northern Dynasty is either misleading its investors or the EPA and the company must be held accountable for its inconsistencies.”⁸

It has always been EPA **standard practice**, fortunately for taxpayers, for project proponents to collect their own baseline data, as PLP has done here. EPA took this information into account in the BBWA, and other experts have reviewed and commented on it. What works for the investment community works for risk assessment as well.

⁴ Northern Dynasty Minerals, Inc., *Pebble Project – Preliminary Assessment Technical Report*, page 4 (February 17, 2011), available at http://www.northerndynastyminerals.com/i/pdf/ndm/Pebble_Project_Preliminary%20Assessment%20Technical%20Report_February%2017%202011.pdf.

⁵ Northern Dynasty Minerals, Inc., *Application for Water Rights South Fork Koktuli River*, LAS 25871 (July 7, 2006), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/water-rightapps/index.cfm>.

⁶ Environmental Protection Agency, *Bristol Bay Assessment Executive Summary*, ES27 (April 2013), available at http://www.epa.gov/ncea/pdfs/bristolbay/bristol_bay_assessment_er2_2013_vol1_exec_summary.pdf.

⁷ See e.g., http://www.ktuu.com/news/ktuu-public-gets-one-more-chance-to-weigh-in-on-pebble-before-scientists-do-20120807_0_7102116_story.

⁸ Letter from Senator Maria Cantwell, to Elisse B. Walter, Chairman, U.S. Securities and Exchange Commission (March 18, 2013), attached as Enclosure3.

C. SOUND SCIENTIFIC CONCLUSIONS

The collection and review of extensive data, including research papers and previously published peer reviewed articles, supports the findings of the BBWA. EPA, sought to identify and assess the following in the Bristol Bay Watershed, especially in the Kvichak and Nushagak watersheds:

The health of salmon and ecological resources

EPA characterized the current health and conditions of Bristol Bay salmon populations and salmon habitat in the Kvichak and Nushagak watersheds. They also described the general conditions of ecological resources in Bristol Bay, including 35 fish species, 190 bird species, and more than 40 terrestrial animal species. Among other things, EPA found the following:

- The average annual run of sockeye salmon is about 37.5 million fish – 46% of the global sockeye, half of which come directly from the Kvichak and Nushagak drainages.
- Headwater streams in the Pebble deposit area provide a temperature-moderating effect, providing temperatures beneficial to fishes in summer and winter as well.
- Bristol Bay's wild salmon fishery and other natural resources provide at least 14,000 full and part-time jobs and are valued at about \$480 million annually.⁹
- The Bristol Bay commercial salmon fishery generates the largest component of economic activity: it was valued at approximately \$300 million in 2009 (sales from fishers to processors), and provided employment for over 11,000 full and part-time workers at the season's peak.
- The Bristol Bay sport-fishing industry supports approximately 29,000 sport-fishing trips, generates approximately \$60 million per year, and directly employs over 800 full-and part-time workers.
- The scenic value of the watershed, measured in terms of wildlife viewing and tourism, is estimated to generate an additional \$100 million per year and support nearly 1,700 full and part-time workers.
- The subsistence harvest of fish also contributes to the region's cash economy (estimated to be over \$6 million per year) when Alaskan households spend money on subsistence-related supplies.

Potential impacts of mining

EPA evaluated the potential impacts of large-scale porphyry copper, gold and molybdenum mining in the Bristol Bay Watershed using publicly-available mining plans for Bristol Bay and existing information on mining, as well as plausible mining scenarios. EPA also reviewed mining practices that could minimize risks to the Bristol Bay Watershed, and assessed the success and failure rates of those mitigation practices. Among other things, EPA found the following:

⁹ EPA's finding in this regard appears quite conservative, as a recent study found this value to be \$1.5 billion. See Institute of Social and Economic Research at the University of Alaska, *The Economic Importance of the Bristol Bay Salmon Industry* (May 13, 2013), attached as Enclosure 4

- The Pebble deposit, because of its low-grade ore, must be mined in large quantities to be economically viable and if developed, it would be one of the largest mines of its type in North America.
- Based on the scenarios assessed and based on Pebble Partnership filings, the Pebble deposit could yield up to 80.6 billion pounds of copper, 107.4 million ounces of gold and 5.6 billion pounds of molybdenum.
- EPA assessed a road corridor of 86 miles, with an additional 17 km of roads within the direct mine footprint, these roads would cross 53 streams known to support migrating and resident salmonids.
- Mining of the Pebble deposit under EPA's three mining scenarios could cause the direct loss of up to 24, 56, and 90 miles of streams respectively.
- Mining of the Pebble deposit could alter stream flow up to an additional 34 miles of streams.
- Mining of the Pebble deposit would cause the loss of up to 4800 acres of wetlands.
- Mining of the Pebble deposit would produce acidic and metals-laden waters. Based on the nature of these materials, it is extremely unlikely that the mine could operate without degrading water quality downstream, particularly given the perpetual management required.
- Leaching of copper during standard operation could directly impact salmonids up to 35 miles of river and stream beyond the mine footprint.
- Leaching during standard operation could indirectly impact salmonids in up to 51 miles of stream within the mine footprint.
- There are no examples of successful, long-term collection and treatment systems for mines, because these time periods exceed the lifespan of most past large-scale mining activities, as well as most human institutions. Engineered waste storage systems of mines have only been in existence for about 50 years.
- In event of a tailings dam failure, the North Fork Kaktuli River could lose up to 19 miles of stream habitat and would not support salmon for at least 10 years and spawning and rearing habitat would be impacted for a period of decades.
- A tailings dam failure could cause a loss of up to 30% of the Nushagak king salmon and 10-20% of the Mulchatna king salmon.

Role of salmon in indigenous populations and economy

EPA described the role of salmon in Alaska Native cultures present in the Nushagak and Kvichak watersheds. Among other things, EPA found:

- The Yup'ik and Dena'ina are two of the last intact, sustainable, salmon-based cultures in the world. There are 31 Alaska Native Villages in Bristol Bay, and many residents of Native villages depend on a salmon subsistence-based economy.
- Bristol Bay is home to 25 federally recognized tribal governments, 14 of which are in the Nushagak and Kvichak drainages with a population of 4,337 in 2010.
- Salmon are integral to the entire way of life in these cultures as subsistence food and subsistence-based livelihoods, and are an important foundation for language, spirituality and social structure.
- The subsistence-based way of life is a key element of Alaska Native identity and serves a wide range of economic, social, and cultural function in Yup'ik and Dena'ina societies.

- In the Bristol Bay region, salmon constitute approximately 52% of the subsistence harvest, and for some communities the proportion is substantially higher.

In addition, EPA examined the economic state of the greater Bristol Bay fisheries industry and the dependence of non-Native populations on the salmon resource.

III. EPA HAS CONDUCTED RIGOROUS PUBLIC AND PEER REVIEW OF THE BRISTOL BAY WATERSHED ASSESSMENT

A. EPA PUT TOGETHER AN EXPERIENCED AND HIGHLY QUALIFIED TEAM TO DRAFT AND REVIEW THE BRISTOL BAY WATERSHED ASSESSMENT

The BBWA was written, compiled and reviewed by a well-qualified team of scientists, researchers and independent consultants. The scientists, academics, and professionals who contributed to its production possess the necessary experience and credentials for the project:

- The authors include sixteen professionals in appropriate fields that span the breadth of the assessment topics, including, among other areas of expertise,
 - plant ecology,
 - stream fish ecology and habitat,
 - aquatic ecology,
 - wetlands and watersheds,
 - hydrology,
 - ecosystem modeling,
 - environmental assessment,
 - ecological risk assessment,
 - waste and chemical management ,
 - geotechnical and geoenvironmental engineering,
 - geology, and
 - civil engineering/environmental restoration.
- These authors were assisted by an additional thirty-nine experts in additional fields including, but not limited to,
 - anthropology,
 - economics,
 - bioeconomics,
 - habitat conservation,
 - environmental engineering and chemistry,
 - forest ecology,
 - mineral resources,
 - toxicology, and
 - GIS.

Moreover, the BBWA was reviewed by EPA and other professionals who possess scientific and professional expertise in other disciplines covered by the assessment.

In my experience and opinion, EPA organized a team of highly-qualified professionals who have backgrounds and expertise in all of the fields critical to conducting the watershed assessment to high standards of integrity.

B. EPA HAS PROVIDED AMPLE OPPORTUNITY FOR INTERAGENCY CONSULTATION AND PUBLIC PARTICIPATION

Pre-Watershed Assessment Public Process

Once EPA decided to prepare the BBWA, it proceeded using a well-structured and methodical manner. That process is summarized here. In February 2011, EPA issued an “Outline for the Development of EPA’s Bristol Bay Watershed Assessment,” in which it described a “process for EPA, in coordination with Federal, State and Tribal organizations to collect and evaluate information necessary to determine whether to initiate an advanced 404(c) action, or take other appropriate action”¹⁰ EPA described a series of specific tasks that it planned to complete in preparing the Assessment, including reviewing and documenting relevant scientific literature and interviewing agency staff and other experts with respect to the characterization of the salmon fishery, risks associated with large-scale development, and potential mitigation measures, as well as synthesizing the “cumulative impacts of all risks, threats and stressors identified on the long term ecological integrity of the Bristol Bay salmon resource and factor in the perpetual efficacy of any mitigation measures identified.”¹¹ EPA also noted that it would formally “consult with Tribes in the watershed that request consultation and [would] meet with prospective resource developers within the watershed, relevant federal and Alaska state agencies and other interests as requested and appropriate.”¹²

As described above, EPA put together a strong project team to work on the BBWA. EPA personnel made trips to the Bristol Bay region “to see firsthand what is being studied and talk with those affected.”¹³ Prior to drafting the assessment EPA engaged in government-to-government consultation with Tribes, working with an intergovernmental technical team (IGTT) with representatives from federal and state agencies and tribal governments. EPA conducted extensive public outreach, including holding community meetings in Ekwok, Iliamna, Nondalton, Newhalen, Koliganek, Kokhanok, New Stuyahok, Dillingham, and Anchorage. It reviewed hundreds of letters and petitions and tens of thousands of emails, maintained a website and listserv; conducted a traditional ecological study involving dozens of interviews in several Bristol Bay villages, and interviewed village elders regarding the importance of salmon in people’s lives.¹⁴

Public Process for First Draft of Bristol Bay Watershed Assessment

In May 2012, after approximately 16 months of preparation, EPA released its Draft BBWA. It then opened a 60-day public comment period on this draft. During this period, EPA conducted

¹⁰ EPA Region 10, *Outline for the Development of EPA’s Bristol Bay Watershed Assessment* (Feb. 7, 2011), available at http://www.epa.gov/region10/pdf/bristolbay/outline_bristol_bay_watershed_assessment.pdf (last visited July 29, 2013).

¹¹ *Id.*

¹² *Id.*

¹³ EPA, *Powerpoint presentation Bristol Bay Watershed Assessment* (Dec. 2011), available at www.epa.gov/region10/pdf/bristolbay/epa_bristol_bay_update_120511.pdf (last visited July 29, 2013).

¹⁴ *Id.*

webinars on the Draft Assessment,¹⁵ and completed a series of public hearings in Seattle, Anchorage, and the Bristol Bay villages of Dillingham, Naknek, Levelock, Igiugig, Nondalton, and New Stuyahok.¹⁶

At the hearings, the overwhelming majority of commenters supported the Assessment process. Altogether, 80% of those who spoke at public hearings on the draft watershed assessment (and over 93% of those who spoke at the in-region hearings) supported EPA's work.

In addition to input provided at these hearings, EPA received over 220,000 public comment letters on the draft Assessment. Indeed, more than 95% of all public input expressed support for the BBWA and/or EPA action.¹⁷ Most importantly, in the Bristol Bay region, more than 92% of all written comments and public testimony supported EPA action.¹⁸ Examples of public comments include:

- “[W]e have a right to be afraid of what is happening, because we live in this land . . . We have been in this battle long enough. We want to see something start happening that can assure Alaska native people in this area that our waters, our way of life will continue to be protected.”¹⁹
- “[F]rom an investor perspective, a Section 404(c) process at this stage could help remove regulatory risk and uncertainty about large-scale mining in the region. This presents the opportunity to enhance clarity which could in turn facilitate the efficient allocation of capital investment in mineral development. We believe it is prudent for all financially interested parties to understand now, as fully as possible, the regulatory environment.”²⁰

Public Process for Second Draft of Bristol Bay Watershed Assessment

On April 30, 2013 EPA released its revised draft of the BBWA for public review and comment.²¹ EPA allowed for a 60-day comment period, receiving more than 877,000 public comment letters and petition signatures.²² While it is not yet possible to review the entire docket on EPA's

¹⁵ EPA Region 10, News Release, *EPA Releases for Public Comment Draft Scientific Study of Bristol Bay Watershed* (May 18, 2012), available at <http://yosemite.epa.gov/opa/admpress.nsf/d96f984dfb3ff7718525735900400c29/6979fe30fc6583f385257a020061b472?OpenDocument> (last visited July 29, 2013); Judy Smith, Community Involvement Coordinator, EPA Region 10 (email to Bristol Bay listserv), *Webinar: Draft Bristol Bay Watershed Assessment Overview* (July 10, 2012).

¹⁶ EPA, *Bristol Bay—Current Public Involvement*, <http://www2.epa.gov/bristolbay/current-public-involvement> (last visited July 29, 2013).

¹⁷ See *Overwhelming Public Support for EPA Action to Protect Bristol Bay Fact Sheet*, attached as Enclosure 5.

¹⁸ *Id.*

¹⁹ Record of Public Comment Meeting, New Stuyahok Alaska at 15, Joe Chythlook, available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4154>.

²⁰ Jonas Kron, Vice President of Trillium Asset Management, LLC and Stuart Dalheim, Vice President of Calvert Investment Management, Inc., available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-5782>.

²¹ EPA, *Revised Draft Assessment is Available for Review* (April 2013), <http://www2.epa.gov/bristolbay/bristol-bay-assessment-fact-sheet-april-2013>.

²² See Regulations.gov Docket Folder Summary for Revised External Review Draft of BBWA, <http://www.regulations.gov/#!docketDetail;D=EPA-HQ-ORD-2013-0189> (last visited July 29, 2013) (showing 877,990 comments received as of 11:59PM on July 29 2013).

publicly accessible web portal, currently more than 95% (or 841,411 comments of the total comments received) are available for review. Of those publicly available comments, more than 76% supported EPA's BBWA process and/or requested EPA take action under 404(c).²³ Importantly, more than 94% of those commenting from the Bristol Bay region supported EPA's watershed assessment and/or 404(c) action.²⁴ In addition to the overwhelming support for EPA coming from the Bristol Bay region, this public comment process saw comments supportive of EPA's actions and the BBWA process from more than 150 Alaska small business owners,²⁵ three Alaska state representatives²⁶, and thirteen members of US Congress.²⁷

C. EPA IS CONDUCTING A RIGOROUS PEER REVIEW OF THE BRISTOL BAY WATERSHED ASSESSMENT

The U.S. Office of Management and Budget (OMB) promulgated guidelines for peer review of scientific information developed by federal agencies.²⁸ These guidelines have distinct peer review requirements for "influential scientific information" (ISI)²⁹ and for "highly influential scientific assessments" (HISAs),³⁰ which are considered a subset of ISI and are subject to "stricter minimum requirements" for peer review.³¹ EPA's peer review of the BBWA complies

²³ Overwhelming Public Support for EPA Action to Protect Bristol Bay, Second Comment Period Fact Sheet, attached as Enclosure 6 (July 29, 2013).

²⁴ *Id.*

²⁵ See Letter from Scott Hed, Director, Sportsman's Alliance for Alaska et al., to Acting EPA Administrator Perciasepe (June 12, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-5063> (signed by 134 Alaska small business owners and presidents); Letter from Tony Behm and Scott Struznik, Alagnak Lodge et al. to EPA (June 27, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-5319> (signed by 44 Alaska small business owners and presidents).

²⁶ See Letter from Representative Bryce Edgmon (May 30, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-5058>; Letter from Representative Andy Josephson (June 27, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-5320>; and Letter from Representative Les Gara (June 26, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-5618>.

²⁷ See Letter from Rep. John F. Tierney et al., to Acting EPA Administrator Perciasepe (May 28, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-7353> (signed by 4 members of Congress) and Letter from Rep. Earl Blunt et al. (June 11, 2013), available at <http://www.regulations.gov#!documentDetail:D=EPA-HQ-ORD-2013-0189-7355> (signed by 9 members of Congress).

²⁸ See OMB, *Final Information Quality Bulletin for Peer Review*, 70 FED. REG. 2664 (Jan. 14, 2005) (hereafter "Bulletin"), available at <http://www.ssa.gov/515/PeerReviews/FedRegNoticeForFinalBulletin.pdf> (last visited July 10, 2013).

²⁹ The term "influential scientific information" means "scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions." *Id.* at 2667, 2675.

³⁰ A scientific assessment is considered "highly influential" where "the agency or the OIRA Administrator determines that the dissemination could have a potential impact of more than \$500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest," *id.* at 2671. See *id.* at 2675. OIRA refers to the Office of Information and Regulatory Affairs within OMB. See *id.* at 2674.

³¹ See *id.* "Even for these highly influential scientific assessments," however, "the Bulletin leaves significant discretion to the agency formulating the peer review plan." *Id.*

with the more rigorous HISA guidelines.³² Among other things, the peer review process has included the following actions:

- To ensure the transparency of its efforts, EPA posted the Peer Review Agenda and Plan for the Draft Assessment on its public website,
- EPA's Plan includes a summary of the subject and purpose of the report, designation of the report as HISA, timing of the review, manner in which the review will be conducted, opportunities for public comment, the number of reviewers and a description of their required expertise, and how reviewers will be nominated and selected.
- EPA invited nominations from the public between February 24 and March 16, 2012.
- In its selection criteria for peer reviewers, EPA required the "absence of financial conflicts of interest," and "no actual conflicts of interest or the appearance of [impropriety]."
- The Draft Assessment peer review panel includes members with strong expertise in each of the subject areas relevant for evaluating the Draft Assessment.
- EPA provided a public comment period on the adequacy of the Draft Assessment Peer Review Plan from April 9, 2012 through May 10, 2012
- EPA provided the peer review panel with the Draft Assessment, which consists of 1,180 pages published in three volumes. The first volume sets forth the main text (338 pages), and the two remaining volumes provide an additional 842 pages of materials compiled into nine appendices that show the reviewers the information upon which the Draft Assessment is based.

The results of the peer review include the following comments:

- *This Assessment presents a "comprehensive overview of current conditions and establishes the global uniqueness of the area to salmon ecology." (Atkins)*
- *"The Assessment presents a well documented discussion of the fish and wildlife resources of the Nushagak and Kvichak River Watersheds, with more limited discussions on the remainder of the Bristol Bay watershed." (Webber Scannell)*
- *"My point is that probable environmental consequences of mining activities are much greater than this report alludes to, given that consequences are likely, even if their magnitude is uncertain." (Dauble)*
- *"Make no mistake we cannot have both mining and productive salmon stocks in the Bristol Bay watershed. . . As a result of the mining operation, the government will be saddled with a 1000 years (at minimum) of monitoring and maintenance of this closed site." (Stein)*

In response to input from the peer review, EPA further strengthened the assessment by providing more information in areas related to climate change, mitigation, more diverse mining scenarios, induced/cumulative impacts and a more thorough treatment of the region's complex hydrology thus deepening the understanding of the potential impacts associated with hard rock mining in Bristol Bay. Further, as of the release of the Second Draft of the Watershed Assessment, over

³² See EPA, An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska— Peer Review Panel Members and Charge Questions, 77 FED. REG. 33213, 33214 (June 5, 2012).

300 internationally recognized scientists have signed a collective letter validating the work of the EPA, and expressing deep concerns about the prospects of large-scale mining in the Bristol Bay Watershed.³³

After release of the second draft of the Watershed Assessment, EPA again hired a team of reviewers to ensure quality, accuracy, and evaluate if EPA sufficiently responded to concerns from the first round review. It is my understanding that before finalizing the Assessment, EPA will consider the final peer review report and that this report will be made available to the public. Therefore by the time this assessment is final, the second peer review will add to the significant existing credibility of the BBWA.

IV. EPA AUTHORITY UNDER THE CLEAN WATER ACT

A. EPA HAS THE AUTHORITY TO CONDUCT THE BRISTOL BAY WATERSHED ASSESSMENT UNDER SECTIONS 104 AND 404 OF THE CLEAN WATER ACT

As described below, the Environmental Protection Agency (“EPA”) is authorized to conduct watershed assessments as it deems appropriate in order to achieve the goals of the Clean Water Act (“CWA”) and in order to properly oversee the 404 permitting program. The CWA directs EPA to “establish national programs for the prevention, reduction and elimination of pollution” and to “prescribe such regulations as are necessary to carry out [its] functions under [the CWA].”³⁴

As a means of fulfilling its role in the 404 process and its statutory responsibilities, Congress has granted EPA broad discretionary authority in Section 104 of the CWA to conduct research and gather information, including the authority to “conduct and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution” and to “collect and make available through publications and other appropriate means, the results of and other information, including appropriate recommendations by [the EPA Administrator] in connection therewith, pertaining to such research and other activities ...”³⁵

Additionally, EPA’s authority to conduct a watershed assessment in Bristol Bay is implied in its authority to prohibit or restrict 404 permitting in defined areas under Section 404(c) of the CWA.³⁷ In order to make the “unacceptable adverse effects” determination required by 404(c), EPA must in some manner collect information about the affected resources and the impacts that discharges of dredged or fill material would have on these resources.

Under EPA regulations setting out its 404(c) procedures, “the Administrator will take into account all information available to [her]”³⁸ The Assessment allows EPA to gather into one

³³ See Letter from Dominick A. DellaSala, Ph.D. et, al, to President Barak Obama (April 26, 2013), attached as Enclosure 7.

³⁴ 33 U.S.C. § 1254(a).

³⁵ 33 U.S.C. § 1361(a).

³⁶ 33 U.S.C. § 1254(a)(1) and (b)(1).

³⁷ 33 U.S.C. § 1344(c).

³⁸ 40 C.F.R. § 231.1(a).

place all the available information on the Bristol Bay resources and the risks posed by large-scale mining to those resources, to assist EPA in complying with its regulations if and when the agency makes a proposed determination under 404(c). Moreover, if the Administrator chooses to exercise her 404(c) authority, she must “set forth in writing and make public [her] findings and [her] reasons for making any determination.”³⁹ Thus, EPA has clear authority to collect the information necessary to inform potential decisions under Section 404(c) of the CWA through an assessment of the Bristol Bay watershed.

Also within the 404(c) context, EPA’s scientific watershed assessment process is guided by its existing regulations and prior experience. EPA’s 404(c) regulations explain that “[i]n evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines (40 CFR part 230).”⁴⁰ Among other things, the 404(b)(1) Guidelines advise EPA to “[e]valuate the various physical and chemical components which characterize the non-living environment of the candidate site, the substrate and the water including its dynamic characteristics;” and “[e]valuate the material to be discharged to determine the possibility of chemical contamination or physical incompatibility of the material to be discharged.”⁴¹ EPA’s commitment to and preparation of the BBWA is consistent with these Guidelines.

Finally, in Bristol Bay the public includes Alaska Native tribes which have inhabited the region for millennia.⁴² EPA’s proposed Policy on Consultation and Coordination with Indian Tribes states that EPA should “consult on a government-to-government basis with tribal governments when EPA actions and decisions may affect tribal interests” and ensure “the close involvement of tribal governments and give special consideration to their interests whenever EPA’s actions may affect Indian country or other tribal interests.”⁴³ EPA’s Watershed Assessment provides an important mechanism to help EPA fulfill its trust obligation to Alaska Native tribes with respect to the water resources and salmon fisheries in Bristol Bay.

B. EPA HAS THE AUTHORITY TO TAKE ACTION UNDER SECTION 404(C) OF THE CLEAN WATER ACT

The goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters so that they can support “the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.”⁴⁴ To further this goal, the CWA regulates, among other things, discharges of pollution – including dredged or fill material -- into waters of

³⁹ 33 U.S.C. § 1344(c).

⁴⁰ 40 C.F.R. § 231.2(e).

⁴¹ 40 C.F.R. § 230.5(e), (f), (h).

⁴² Six federally recognized tribes in the Kvichak and Nushagak River drainages have urged EPA to use 404(c) proactively to protect water and fishery resources in Bristol Bay—Nondalton Tribal Council, Koliganik Village Council, New Stuyahok Traditional Council, Ekwok Village Council, Curyung Tribal Council and Levelock Village Council.

⁴³ EPA, *Proposed Policy on Consultation and Coordination with Indian Tribes*, at 3, 6 (June 9, 2010), available at <https://www.google.com/search?source=jg&hl=en&rlz=&=&q=EPA%E2%80%99s+Proposed+Policy+for+Relation+with+Indian+Tribes>.

⁴⁴ 33 U.S.C. § 1251(a)(2).

the United States.⁴⁵ EPA maintains oversight over this “section 404” permitting program as set out in Section 404(c).

Through Section 404(c) Congress authorized EPA to prohibit or withdraw the specification, or deny, restrict, or withdraw the use for specification, of any defined area as a disposal site for dredged or fill material whenever the EPA Administrator “determines that the discharge of dredged or fill material is having or will have an ‘unacceptable adverse effect’ on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.”⁴⁶ In determining what constitutes an “unacceptable adverse effect,” EPA considers relevant portions of the 404 Guidelines (40 CFR 230).⁴⁷ The Guidelines assist in determining if discharges of dredged or fill material can be permitted, and would, in part, determine whether discharges from a proposal to mine the Pebble deposit could be authorized by the Department of the Army pursuant to Section 404 of the CWA.

As noted above, Congress in the text of the Clean Water Act provided EPA authority to act under Section 404(c) if a proposed project “will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.”⁴⁸ The use of the future tense with the phrase “will have” indicates that EPA may exercise its 404(c) authority before an area is specified as a disposal site within a 404 permit.

The Act’s legislative history also supports this proactive use of 404(c) authority. At the time Congress was developing the Clean Water Act Amendments of 1972, Senator Edmund Muskie emphasized the forward-looking nature of EPA’s 404(c) authority by stating that “... prior to the issuance of any permit to dispose of spoil, the Administrator [of EPA] must determine that the material to be disposed of will not adversely affect municipal water supplies, shellfish beds and fishery areas..., wildlife, or recreational areas in the specified site. Should the Administrator so determine, no permit may issue.”⁴⁹

Further, EPA’s regulations implementing 404(c) expressly address the agency’s authority to take action with respect to future disposal sites, either before a permit application has been submitted or during the permitting process. The following are a few examples:

Under section 404(c), the Administrator may exercise a veto over the specification by the U.S. Army Corps of Engineers or by a state of a site for the discharge of dredged or fill material. The Administrator may also prohibit the specification of a site under section 404(c) with regard to any existing or potential disposal site before a permit application has been submitted to or approved by the Corps or a state. ...⁵⁰

⁴⁵ Waters of the United States are defined in federal regulations at 40 CFR 230.3(s)(1)-(7), and include tidal waters, tributary rivers and streams, adjacent wetlands, and “other waters.”

⁴⁶ 33 U.S.C. § 1344(c).

⁴⁷ See 40 CFR 231.2(e) (definitions).

⁴⁸ CWA § 404(c), 33 U.S.C. § 1344(c) (emphasis added).

⁴⁹ Sen. Edmund Muskie, *Senate Consideration of the Report of the Conference Committee*, s. 2770, 93rd Cong. 1st Sess. (Oct. 4, 1972), reprinted in 1 LEGIS. HISTORY OF WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, at 177 (1973).

⁵⁰ 40 C.F.R. § 231.1(a) (emphasis added).

The regulations set forth in this part are applicable whenever the Administrator is considering whether the specification of any defined area as a disposal site should be prohibited, denied, restricted, or withdrawn. These regulations apply to all existing, proposed or potential disposal sites for discharges of dredged or fill material into waters of the United States, as defined in 40 CFR 230.2. ...⁵¹

... [T]he term: ... (b) *Prohibit specification* means to prevent the designation of an area as a present or future disposal site. (c) *Deny or restrict the use of any defined area for specification* is to deny or restrict the use of any area for the present or future discharge of any dredged or fill material.⁵²

Similarly, in the 1979 preamble to its regulations implementing 404(c), EPA explained that “the statute clearly allows it to use 404(c) before an application is filed” and that “... [S]ection 404(c) authority may be exercised before a permit is applied for, while an application is pending, or after a permit has been issued. In each case, the Administrator may prevent any defined area in waters of the United States from being specified as a disposal site, or may simply prevent the discharge of any specific dredge or fill material into a specified area.”⁵³ Furthermore, in the Memorandum of Agreement between EPA and the U.S. Army Corps of Engineers delineating their shared responsibility under Section 404(q) of the Clean Water Act, the portion “address[ing] EPA’s exercise of its 404(c) veto authority expressly contemplates that the agency would act before the Corps issues a permit.”⁵⁴

Early action to establish restrictions on unsuitable disposal sites facilitates planning by developers and industry and eliminates frustrating situations in which someone spends time and money developing a project for an inappropriate site and learns at an advanced stage he or she must start over. As EPA explained in its preamble explanation of its regulations such a proactive approach “will facilitate planning by developers and industry ... eliminate frustrating situations in which someone spends time and money developing a project for an inappropriate site and learns at an advanced stage that he must start over [and] facilitate comprehensive rather than piecemeal protection of wetlands.”⁵⁵ Proactive use of 404(c) therefore stems from a concern for the plight of the applicant as well as a desire to protect the site before any adverse impacts occur.⁵⁶

V. CONCLUSION – EPA SHOULD ACT TO PROTECT BRISTOL BAY

Over the course of my career I have reviewed and been involved in many important decisions requiring the balancing of values allowing America to thrive economically, maintain and

⁵¹ *Id.* § 231.1(c) (emphasis added).

⁵² *Id.* § 231.2(b)-(c) (emphasis added).

⁵³ EPA, Denial or Restriction of Disposal Sites; Section 404(c) Procedures, 44 FED. REG. 58076, 58076-77 (Oct. 9, 1979) (emphasis added).

⁵⁴ Clean Water Act Section 404(q): Memorandum of Agreement Between the EPA and Dept. of Army, available at <http://water.epa.gov/lawsregs/guidance/wetlands/dispmoa.cfm>.

⁵⁵ 44 Fed. Reg. 58076, 58077 (Oct. 9, 1979).

⁵⁶ *Id.* (emphasis added).

enhance a high quality of life, and respect the views of citizens most likely to be impacted by proposed development, including those of indigenous populations. In my opinion, EPA can feel confident that any action it takes to protect Bristol Bay would be well-founded and based on EPA's utilization of best practices, sound science and judgment in preparing its BBWA. And in my experience, no better case can be made that EPA should take proactive action to protect Bristol Bay salmon, which in turn protects the people of the region and its bedrock sustainable economy. It is clear that the Bristol Bay watershed is truly unique, of national significance, and at great risk from mining of the Pebble deposit.

As authorized by Section 404(c), EPA action can take many forms, from an outright prohibition on permits to the placement of restrictions on future permits to ensure that Bristol Bay is protected. In my view, a reasonable path forward would be for EPA to use proactive restrictions in the form of performance standards to protect Bristol Bay from the proposed Pebble mine. In my time at EPA I worked with some of the nation's primary experts on hard rock mines and the implementation of Section 404 of the Clean Water Act. After retiring from the EPA, two of these experts – William Riley and Thomas Yocom – analyzed available information about the proposed Pebble mine and prepared a report that recommends that EPA establish three standards that are founded in EPA and Corps policy and practice:

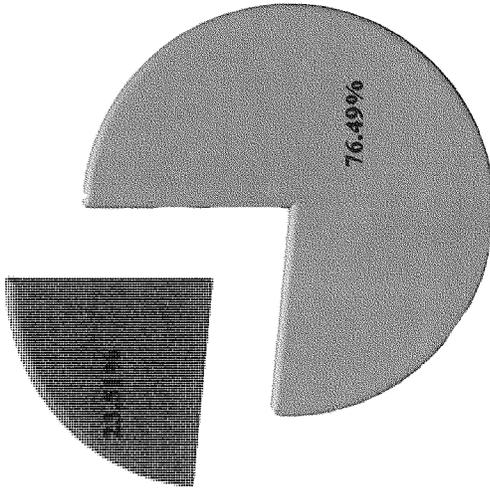
- no discharge of fill material to wild salmon spawning and rearing habitat,
- no discharge of toxic material to waters of the U.S., and
- no discharge of fill material that will require treatment of seepage and runoff in perpetuity.

Utilizing standards such as these, EPA can provide clarity and specificity in advance of any permit application. Issuing a 404(c) ruling will provide the Alaska Natives, commercial and sports fishing industries, and others who rely on Bristol Bay the certainty they all deserve. Further, it will provide companies with very clear parameters under which they could operate. Such action would be cost-effective, provide certainty to permit applicants as to what minimal requirements they would need to meet in order to qualify for a 404 permit, and provide reassurance to all other stakeholders with regard to future development and its impact on their lives and businesses.

As Senator Lisa Murkowski recently stated, the proposed Pebble mine has promoted "anxiety, frustration, and confusion" in many Alaska communities. EPA has the science foundation and legal authority to protect Bristol Bay from this proposed mine, and in my opinion, should do so right away.





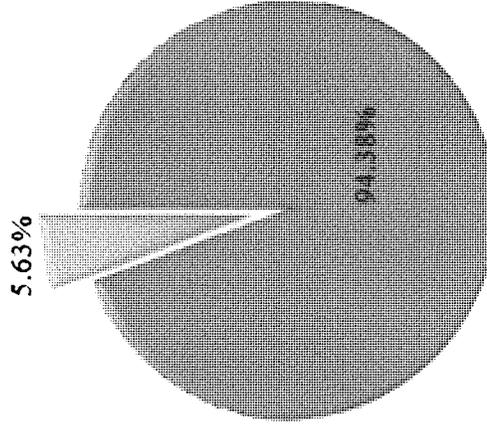


All Comments

■ Supportive of EPA Action (643,535 letters and petition signatures)

■ Not Supportive of EPA Action (197,777 letters and petition signatures)

66

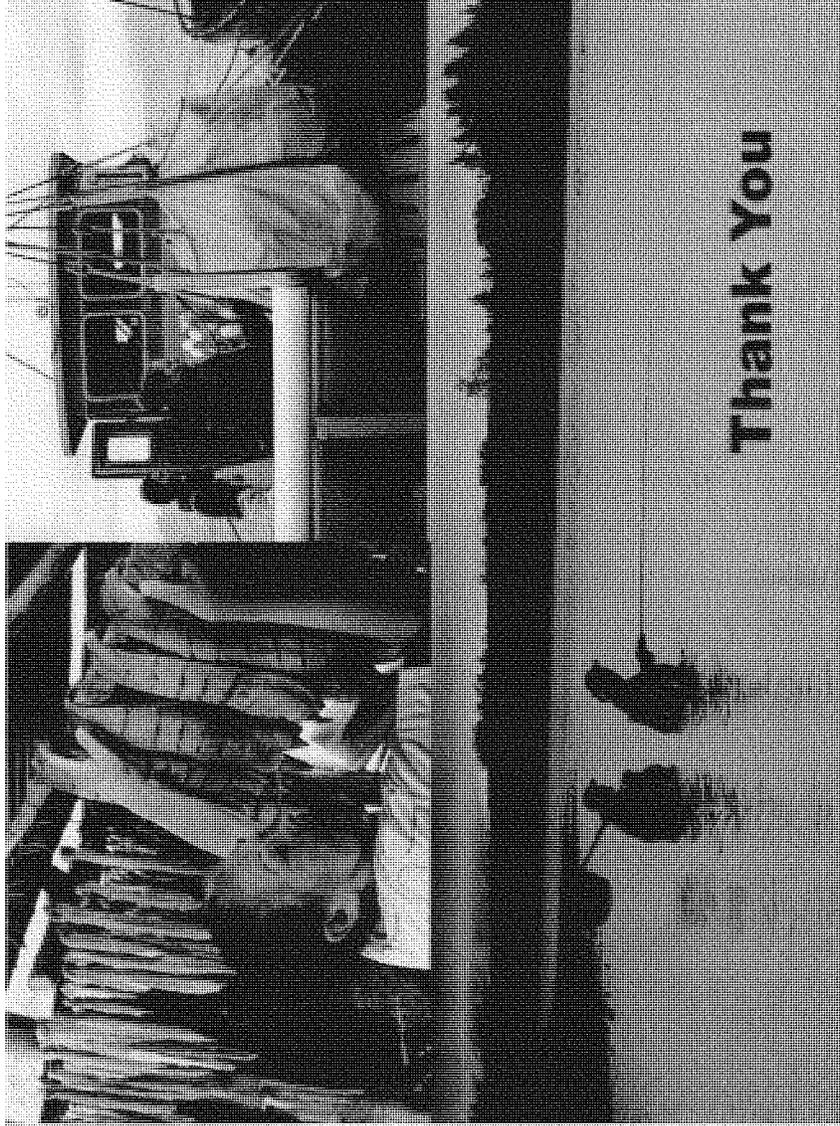


Bristol Bay Comments

■ Bristol Bay Comments Supportive of EPA Action (151 individual letters)

■ Bristol Bay Comments Not Supportive of EPA Action (9 individual letters)

* Numbers as of July 29th, 2013



Enclosures to
Statement for the Record

Before the U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Written testimony for the Subcommittee on Oversight hearing titled
“EPA’s Bristol Bay Watershed Assessment – A Factual Review of a
Hypothetical Scenario”

Submitted by:
Wayne Natri

July 29, 2013

Enclosures:

1. Wayne Natri Curriculum Vitae
2. William M. Riley and Thomas G. Yocom, *Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts*, Prepared for the Bristol Bay Native Corporation and Trout Unlimited, Executive Summary (December 2011)
3. Letter from Senator Maria Cantwell, to Elisse B. Walter, Chairman, U.S. Securities and Exchange Commission (March 18, 2013),
4. Institute of Social and Economic Research at the University of Alaska, *The Economic Importance of the Bristol Bay Salmon Industry* (May 13, 2013)
5. Overwhelming Public Support for EPA Action to Protect Bristol Bay Fact Sheet
6. Overwhelming Public Support for EPA Action to Protect Bristol Bay, Second Comment Period Fact Sheet
7. Letter from Dominick A. DellaSala, Ph.D. et, al, to President Barak Obama (April 26, 2013)

Wayne H. Nastri**Education:**

University of California, Irvine; B.S. (Biological Sciences), 1981
 California State University, Long Beach, 1981-1982, Molecular Genetics

Special Qualifications:

Prior to forming E4 Strategic Solutions, Mr. Nastri served as Senior Vice President and Co-Chair of the Environment and Energy practice of mCapital Management, a government affairs firm in Washington, DC. He also worked as a Senior Vice President with Dutko Worldwide on primarily environmental matters. Prior to that he was appointed by President George W. Bush as the Regional Administrator for the United States Environmental Protection Agency, Pacific Southwest Region (Region 9). Prior to his appointment as Regional Administrator, he served as the Governor's Appointee to the Governing Board of the South Coast Air Quality Management District. Mr. Nastri has been active on a variety of environmental issues over the last twenty years and has held a variety of environmental related positions within private industry, and state and federal government. In private industry, Mr. Nastri has worked in the environmental engineering and management field as an Environmental Engineer, Project Manager, Health and Safety Officer, and Operations Manager. He has worked with a variety of media including air, water, soil, and hazardous waste. Mr. Nastri served on Cal/EPA's (i.e., Department of Toxic Substances Control - DTSC) Site Mitigation External Advisory Committee. He also served (pro bono) as the Legislative Director for the California Environmental Business Council, **and was** Editor-in-Chief for the National Association of Environmental Professionals' Environmental News. Mr. Nastri has also served in various advisory committees to Cal EPA including CARB's ZEV implementation advisory committee, DTSC's Site Mitigation Program Advisory committee (where he co-chaired the Brownfields Sub-Committee) and Office of Environmental Health Hazards and Assessments - OEHHA's Private Site Manager's Advisory Committee. He has written and had published a variety of papers dealing with environmental audits, regulatory agencies and environmental mediation.

Professional Career:

Co-President and Co-Founder, E4 Strategic Solutions, Inc. 1/13 – Present. Works with clients on a variety of environmental and energy issues including technology development and application, compliance and enforcement, as well as messaging development, outreach and communications.

Senior Vice President, mCapital Management. 3/11 – 1/13. Opened mCapitol Management's Southern California office and Co-Chaired the Environment and Energy practice.

Senior Vice President, Dutko Worldwide. 2/09 – 3/11. Member of the Energy/Environment Team focusing on advancing Clean/Alternative Energy Technologies as well as providing regulatory counsel on environmental matters. Assists clients in working with federal, state and

local government on a variety of issues ranging from technology deployment to regulatory enforcement.

Regional Administrator, United States Environmental Protection Agency. 10/01 – 01/09: Responsible for policy development and operations in USEPA’s Pacific Southwest Region. Mr. Nastri had management oversight of nearly 1000 people and an annual budget exceeding \$700 million. As Regional Administrator, he worked closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. Responsibilities also included issuance of permits, compliance monitoring, and enforcement. Mr. Nastri worked closely with the public, industry and all levels of government in a wide variety of voluntary pollution prevention programs and energy conservation efforts. Under Mr. Nastri’s leadership, the region was instrumental in the development of diesel emission reduction efforts through development of the West Coast Diesel Collaborative. Mr. Nastri also focused the agency on developing strategies to address marine emissions associated with ocean-going vessels and ports.

President/co-founder, Environmental Mediation, Inc. 2/95-10/01: At EMI, Mr. Nastri was responsible for developing and implementing strategic solutions related to environmental issues including compliance audits, issue assessments, third party peer reviews, investigative/remedial project oversight, legislative monitoring and direct communications with the general media, as well as regulatory, legislative, and executive bodies. Mr. Nastri specialized in air and water quality issues as well as hazardous waste investigation and remediation issues. He was directly responsible for advising EMI clients on investigative techniques, data interpretation, identification and development of remedial options, and remedy acceptance and cost-effectiveness. Mr. Nastri also assists in the development and implementation of targeted communications strategies on behalf of EMI clients. In this capacity, he dealt extensively with media and community groups.

Vice President, The Jefferson Group, Inc. 12/91-10/94: Responsible for management of the California office of The Jefferson Group, a government and public affairs firm. Directed environmental negotiations with local, state and federal agencies as well as participating in regulatory and legislative monitoring. Provided technical advice and project oversight services for environmental projects involving air and water quality as well as site investigation and remediation.

Operations Manager, Program Manager, Branch Health & Safety Officer, RESNA, Inc. 2/88-11/91: Performed a wide variety of duties with RESNA including Phase I site assessments, regulatory compliance audits, negotiations with regulatory agencies related to site cleanup, development of preliminary endangerment assessments, oversight of all health and safety practices, and asbestos inspections. While at RESNA, Mr. Nastri worked on projects involving a wide range of contaminants including pesticides, metals, petroleum hydrocarbons, chlorinated hydrocarbons, polynuclear aromatics and cyanides.

Principal/Project Manager, Minirem Environmental Corporation. 6/86-1/88: Performed numerous audits and inspections on various manufacturing, warehouse, and commercial facilities. Developed the company's 40 hour Health and Safety training program and directly

participated in several hazardous waste cleanup projects (e.g., mercury decontamination, pesticide cleanups, PCB decontamination, etc.).

Principal and Co-founder, Frontline Technology. 11/85-5/86 Primarily responsible for marketing research and development of automated biomedical instruments (e.g., nephelometric, fluorescence polarization, photometric, enzyme-linked immunosorbent assays, etc.). Principal research and development role focused on optimization of chemical reactions for photometric analysis.

Project Manager, Ocean Scientific. 2/85-10/86: Managed company's largest research and development project for an automated clinical chemistry analyzer (\$6 million) consisting of eight engineers (mechanical, electrical, software) and three technicians. In addition to management responsibilities, Mr. Nastri also served as the project chemist and worked on optimizing photometric and nephelometric rates of reaction.

Laboratory Technologist, Research Associate, and Product Manager, ICL Scientific. 6/81-1/85: As a research and development chemist, Mr. Nastri was responsible for development of human protein isolation techniques, enzyme-linked immunosorbent assays, and therapeutic drug control panels. Using human serum samples, Mr. Nastri isolated and purified specific proteins (e.g., alpha-2-macroglobulin) through affinity chromatography. Antibodies were developed for the proteins and then utilized in combination with markers and optimized for instrument automation. Mr. Nastri was also responsible for product training to end users (hospital and laboratory personnel), conducting marketing research and development of product budgets and forecasts.

Publications:

- Nastri, Wayne H., Megan L. Cambridge, "Putting the Environmental Project Together: From Non-Compliance to Revitalization", Technical Papers of the 13th Annual Environmental Management and Technology Conference West, Advanstar Expositions, Duluth, MN, 1997, pp 87-90
- Nastri, Wayne H., "The Importance of Mediation", Technical Papers of the 12th Annual Environmental Management and Technology Conference West, Advanstar Expositions, Duluth, MN, 1996, pp 157-161
- Poulsen, Dennis R., Wayne H. Nastri, "Negotiating with Environmental Regulatory Agencies", Environmental News, Environmental Engineers & Managers Institute of AEE, Atlanta, GA, 1996, pp 1-3
- Nastri, Wayne H., "Challenges Associated with Environmental Audits", CEBC Chronicle, San Jose, CA, 1996, pp 8-10

Personal References

Available on request

MINING THE PEBBLE DEPOSIT:

Issues of 404 compliance and unacceptable environmental impacts

EXECUTIVE SUMMARY

A number of groups have petitioned the United States Environmental Protection Agency (EPA) to initiate action under Section 404(c) of the Clean Water Act (CWA) to protect the fisheries of Bristol Bay from large-scale hardrock mining of the Pebble deposit in the headwaters of the Kvichak and Nushagak River drainages in southeastern Alaska. The Bristol Bay Native Corporation and Trout Unlimited have asked the authors of this report – both Clean Water Act experts with long and distinguished governmental careers – to prepare this report analyzing known information about mining the Pebble ore deposit and the potential impacts of doing so, and recommending potential 404(c) restrictions.

In order for EPA to consider 404(c) action, there must be a proposed discharge of dredged or fill material into the "waters of the United States," including wetlands, and there must be a probability that the discharge(s) would result in unacceptable adverse environmental impacts as those are defined in federal regulations. In determining whether the potential impacts are unacceptable, EPA considers whether the proposed discharges would comply with federal regulations governing the issuance of permits for such discharges.

READ THE FULL REPORT www.savethebay.org/mining-the-deposit-report



BRISTOL BAY NATIVE CORPORATION
 Neil Smith - Land & Resources Manager
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TROUT UNLIMITED
 Sheron Brown - Bristol Bay Campaign Director
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"Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts" evaluates publicly available plans to mine the Pebble deposit, concluding that these plans would not comply with federal regulations. There appear to be less damaging alternatives available to the project sponsors to extract copper than mining the Pebble deposit. Even the smallest initial 25-year phase described by the project sponsors would result in the permanent destruction of well over 3200 acres of fish and wildlife habitat, including the loss of over 30 miles of stream habitats. The secondary and long-term downstream impacts may be far greater, as the mining operation would require the impoundment of billions of tons of waste rock and tailings, as well as the potential need for storage and perpetual treatment of very large quantities of waste water from seepage and runoff.

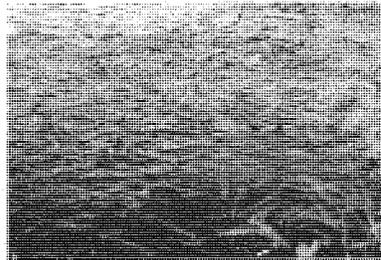
Compared to past projects where EPA determined impacts to fish and wildlife habitats were unacceptable pursuant to its 404(c) authority, the impacts of mining the Pebble deposit are unparalleled. The report concludes that from a regulatory standpoint, these impacts are environmentally unacceptable.

The report recommends restrictions that EPA could proactively impose on regulated discharges of dredged or fill material (i.e., mine waste) from mining the Pebble deposit. These restrictions include prohibitions on discharges of dredged or fill material:

- 1) into salmon spawning and rearing habitat;
- 2) that fails testing requirements to demonstrate that the material is not toxic to aquatic life; and
- 3) where its runoff or seepage would require treatment in perpetuity.

These restrictions are rooted in well-established precedents and long-standing practices and policies within the CWA 404 program.

Asserting these restrictions proactively could further the goals of the Clean Water Act by providing certainty and associated time and money savings to industry and the public- including the indigenous peoples of the region to whom the United States has a trust responsibility- as to what will be required of any proposed plan to mine that deposit.



Terry Gunn

ABOUT THE AUTHORS

William M. Riley had a distinguished career with USEPA working for nearly 25 years in the Seattle Office (Region 10). He retired in 2007 as the Director of the Office of Environmental Assessment and previously served as National Environmental Policy Act Coordinator, Regional Mining and Aquatic Resources Unit Manager.

Thomas G. Yocom is a former National Wetlands Expert for the U.S. Environmental Protection Agency, retiring in 2005. He previously served as a fishery biologist for the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. He has been a Wetlands Regulatory Scientist for the Huffman-Broadway Group since 2006.

MARIA CANTWELL
WASHINGTON

United States Senate
WASHINGTON, DC 20510-4705

COMMITTEES:
COMMERCE, SCIENCE, AND
TRANSPORTATION
ENERGY AND NATURAL
RESOURCES
FINANCE
INDIAN AFFAIRS
SMALL BUSINESS

March 18, 2013

The Honorable Elisse B. Walter
Chairman
U.S. Securities and Exchange Commission
100 F St., N.E.
Washington, DC 20549-1090

Dear Chairman Elisse B. Walter,

I am writing to express concern about potential discrepancies in the filing materials provided to the U.S. Securities and Exchange Commission (SEC) by Northern Dynasty Minerals, the Canadian company proposing to construct the Pebble Mine in the headwaters of Bristol Bay, Alaska. Specifically, Northern Dynasty may have provided inaccurate information regarding potential mine specifications and other aspects of their project to mislead investors, many of whom live in my state, and in their filing documents at the SEC.

Northern Dynasty Minerals submitted its "Wardrop Report" to meet filing requirements with the SEC on February 24th, 2011.^[1] Northern Dynasty subsequently informed the SEC and investors that the proposed Pebble Mine design and specifications are feasible and permissible in a press release from 2011 that is also currently on file with your agency.^[2] Concurrent with this filing, the EPA has been conducting a watershed assessment to determine potential long term impacts to the environment and its economic and cultural significance, as is required for this type of mining project. The Watershed Assessment is a science based document with an ongoing public process. According to EPA's Draft Watershed Assessment, the same Wardrop Report submitted to the SEC was used to inform potential future mining scenarios in its Bristol Bay Watershed Assessment.

^[1] <http://www.sec.gov/Archives/edgar/data/1164771/000106299311000722/0001062993-11-000722-index.htm>

^[2] <http://www.sec.gov/Archives/edgar/data/1164771/000106299311000722/exhibit99-1.htm>

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According to EPA's Draft Watershed Assessment released on May 18, 2012, "An Assessment of the Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" (EPA910-R-12-004d), the proposed Pebble Mine threatens Bristol Bay salmon and the thousands of jobs which rely on them.^[3] Bristol Bay salmon support a multi-million dollar commercial fishing industry that includes thousands of Washington state jobs. In total, Bristol Bay produces roughly half of the world's wild sockeye salmon with a total value of over \$480 million dollars, and supporting over 14,000 jobs. In addition to commercial fisheries, recreational salmon fisheries yield \$75 million for Washington state businesses alone. Bristol Bay salmon are integral to subsistence harvest as well. The annual estimated net economic value of subsistence harvest of salmon in Bristol Bay is between \$84.3 and \$193.7 million.^[4]

Ecosystem degradation is of serious concern to many investors. Last year, nearly 30 investor organizations representing over \$170 billion in assets urged the EPA to complete a scientific assessment to determine the Pebble Mine's potential impact on salmon. These investor organizations hold over 13 million shares in Anglo American PLC, a UK-based mining company with a 50% stake in the proposed Pebble Mine.^[5]

Recently, however, the Northern Dynasty Minerals referred to the very same Wardrop Report as a "fantasy proposal" when it delivered formal testimony to the EPA in August of 2012.^[6] This contradictory use of the Wardrop Report is extremely concerning as it is unclear whether Northern Dynasty Minerals is misleading investors by attracting investment for a "fantasy proposal" or it is intentionally providing fraudulent testimony to the EPA.

^[3] EPA's Draft Bristol Bay Watershed Assessment, "An Assessment of the Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska," May, 2012, available at: http://www.epa.gov/ncea/pdfs/bristolbay/bristol_bay_assessment_erd_2012_vol1.pdf

^[4] An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska; Appendix E: Bristol Bay Wild Salmon Ecosystem Baseline Levels of Economic Activity and Values, available at:

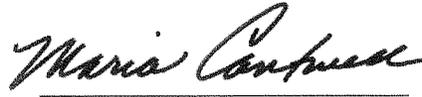
<http://cfpub.epa.gov/ncea/bristolbay/recordisplay.cfm?deid=241743>

^[5] Trillium Asset Management, "Largest Open Pit Mine in North America Cause for Investor Concerns— Investors Representing \$170 Billion Urge EPA to Safeguard Alaska's Bristol Bay," April 12, 2011, available at: <http://www.trilliuminvest.com/news-articles-category/advocacy-news-articles/largest-open-pit-mine-in-north-america-cause-for-investor-concerns-%e2%80%93-investors-representing-170-billion-urge-epa-to-safeguard-alaska-%e2%80%99s-bristol-bay/>

^[6] Dan Fiorucci, "Public Weighs In on Pebble Mine at EPA Hearing," August 7, 2012, available at: http://www.ktuu.com/news/ktuu-public-gets-one-more-chance-to-weigh-in-on-pebble-before-scientists-do-20120807_0,7102116.story

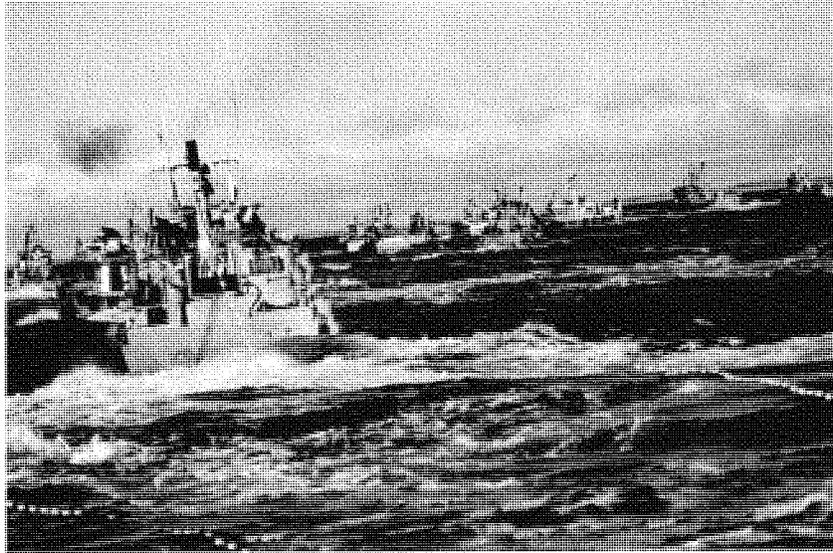
I urge you to investigate this matter immediately. Due to the importance of this issue to Washington State and the Pacific Northwest, I would greatly appreciate being informed about all developments on this matter.

Sincerely,

A handwritten signature in black ink that reads "Maria Cantwell". The signature is written in a cursive, flowing style.

Senator Maria Cantwell

The Economic Importance of the Bristol Bay Salmon Industry



prepared for the

Bristol Bay Regional Seafood Development Association

by

Gunnar Knapp
Mouhcine Guetttabi
Scott Goldsmith



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April 2013

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THE ECONOMIC IMPORTANCE OF THE BRISTOL BAY SALMON INDUSTRY

EXECUTIVE SUMMARY

By any measure, the Bristol Bay sockeye salmon fishery is very large and valuable. It is the world's most valuable wild salmon fishery, and typically supplies almost half of the world's wild sockeye salmon. In 2010, harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities **created \$1.5 billion** in output or sales value across the United States.

In 2010, Bristol Bay salmon fishermen harvested 29 million sockeye salmon worth \$165 million in direct harvest value alone. That represented 31% of the total Alaska salmon harvest value, and was greater than the total value of fish harvests in 41 states. Salmon processing in Bristol Bay increased the value by \$225 million, for a total first wholesale value after processing of \$390 million. The total value of Bristol Bay salmon product exports in 2010 was about \$250 million, or about 6% of the total value of all U.S. seafood exports.

In 2010, the Bristol Bay sockeye salmon fishery supported 12,000 fishing and processing jobs during the summer salmon fishing season. Measuring these as year-round jobs, and adding jobs created in other industries, the Bristol Bay salmon fishery created the equivalent of almost 10,000 year-round American jobs across the country, and brought Americans \$500 million in income. For every dollar of direct output value created in Bristol Bay fishing and processing, more than two additional dollars of output value are created in other industries, as payments from the Bristol Bay fishery ripple through the economy. These payments create almost three jobs for every direct job in Bristol Bay fishing and processing.

United States domestic consumption of Bristol Bay frozen sockeye salmon products has been growing over time as a result of sustained and effective marketing by the industry, new product development and other factors. This growth is likely to continue over time, which will result in even greater output value figures for the industry's economic impacts across the U.S.

The economic importance of the Bristol Bay salmon industry extends far beyond Alaska, particularly to the West Coast states of Washington, Oregon and California.

- » About one-third of Bristol Bay fishermen and two-thirds of Bristol Bay processing workers live in West Coast states.
- » Almost all major Bristol Bay processing companies are based in Seattle.
- » Most of the supplies and services used in fishing and processing are purchased in Washington state.
- » Significant secondary processing of Bristol Bay salmon products occurs in Washington and Oregon.

The economic importance of the Bristol Bay salmon industry goes well beyond the value, jobs, and income created by the fishing and processing which happens in Bristol Bay. More value, jobs and income are created in *downstream industries* as

Bristol Bay fishing boats



Bristol Bay salmon are shipped to other states, undergo further processing, and are sold in stores and restaurants across the United States. Still more jobs, income and value are created in other industries through *multiplier impacts* as Bristol Bay fishermen and processors and downstream industries purchase supplies and services, and as their employees spend their income.

Economic Impacts of the Bristol Bay Salmon Industry in 2010

| Annual average employment: 9,800 jobs | | | Output value: \$1.5 billion | Income: \$500 million |
|---|--|---------------|-----------------------------|-----------------------|
| Fishing & processing in Bristol Bay | | | | |
| 12,000 seasonal jobs (=2,000 annual jobs) | | \$390 million | | \$140 million |
| Shipping, secondary processing & retailing after Bristol Bay | | | | |
| 1,000 jobs | | \$110 million | | \$40 million |
| Multiplier impacts in other industries | | | | |
| 6,800 jobs | | \$970 million | | \$320 million |

Overview of the Bristol Bay Salmon Industry

Bristol Bay is located in southwestern Alaska. Each year tens of millions of sockeye salmon return to spawn in the major river systems which flow into Bristol Bay. The large lakes of the Bristol Bay region provide habitat for juvenile sockeye salmon during their first year of life.

A Bristol Bay salmon fisherman



For well over a century, Bristol Bay salmon have supported a major salmon fishing and processing industry. Most of the harvest occurs between mid-June and mid-July. At the peak of the fishing season, millions of salmon may be harvested in a single day.

Only holders of limited entry permits (issued by Alaska’s state government) and their crew are allowed to fish in Bristol Bay. There are permits for two kinds of fishing gear: drift gillnets (operated from fishing boats) and set gillnets (operated from shore). There are approximately 1,860 drift gillnet permits and approximately 1,000 set net permits. Drift gillnet permits average much higher catches and account for most of the total catch. About one-third of the permit holders are from West Coast states.

| Bristol Bay Salmon Industry Permit Holders, by State of Residence, 2010 | | | | | | |
|---|--------|------------|--------|------------|--------------------------|-------|
| Permit Type | Alaska | Washington | Oregon | California | Other States & Countries | Total |
| Drift Gillnet | 845 | 642 | 98 | 109 | 156 | 1,850 |
| Set Gillnet | 629 | 127 | 38 | 34 | 99 | 927 |
| Total | 1,474 | 769 | 136 | 143 | 255 | 2,777 |

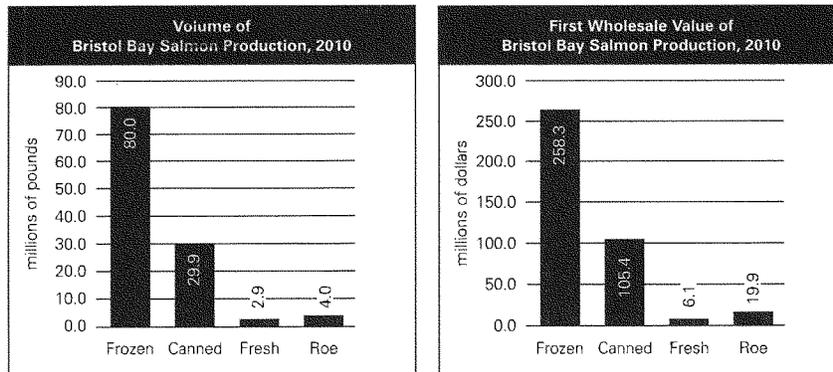
For each permit holder, who is usually a captain, there are typically two to three additional crew members. About 7,000 fishermen fished in Bristol Bay in 2010.

The Bristol Bay salmon harvest is processed by about 10 large processing companies and 20 smaller companies employing about 5,000 processing workers at the peak of the season in both land-based and floating processing operations. Most of the workers are from other states and live in bunkhouse facilities at the processing plants.

Bristol Bay salmon are processed into four major primary products: frozen salmon, canned salmon, fresh salmon, and salmon roe. Frozen salmon includes both headed and gutted (H&G) salmon as well as salmon fillets.



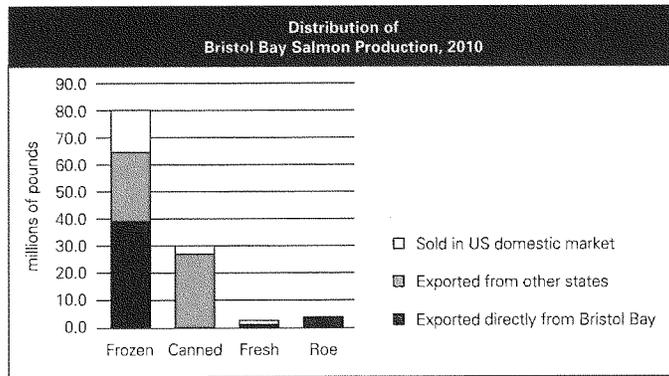
Frozen and canned salmon account for most of the volume and value of Bristol Bay salmon production.



About half of Bristol Bay frozen salmon is exported directly from Bristol Bay, primarily to Japan and China. Most of the remaining frozen salmon is shipped to Washington state where much of it is repackaged and/or reprocessed into secondary products such as fillets, portions and smoked salmon. Some of these products are exported while the rest are sold in the US domestic market.

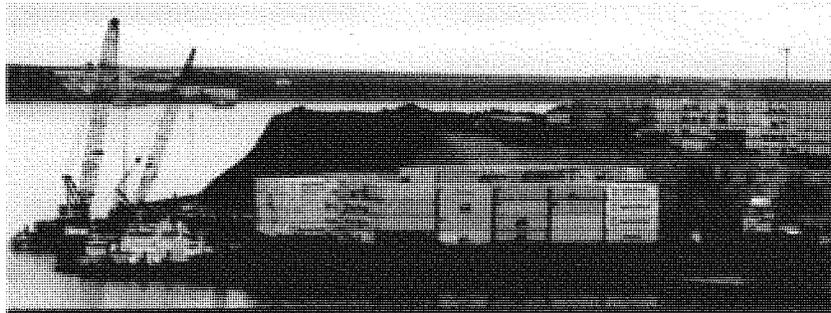
Bristol Bay canned salmon is shipped to warehouses in Washington and Oregon where it is stored, labeled, and sold by processors over the course of the year, mostly to the United Kingdom and other export markets.

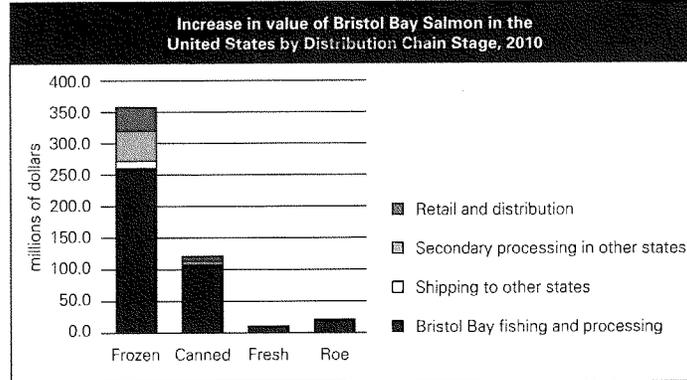
The total value of Bristol Bay salmon product exports in 2010 was about \$252 million, or about **6% of the total value of all U.S. seafood exports.**



The value of Bristol Bay salmon increases at each stage in the distribution chain. Because a large share is exported, most of the increase in value in the United States occurs in Bristol Bay fishing and processing. About one-fifth of the total increase in value occurs in later stages of the distribution chain.

Containers for shipping Bristol Bay salmon products





Economic Impacts of the Bristol Bay Salmon Industry

Economic impacts of the Bristol Bay salmon industry are the jobs, income and output value created by the fishery—or the jobs, income and output value that would not exist if the industry did not exist. Economic impacts include:

- » *Direct economic impacts:* Jobs, income and output value in businesses directly involved in harvesting, processing, and retailing Bristol Bay salmon.
- » *Multiplier economic impacts:* Jobs, income and output value created in other industries as Bristol Bay fishermen, processors and downstream industries purchase supplies and services, and as their employees spend their income.

We estimated both direct and indirect economic impacts for three stages of the distribution or value chain for Bristol Bay salmon in the United States:

- » Fishing and primary processing in Bristol Bay
- » Shipping to other states and secondary processing
- » Distribution and retailing (nationwide transportation, wholesaling and retailing of Bristol Bay salmon products in stores and restaurants throughout the United States)¹

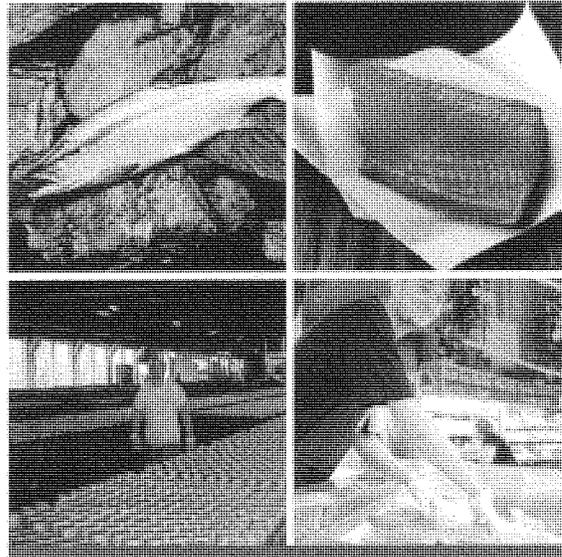
¹The economic effects of distribution and retailing of Bristol Bay salmon are technically economic contributions rather than economic impacts, because if Bristol Bay salmon did not exist stores would sell other products instead, which would still create jobs, income and output value. Because no data are available for Bristol Bay salmon retail volumes and prices, our estimates of economic contributions for this stage are based on the simple assumption that distribution and retailing increases the value of Bristol Bay salmon products by an average of 50%.

We estimated economic impacts for the United States as well as for Alaska, Washington, Oregon and California in 2010. To estimate economic impacts, we used IMPLAN input-output modeling software which tracks the ripple effects of payments between industries at both the national level as well as within individual states.

Our economic impact estimates do not account for the fact that Bristol Bay salmon fishing and processing helps to cover a significant share of the fixed costs of many Alaska and Pacific Northwest fishermen and processors, or for the economic benefits of Bristol Bay salmon exports in helping to offset the large United States seafood trade deficit. Thus our estimates of the economic importance of the Bristol Bay seafood industry are conservative.

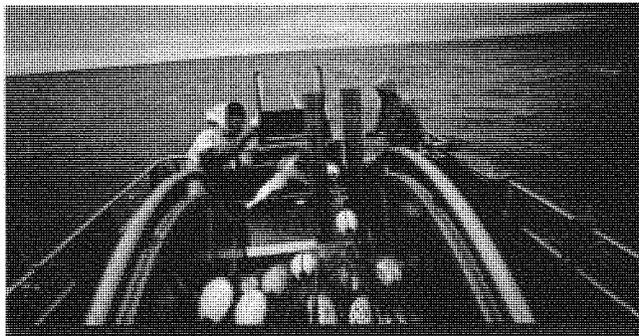
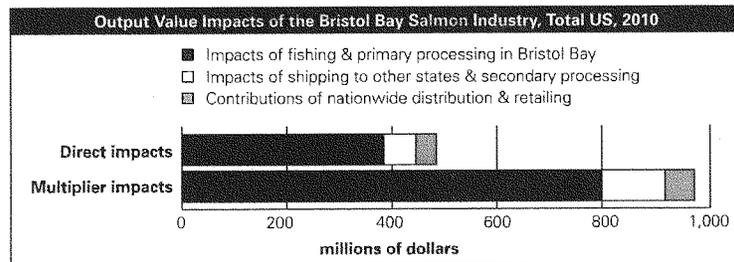
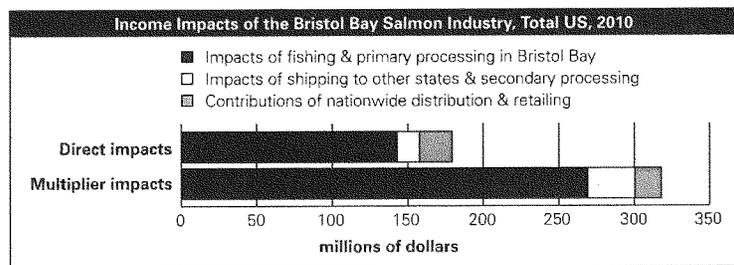
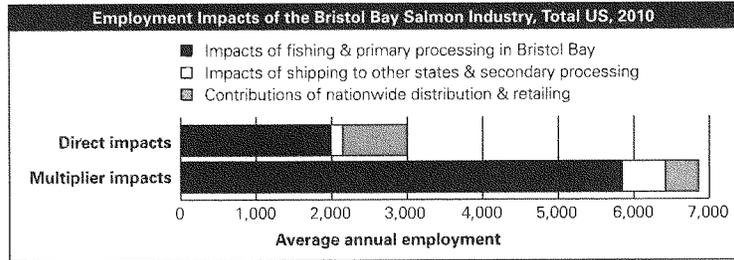
In 2010, almost 12,000 people worked in the Bristol Bay salmon industry during the fishing season, which occurs primarily in June and July. Of these, about 4,400 were Alaska residents, while most of the others were residents of West Coast states.

To compare Bristol Bay seasonal jobs lasting about two months with other year-round employment impacts, we converted them to annual average employment by dividing seasonal employment by six. Expressed as annual average employment, in 2010, almost 10,000 American jobs were created in harvesting, processing, and retailing Bristol Bay salmon and through the multiplier effects of these activities.



In 2010, Americans earned \$500 million from harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities.

| Seasonal Jobs in the Bristol Bay Salmon Industry, by State of Residence, 2010 | | | | | | |
|---|---------------|--------------|--------------|--------------|------------|--------------|
| | Total US | Alaska | Washington | Oregon | California | Other States |
| Fishing | 7,035 | 3,734 | 1,948 | 362 | 345 | 646 |
| Processing | 4,886 | 635 | 1,279 | 1,781 | 208 | 983 |
| Total | 11,921 | 4,369 | 3,227 | 2,143 | 553 | 1,629 |



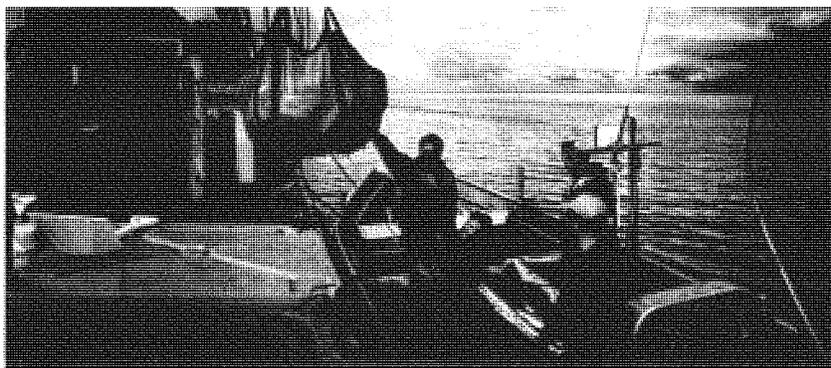
In 2010, \$1.5 billion in output value was created in the United States in harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities.

The tables below provide additional details of our economic impact estimates. A large share of the impacts occur in West Coast states—reflecting the fact that about one-third of Bristol Bay fishermen and two-thirds of Bristol Bay processing workers live in West Coast states; almost all major Bristol Bay processing companies are based in Seattle; most of the supplies and services used in fishing and processing are purchased from Washington; and significant secondary processing of Bristol Bay salmon products occurs in Washington and Oregon.

| Employment Impacts of the Bristol Bay Salmon Industry, 2010 (annual average employment) | | | | | | | |
|---|----------------------------|--------------|---|--------------|------------|------------|--------------|
| Impact Driver | | Total US | AK | WA | OR | CA | Other States |
| Fishing and primary processing in Bristol Bay | Direct impacts* | 1,987 | 728 | 538 | 92 | 357 | 271 |
| | Multiplier impacts | 5,852 | 1,338 | 2,237 | 163 | 249 | 1,865 |
| | Total impacts | 7,839 | 2,066 | 2,775 | 255 | 606 | 2,137 |
| Shipping to other states and secondary processing | Direct impacts | 191 | | 156 | 15 | | |
| | Multiplier impacts | 563 | | 229 | 24 | | |
| | Total impacts | 754 | | 385 | 39 | | |
| Total impacts | | 8,592 | | 3,160 | 294 | | |
| Nationwide distribution and retailing** | Direct contributions | 787 | Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. *Direct employment impacts of fishing and processing in Bristol Bay were calculated by dividing seasonal employment by 6. **Based on conservative assumption that distribution and retailing increases value by 50%. | | | | |
| | Multiplier contributions | 425 | | | | | |
| | Total contributions | 1,212 | | | | | |
| Total impacts & contributions | | 9,804 | | | | | |

| Income Impacts of the Bristol Bay Salmon Industry, 2010 (millions of dollars) | | | | | | | |
|---|----------------------------|------------|--|------------|-----------|-----------|--------------|
| Impact Driver | | Total US | AK | WA | OR | CA | Other States |
| Fishing and primary processing in Bristol Bay | Direct impacts | 144 | 50 | 48 | 8 | 19 | 18 |
| | Multiplier impacts | 268 | 62 | 98 | 7 | 12 | 90 |
| | Total impacts | 412 | 112 | 146 | 15 | 31 | 108 |
| Shipping to other states and secondary processing | Direct impacts | 13 | | 11 | 1 | | |
| | Multiplier impacts | 30 | | 12 | 1 | | |
| | Total impacts | 43 | | 23 | 2 | | |
| Total impacts | | 455 | | 169 | 17 | | |
| Nationwide distribution and retailing* | Direct contributions | 23 | Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. *Based on conservative assumption that distribution and retailing increases value by 50%. | | | | |
| | Multiplier contributions | 20 | | | | | |
| | Total contributions | 42 | | | | | |
| Total impacts & contributions | | 497 | | | | | |

| Output Value Impacts of the Bristol Bay Salmon Industry, 2010 (millions of dollars) | | | | | | | |
|---|----------------------------|--------------|--|------------|-----------|-----------|--------------|
| Impact Driver | | Total US | AK | WA | OR | CA | Other States |
| Fishing and primary processing in Bristol Bay | Direct impacts | 390 | 127 | 198 | 13 | 19 | 32 |
| | Multiplier impacts | 801 | 161 | 288 | 19 | 37 | 297 |
| | Total impacts | 1,191 | 288 | 486 | 32 | 56 | 329 |
| Shipping to other states and secondary processing in WA & OR | Direct impacts | 68 | | 56 | 4 | | |
| | Multiplier impacts | 111 | | 37 | 3 | | |
| | Total impacts | 179 | | 93 | 6 | | |
| Total impacts | | 1,370 | | 580 | 38 | | |
| Nationwide distribution and retailing* | Direct contributions | 46 | Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. Output value allocated among states based on the residency of fishing and processing workers and business locations. * Based on conservative assumption that distribution and retailing increases value by 50%. | | | | |
| | Multiplier contributions | 61 | | | | | |
| | Total contributions | 106 | | | | | |
| Total impacts & contributions | | 1,476 | | | | | |

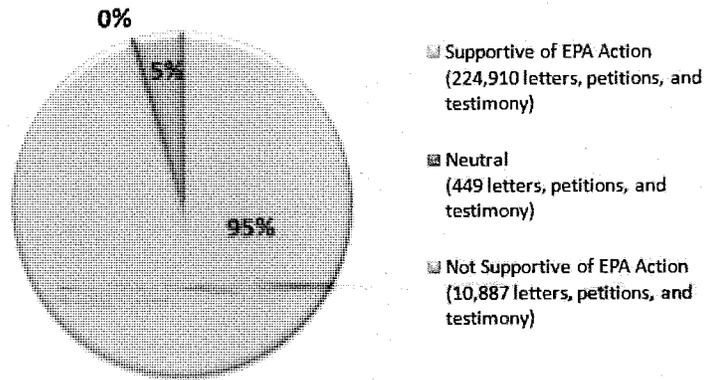


Conclusions

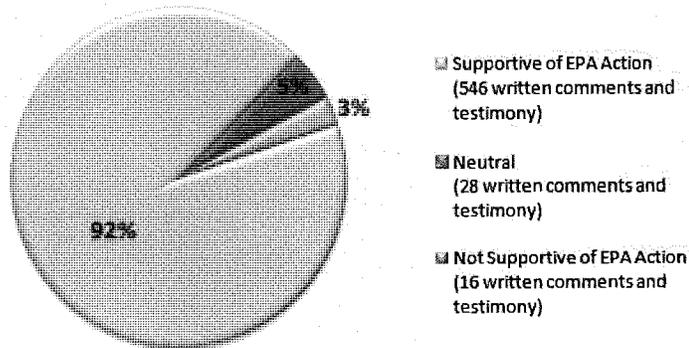
The Bristol Bay salmon fishery is the world's most valuable wild salmon fishery. It contributes well over \$1 billion in value and about 10,000 jobs to the United States economy every year, across multiple industries and states. It has operated continuously for more than 120 years and can continue to provide significant and widespread economic benefits across multiple industries and states for the foreseeable future.

Overwhelming Public Support for EPA Action to Protect Bristol Bay¹

All Public Comments & Public Hearing Testimony on the EPA Draft Bristol Bay Watershed Assessment



Bristol Bay Region Public Comments and Testimony



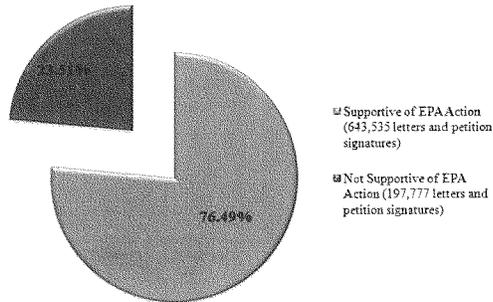
For additional information: Daniel Cheyette, Bristol Bay Native Corporation, (907) 278-3602

¹ Numbers compiled from all individual written public comments, mass mailings, and public hearing testimony found in the EPA Bristol Bay Watershed Assessment docket at www.regulations.gov. Charts exclude late comments. Bristol Bay regional chart excludes all comments submitted via national organizations. "Neutral" refers to comments that do not take a position on EPA involvement or 404c action, i.e. some science reports and comments, neutral requests for extension of time, etc.

Overwhelming Public Support for EPA Action to Protect Bristol Bay¹

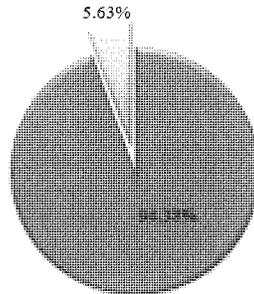
An Analysis of the Second Public Comment Period of the EPA Bristol Bay Watershed Assessment

All Public Comments on EPA Bristol Bay Watershed Assessment, Second External Review Draft



Comments from Bristol Bay Region on EPA Watershed Assessment, Second External Review Draft

- ☑ Bristol Bay Comments Supportive of EPA Action (151 individual letters)
- ☐ Bristol Bay Comments Not Supportive of EPA Action (9 individual letters)



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¹ Numbers compiled from an analysis of all individual written public comments, mass mailings, and petitions available for review as of July 29, 2013 on the EPA Bristol Bay Watershed Assessment Revised External Review Draft docket at www.regulations.gov. Bristol Bay regional chart excludes all mass mailings and petition signatures submitted via national organizations.

April 26, 2013

President Barack Obama
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Mr. President:

As scientists with backgrounds in ecology and other natural resource-related disciplines, we are writing to express our deep concerns with the prospect of large-scale mining in the unique and biologically rich Bristol Bay watershed of Southwest Alaska.

We also write to thank the Environmental Protection Agency (EPA) for preparing a comprehensive assessment of the potential impacts to fisheries, wildlife and native cultures from large-scale gold and copper mining, such as may be proposed at the Pebble Mine. This approach of reviewing the assets and vulnerabilities of a valuable and high-functioning ecosystem and considering up front a range of possible mining scenarios should help the agency make sound policy recommendations.

The watershed assessment is particularly important for protecting a region in which a healthy and diverse fish population is central to the wellbeing of people, other wildlife, the economy and a subsistence way of life that dates back thousands of years. The agency is to be commended for initiating this effort rather than waiting to rely on the narrow scope of review that might be taken when a single permit application is filed.

In our view, EPA's draft *Bristol Bay Watershed Assessment* aptly identifies the outstanding ecological and cultural values at risk from a mine on the scale of the Pebble discovery or from other mine operations that would likely follow an initial mine opening in the region. The Bristol Bay area, comprised of the Nushagak and Kvichak river watersheds, the headwaters of three other pristine rivers, and the largest undeveloped lake on Earth, is one of the most productive, beautiful, and bountiful landscapes on the continent. Undeveloped watersheds are a rarity throughout the world and Bristol Bay's pristine watersheds support a world-class salmon fishery, which includes all five salmon species native to Alaska and the largest sockeye salmon runs in the world. Annual salmon returns, fully unsupported by hatcheries, typically average in the millions. The Bristol Bay Sport Management Area also supports abundant sport and subsistence fisheries. Together, this keystone fishery and the diverse habitats of the region are home to abundant populations of brown bears, gray wolves, and bald eagles. Caribou and moose frequent the areas' wetlands.

We believe that the geographic scope of the assessment is appropriate not only because the Kvichak and Nushagak basins include roughly half of the total land area that drains to the Bay, but also because there are currently mine leases on more than half a million acres in these highly productive basins. In addition, the metal-bearing waste produced by a single mine could, as EPA notes, run upwards of seven billion tons, or as other scientists have estimated, even

exceed ten billion tons¹. The need to manage and permanently contain a volume of mine tailings even close to these numbers in a harsh yet vulnerable environment would be an enormous challenge.

We would also note that the mine impact scenarios used to estimate risks to fisheries, though based on an industry report for the Pebble prospect,² may actually be overly optimistic about such challenges and about the overall management of a large mine. This is particularly important given the sensitivity of aquatic life to very low levels of metals and the potential for effects that could result in a long-term decline of fish populations. In addition, it appears that true cumulative impacts were underestimated, as the project scope was limited and did not include full impacts related to power, port, transportation, and additional human infrastructure development that would likely occur.

We understand that no specific mining proposal has yet been put forward for approval and that the agency has been criticized for utilizing hypothetical mine scenarios for assessment of impacts. We disagree strongly with these criticisms and believe that the use of credible mining scenarios is appropriate for this sort of forward-looking analysis. We would also note that the nature of metal mining, with its high potential for encountering unanticipated conditions, means that nearly any major mine plan is subject to change. Indeed, the footprints of many mines that have operated over decades are far larger than initially planned.

Again, we applaud EPA for its effort to establish a solid science-based summary from which to evaluate likely impacts to Bristol Bay from large-scale mine development. We believe that the preponderance of evidence shows clearly that gold and copper mining in the Bristol Bay watershed threatens a world-class fishery and uniquely rich ecosystem, and we urge the Administration to act quickly to protect the area.

Sincerely,

(*affiliations provided for identification purposes only)

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¹ Ghaffari, H., R. S. Morrison, M. A. Deruijeter, A. Živković, T. Hantelmann, D. Ramsey, and S. Cowie. 2011. Preliminary assessment of the Pebble Project, Southwest Alaska. Wardrop, Vancouver, BC.

² *Ibid.*

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Wayne Nastri co-founded E4 at the start of 2013 and advises clients on a wide range of environmental issues. Prior to starting E4 Strategic Solutions, he served for nearly eight years as the Region 9 Administrator for the US EPA, which has jurisdiction over California, Arizona, Nevada, Hawaii and the Pacific Islands. Wayne also served on the Governing Board of California's South Coast Air Quality Management District (SCAQMD). Wayne has served in various advisory committees to Cal EPA including the California Air Resources Board (CARB) zero emission vehicle (ZEV) implementation advisory committee, Department of Toxic Substances Control Site Mitigation Program Advisory committee (where he co-chaired the Brownfields Sub-Committee) and Office of Environmental Health Hazards and Assessments (OEHHA)'s Private Site Manager's Advisory Committee. He has written and had published a variety of papers dealing with environmental audits, regulatory agencies and environmental mediation.

For six years prior to his appointment at EPA, Wayne was president and co-founder of Environmental Mediation, Inc (EMI). At EMI, he was responsible for developing and implementing strategic solutions related to environmental issues including compliance audits, issue assessments, third party peer reviews, investigative/remedial project oversight, legislative monitoring and direct communications with the general media, as well as regulatory, legislative, and executive bodies. Wayne specialized in air and water quality issues as well as hazardous waste investigation and remediation issues

Chairman BROUN. Thank you, Mr. Nastri.
Now Mr. McGroarty, you are recognized for five minutes.

**TESTIMONY OF MR. DANIEL MCGROARTY, PRESIDENT,
AMERICAN RESOURCES POLICY NETWORK**

Mr. MCGROARTY. Dr. Broun, Ranking Member Maffei, members of the Committee, thank you for the opportunity to testify today. I am Dan McGroarty, President of the American Resources Policy Network, an organization dedicated to exploring the importance of U.S. resource development and the dangers of foreign resource dependence.

I am formerly Director and Officer of U.S. Rare Earths and President of Carmot Strategic, an issues management firm. I also want to share with the Committee that since early 2013, ARPN has been asked to participate on a volunteer basis in a series of metal-specific sessions convened by the DoD related to the mandated National Defense Stockpile Review.

The Pebble deposit, subject of the EPA assessment, is the largest potential copper mine in the United States. America's lack of this critical metal has been noted in a DoD report as causing "a significant weapon system delay." Pebble also has potential for the recovery of other metal: molybdenum, used as an alloy in gun barrels of many times, uranium, used in high-performance jet fighters, and selenium tellurium, used in solar panels that could not only lead the green revolution but provide a portable power source for U.S. troops.

As a matter of public policy, Pebble should be treated no differently than any other potential resource project under the Federal permitting process established by the National Environmental Policy Act—NEPA. EPA's Bristol Bay watershed assessment prior to Pebble seeking a single permit creates a chilling effect on investment in U.S. resource extraction. A preemptive permit denial based on the assessment could deprive America of reliable sources of critical metals responsibly extracted under American regulations. In my view, every issue raised in the assessment could be reviewed within the existing NEPA process. There is no issue that requires a new pre-permitting process with the power to prevent a proposed project from entering NEPA.

In terms of the substance of the watershed assessment, a key underlying study used by EPA is the Earthworks-funded study, Kuipers Maest 2006. The global water and environmental management firm, Schlumberger, has conducted an analysis of this study on behalf of the Northwest Mining Association. The results are troubling.

First, Schlumberger could not replicate the hydrological data presented in the Kuipers Maest study, a fundamental tenet of sound scientific research. Second, Schlumberger found a backward bias as the study drew on a preponderance—their word—of case studies taken from mines that operated before the modern regulatory era. Does it constitute sound science to argue against a proposed mine based on what happened at other mines operated to other standards 20, 30, 40 years ago? Would we use such a backward biased yardstick to justify or judge the safety of a new airplane, a new car, a new medicine?

I will turn now from substance to sourcing, serious questions concerning the impartiality of experts relied upon by EPA, once again, the subject of concern as worked on by Ann Maest and Stratus Consulting. Many of us know the Chevron case in Ecuador where plaintiffs were awarded an \$18 billion judgment. In response, Chevron brought racketeering claims against members of the plaintiffs' team, including Maest and Stratus, arguing that they manipulated data to show contamination where none existed. How did they know this? The plaintiffs' team invited a film crew to make a documentary generating hours of outtakes that were revealed in the discovery process. Here is one example.

[Video.]

The subscript said, "Facts do not exist. Facts are created." That is the lawyer who directed the research. There is laughter that follows that from Ann Maest, the scientist who conducted the Ecuador study and subsequently submitted sworn statements in Federal court that renounced all scientific findings—that is a quote—in their report to settle claims against her. Now, the work of that very same scientist is cited 11 times in the EPA assessment. To be clear, I do not know whether the work used in EPA's assessment will prove to show issues similar to the Ecuador studies the author disavowed but that question needs to be examined impartially and independently. Otherwise EPA's reliance on that work done by this scientist or her firm puts the assessment under a cloud.

In closing, there is a quote I would like to share. "NEPA is democratic at its core. In many cases, NEPA gives citizens their only opportunity to voice concerns about a project impact on their community, and because informed public engagement often produces ideas, information, even solutions that the government might otherwise overlook, NEPA leads to better decisions, better outcomes for everyone. The NEPA process has saved money, time, lives, historical sites, endangered species, public lands, and because of NEPA, we are guaranteed a voice." That quote is from the website of the Natural Resources Defense Council. They love NEPA, just not this time and not this project.

If we allow this precedent, if the EPA uses the assessment to deny Pebble access to the NEPA process, there will be many mines and projects that don't get built, many metals will be forced to import many times from nations that wish us harm. We have a process in place to determine whether a mine should or shouldn't be built. We should follow that process and let science guide us. Thank you. I look forward to your questions.

[The prepared statement of Mr. McGroarty follows:]

**Written Testimony
Submitted by**

Daniel McGroarty

American Resources Policy Network

before the

**U.S. House of Representatives
Committee on Science, Space & Technology
Subcommittee on Oversight**

**“EPA’s Bristol Bay Watershed Assessment:
A Factual Review of a Hypothetical Scenario”**

August 1, 2013

Chairman Broun, Ranking Member Maffei, Members of the Committee:
Thank you for the opportunity to testify today. My name is Daniel McGroarty, and I am president of the American Resources Policy Network, an experts organization dedicated to exploring and informing the American public and American policy-makers of the importance of U.S. resource development – and the dangers of unnecessary foreign resource dependence.

The Pebble deposit, the clear subject of the EPA assessment, is the largest potential copper mine in the United States – a critical metal, the lack of which has been cited in a Defense Department report as causing “a significant weapon system production delay for DoD.” Pebble is potentially a multi-metal mine, with prospects beyond copper for the recovery of Molybdenum -- used in alloy form in gun-barrels of many types, Rhenium -- used in high-performance jet fighters, and Selenium and Tellurium, both of which are used in photovoltaic solar panels that could not only lead the Green Revolution – but provide a portable power source for U.S. troops in the field.

As a matter of sound public policy, Pebble should be treated no differently than any other potential mineral resources project under the well-established environmental permitting process. But even before the permitting process has

begun, Pebble has been subject to inconsistent and unprecedented treatment by the EPA -- creating a troubling trend in public policy, with strategic implications. Given these factors, this Committee is right to examine the EPA's actions in greater detail.

American permitting needs to be predictable -- not as to outcome, but in terms of process -- in order to encourage investment in American resources. The hallmark of that process -- in terms of environmental permitting and public participation -- is the National Environmental Policy Act (NEPA).

Yet, the very act of EPA conducting the Bristol Bay Watershed Study (hereinafter, the "Watershed Study") -- prior to Pebble submitting a mine plan or seeking a single permit -- creates a chilling effect on investment in U.S. resource extraction. The likelihood that mine opponents are gearing up to use the Watershed Study as a reason to trigger a pre-emptive permit denial -- before NEPA even begins -- could deprive the U.S. of reliable sources of critical metals, responsibly extracted under American regulations.

Every issue raised to justify the Watershed Study could easily and amply be raised and reviewed within the existing permitting process, with input from experts of all kinds, and community input as well. Put another way, there is no issue I see that requires the construction of a wholly new "pre-permitting process," with the power to prevent a proposed project from even having the opportunity to be judged within the NEPA process.

An unprecedented watershed assessment of a hypothetical mine -- and even the minor contemplation of a preemptive permit veto -- warrants an extremely high bar for the scientific method, the validity of source material, and the impartiality that must be met by this study.

On all those counts, Mr. Chairman, we believe this assessment fails and falls short.

At this point, two caveats: I am a policy analyst, not a scientist. The substantive points I will raise are detailed by experts, but should give all non-scientists reason for pause.

So far, the most substantive review of one of the key studies in the Watershed Assessment -- the EARTHWORKS-funded study, "Kuipers Maest, 2006, "Comparison of predicted and actual water quality at hardrock mines" led by Dr. Ann Maest (hereinafter, the "Kuipers Maest 2006 report") -- is an

analysis conducted by global water and environmental management firm Schlumberger, on behalf of the NorthWest Mining Association, and submitted to the EPA as part of NWMA's Watershed Study comments. As the Schlumberger reports says, one of the fundamental tenets of scientific research is that its findings can be replicated by others, provided they have access to the data set. Schlumberger states that it cannot replicate the hydrological data presented in the Kuipers Maest 2006 report relied on by EPA.

Second, Schlumberger finds what I have elsewhere noted as "backward bias" inherent in any hypothetical construct. Schlumberger notes that the Kuipers Maest 2006 report draws on a "preponderance" of case studies drawn from mines that operated before the modern regulatory era.

If the "data set" consists of a preponderance of mines permitted and operated before the modern era of regulatory limits – is it any surprise that these mines fell short of the modern limits?

What does the failure of past mines have to do with a proposed mine, using current and perhaps even cutting-edge processes – and whether it will meet modern requirements?

And how does it constitute "sound science" to argue against a proposed mine based on what happened at other mines operated to other standards 20, 30 or 40 years ago?

Would we use such a backwards-biased yardstick to judge the safety of a new airplane? A new car? A new medicine?

Is it "sound science" to say that poor performance in the past proves that we cannot achieve superior performance now and in the future?

Now I will turn from the substance to sourcing -- serious questions concerning the impartiality of experts relied upon by the EPA.

My organization expressed these concerns in a letter sent to members of the House, Senate and administrators at EPA, which I include in my written testimony but will summarize here.

Once again, the subject of concern is work done by Dr. Ann Maest and Stratus Consulting.

Many of us saw the coverage of the Chevron environmental case in Ecuador, where plaintiffs were awarded an \$18 billion dollar judgment against the oil company. This judgment has been the subject of extensive federal litigation in U.S. courts, where, among other charges, Chevron brought racketeering claims against members of the plaintiff's team – including against Dr. Maest and Stratus. At the heart of these suits were claims that the plaintiff's litigation team manipulated data to show contamination where no data existed -- and created a report written by the plaintiff's team, including Maest and Stratus, that was then passed off as being written by a court-appointed independent consultant.

How do we know this? For what must have been public relations reasons, the plaintiff's team actually invited a film crew to document the behind-the-scenes events in a major environmental lawsuit for a favorable documentary. This documentary also generated hours of tape on the cutting-room floor that was uncovered during Chevron's discovery process.

Here is one such clip:

PLAY VIDEO

<http://www.youtube.com/user/TexacoEcuador?feature=watch>

“Facts do not exist. Facts are created.” That's the lawyer who directed the supposedly independent research. The woman chuckling in the seat next to him is Dr. Ann Maest: the scientist who conducted the Ecuador study, and later disavowed its findings...

...The very same scientist whose work is cited multiple times in the Bristol Bay Watershed Study.

And while the Chevron litigation is still ongoing, Maest and Stratus settled claims against them by submitting sworn statements that “renounced all of the scientific findings” in their report.

Stratus and Maest have numerous contracts with EPA and Maest's work is cited 11 times in the Watershed Study – 7 of those in reference to the Stratus consulting firm.

EPA -- apparently understanding the controversy surrounding this work -- ordered a quasi-peer review of the Kuipers Maest 2006 report as part of addendum to the second draft of the Watershed Study. I call it a quasi-peer

review because EPA's last-minute effort falls seriously short of basic peer review standards.

Case in point: the review relied on one scientist who was a former colleague at the Stratus firm, who had coauthored studies with Dr. Maest. The Committee can consider for itself whether this constitutes the kind of independent assessment that defines peer review.

So, to sum up: In the Ecuador incident, the scientist has disavowed her work.

Her firm has cut its ties to her.

And yet EPA builds its Watershed Study on her work.

I want to be clear on this point: I do not know whether the work used in the Watershed Study will prove to show issues similar to the Ecuador studies that the author disavowed. My point is that this question needs to be examined – impartially, independently – and that absent that, EPA's reliance on work done by this scientist or her firm in the Watershed Study puts the entire study under a cloud.

In closing, there's a quote I'd like to share with the Committee:

“NEPA is democratic at its core. In many cases, NEPA gives citizens their only opportunity to voice concerns about a project's impact on their community... And because informed public engagement often produces ideas, information, and even solutions that the government might otherwise overlook, NEPA leads to better decisions -- and better outcomes -- for everyone. The NEPA process has saved money, time, lives, historical sites, endangered species, and public lands while encouraging compromise and cultivating better projects with more public support.

...because of NEPA -- ...we are guaranteed a voice.”

That quote is from the website of the NRDC. They love NEPA -- just not this time, for this project.

That's a dangerous departure from the law. This time, the mine is Pebble and the metal is copper. But if we allow this precedent, there will be many mines

and projects that don't get built – and many metals we'll be forced to import, many times from nations that wish us harm.

We have a process in place to determine whether a mine should or shouldn't be built. We should follow that process – to lead us to a policy based on science, and projects made better by the even-handed scrutiny they receive.

Thank you.

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**About Dan McGroarty**

Through his issues-management firm, Carmot Strategic Group, Dan McGroarty has consulted for more than a decade with firms ranging from Fortune 50 companies to start-up ventures in industries ranging from the resource sector, telecommunications and airlines to travel, pharmaceuticals and financial services. His engagements occur at the CEO and senior executive level, with a focus on issue management and company strategy, against the broader policy and risk environment that affects each client.

Dan currently serves as Senior Advisor to the U.S. Chamber of Commerce/International Division.

Prior to establishing his consultancy, Dan served at senior levels in the U.S. Government, as Special Assistant to the President in the White House and as presidential appointee to two Secretaries of Defense.

As a former think tank fellow, Dan is author of two books on education policy. His articles and op-eds on current policy issues have been published in The Wall Street Journal, the New York Times, The Public Interest, National Review, Philanthropy, The Christian Science Monitor, the Los Angeles Times, Investor's Business Daily, Policy Review and The American Spectator.

Dan also serves as Adjunct Professor in the Graduate School of Political Management at George Washington University, and as a contributing columnist on geo-political issues at RealClearPolitics' RealClearWorld.

Chairman BROUN. I want to thank all the witnesses for your testimony, reminding Members that Committee rules limit questioning to five minutes. The Chair at this point will open the first round of questions, and the Chair recognizes himself for five minutes.

Dr. Kavanaugh, is it possible to have a scientifically sound watershed assessment using a hypothetical mining scenario in the absence of a submitted permit?

Dr. KAVANAUGH. No, I don't think it is, Mr. Chairman. I think that there is a serious constraint on undertaking a risk analysis on the basis of a hypothetical scenario. That doesn't meet the standards for an ecological risk assessment. It doesn't meet the standards for an Environmental Impact Statement, and it is essentially a hypothetical risk analysis. So it is inherently speculative, in my opinion, particularly in the context of identifying worst-case scenarios without attaching a probability of occurrence to those worst-case scenarios.

Chairman BROUN. Very good. Thank you.

Mr. Rothschild, typically who pays for an Environmental Impact Statement under the National Environmental Policy Act for projects requiring dredge and fill permits?

Mr. ROTHSCHILD. Mr. Chair, those permits are always paid for by the project applicant. The Corps has guidance documents which say that while the consultants are directed by the Army Corps, they are paid for by the project applicant.

Chairman BROUN. Okay, but not by taxpayers?

Mr. ROTHSCHILD. Not by taxpayers.

Chairman BROUN. Okay. And generally speaking, how does that payment mechanism compare to the one involving agency watershed assessments such as NEPA document under discussion today?

Mr. ROTHSCHILD. The NEPA document is paid by the agency, by the taxpayers.

Chairman BROUN. The EPA document?

Mr. ROTHSCHILD. Yes, the EPA document.

Chairman BROUN. I said NEPA, but I meant EPA.

Mr. ROTHSCHILD. Yes, the 104(a).

Chairman BROUN. Okay. Now, we have heard testimony today from Mr. McGroarty that there are no issues addressed in EPA's watershed assessment that could not be raised and reviewed within the regular permitting process. Is there anything unique in a watershed assessment that would not be addressed in an Environmental Impact Statement under NEPA? Please give me a yes or no answer, starting with Mr. Rothschild.

Mr. ROTHSCHILD. No.

Dr. KAVANAUGH. No, I don't think so.

Chairman BROUN. Mr. Nastri?

Mr. NASTRI. I am considering your question because the—

Chairman BROUN. Please turn on your microphone.

Mr. NASTRI. Thank you. I was considering your question because the watershed assessment addresses the 404 issue.

Chairman BROUN. Well, the question was yes or no. Is there anything that—anything unique to the watershed assessment that would not be addressed in an Environmental—in an EIS under NEPA?

Mr. NASTRI. I am not aware at this time of anything that would not be addressed.

Chairman BROWN. So the answer is no. Is that correct?

Mr. NASTRI. I am not aware of it, sir.

Chairman BROWN. Okay. As far as you know, it is no then. Okay. Then I will come back to you. You conclude your written testimony by stating your support for preemptive action by EPA to veto the Pebble mine using its authority under Section 404(c) of the Clean Water Act. Setting aside the question of EPA's authority to do so, can you explain as a former Regional Administrator for EPA how is such an action fair to people who have invested hundreds of millions of dollars collecting information so that they can define a mine and identify scientific data to show how they might propose to meet the standards in our environmental laws?

Mr. NASTRI. Well, it is very fair to project proponents, and as I said in my testimony, oftentimes what we wanted to hear—what project proponents wanted to hear was early parameters by which they could develop their project. They wanted certainty and they wanted that certainty before they invested time and the millions of dollars that are often associated by going through the EIS process.

Chairman BROWN. Well, absolutely, but they didn't ask for a hypothetical mining scenario here.

Let me follow up with a yes or no question. Would allowing the Pebble project to present a plan to go through the NEPA permitting process result in any environmental harm?

Mr. NASTRI. Would it result in environmental—yes, it would, and—

Chairman BROWN. Wait a minute. Let me ask the question again.

Mr. NASTRI. Sure.

Chairman BROWN. Would allowing the Pebble project to present a plan, just to present a plan to go through the NEPA permitting process result in any environmental harm? Your answer is yes to that?

Mr. NASTRI. My answer is yes because of a delay that is going on and the uncertainty, and that uncertainty causes lack of investment.

Chairman BROWN. How is it going to cause environmental harm, though?

Mr. NASTRI. Well, it causes environmental harm by not allowing other projects to go through that could provide greater benefit, so you are looking at lost opportunities, sir.

Chairman BROWN. Mr. McGroarty, in your testimony, you mention copper in connection to the green revolution. What do you mean by that?

Mr. MCGROARTY. Mr. Chairman, when we look at the major uses of copper in green technology, it is a constant presence. Wind power, for instance, a single industrial wind turbine uses approximately—just one—3 to 3-1/2 tons of copper for one wind turbine. Solar photovoltaic arrays, the newest technology for that uses an alloy or a metals blend called CIGS, C for copper, I for indium, G for gallium and S for selenium, 95 percent of which selenium comes from copper. So CIGS coming and going, copper is essential for photovoltaic arrays. Geothermal, drawing power from the Earth, the power is brought to the surface via copper coils. And then fi-

nally, whether it is solar or wind or geothermal, if we want to bring that power to the grid so that consumers can access it—renewable energy, which I support and which my organization supports—that comes through copper cable, at least in part through copper cable. So at every presence, I think what we need to look at is the green revolution is very dependent on metals and minerals beneath it.

Chairman BROUN. Thank you, Mr. McGroarty.

My time is expired. Mr. Maffei, you are recognized for five minutes.

Mr. MAFFEI. I thank the Chairman.

Mr. McGroarty, I too am concerned about the veracity of the scientific assessment of Ann Maest, but how many overall citations were there in the EPA draft report—draft assessment?

Mr. MCGROARTY. To her studies or her—

Mr. MAFFEI. No, how many overall to any—

Mr. MCGROARTY. I don't know.

Mr. MAFFEI. The answer is 1,390, and you said there were 11 times she was cited. That is some three-quarters of a percent. Do you think that if we can show that on the American Resources Policy Network's sourcing that three-quarters of a percent of your sources have been debunked, that we should ignore everything else that your organization says?

Mr. MCGROARTY. Let me respond in terms of that. EPA itself seems to indicate some concern about the Kuipers-Maest study because they subjected it to a kind of a quasi-peer review, so they did select it out.

Mr. MAFFEI. So they took care of that problem, at least in terms of the peer review. They did take care of that problem.

You mentioned that we should let science guide us. Are you a scientist, sir?

Mr. MCGROARTY. I am not.

Mr. MAFFEI. Are you an engineer?

Mr. MCGROARTY. No.

Mr. MAFFEI. Are you an attorney with expertise about EPA procedures?

Mr. MCGROARTY. No, I am a policy analyst.

Mr. MAFFEI. Okay. You know, actually I admire your background. It is very similar to my own—journalism, communications—but I don't understand why you have any expertise to speak on this matter. Do you want to illuminate me on that?

Mr. MCGROARTY. Sure. My interest in this issue and involvement in this issue dates back. I served in government, two presidential appointments to the Department of Defense in the Reagan Administration, Secretary Weinberger, Secretary Carlucci, and then later went to the White House with George Herbert Walker Bush. I was responsible—

Mr. MAFFEI. You are an expert in politics, a political expert. Again, I have respect for your profession. I just don't understand what you are adding in terms of the scientific assessment that you yourself say should guide us.

Mr. MCGROARTY. At that time, one of the issues regarding the Soviet Union was the concern for strategic metals access. Nowadays it is China. The Cold War is over. And I was responsible for the statements on national security, many foreign affairs issues

and defense policy, both at DoD, where this issue was critical and important, and at the White House.

Mr. MAFFEI. All right. My—

Mr. MCGROARTY. The genesis of my interest and involvement dates back to that.

Mr. MAFFEI. So you are concerned about the strategic effect if we don't have enough of these metals? I do understand that.

You did point out about a chilling effect on mining, and I would like to ask Mr. Nastri, in regards to the Chairman's question and your answer, are you concerned about environmental impact because of a chilling effect if the continued—you know, the mining companies continue to say they are going to ask for a permit and don't? Is that why there is an environmental damage here? And if not, do you want to clarify, you know, or elaborate your answer to the Chairman's question about that?

Mr. NASTRI. Sure. The real issue here is uncertainty and the impact that uncertainty causes, and I think Senator Murkowski said it well when she said in a letter to Northern Dynasty and the Pebble Partnership that there is frustration, there is anxiety, and all this because of the uncertainty, and the uncertainty actually prevents a lot of investment to take place. We spoke to many organizations that said they would love to invest by creating jobs, by creating new processing facilities but with the uncertainty that is there, they are not going to do anything. You also have a number of people that want to invest in the fishing industry—buy new boats, buy new nets. They too have an uncertainty. And so what happens is, you have what I would argue is ongoing degradation because there is paralysis, and so that was the manner in which I was referencing.

Mr. MAFFEI. So whichever way we go, we are better off making the decision now than continuing to postpone it if it is a clear decision?

Mr. NASTRI. Absolutely. I think it is much better to provide that certainty, and as I described before, I believe that EPA could proceed under a set of 404 restrictions. The restrictions would provide the guidelines for companies to move forward. It would actually improve whatever it is they decided to do by letting them know what they have to do.

Mr. MAFFEI. One criticism of the EPA that I think is shared by Dr. Kavanaugh, if I read his writings correctly, is that the assessment doesn't take into account new technologies that might minimize the risk to the environment. Mr. Nastri, is that a possibility, that there could be new technologies the EPA simply can't take into account?

Mr. NASTRI. Well, having worked at EPA for a number of years, I can tell you, they have mining engineers, they have people that worked in the mining industry. They are quite familiar with mining in general. And when I look at the documentation that has been provided by the partnership, Pebble Partnership's own companies, they describe in detail mining plans. They talk about two types of operations: open pit and underground. There is really not a lot of variation that you are going to see other than the actual size in the technology. And from that perspective, the real question I think that people need to wonder about is, this is the resource

of the world's greatest salmon fishery. Over 40 percent of red salmon supply comes from this fishery. Can you imagine the uproar that would be caused if new, unfounded or unproven technology were applied in some area like this, which is so globally significant, and something went wrong? Is this the area where you would actually try to put in new technology without having the absolute certainty that it is going to be failsafe? This is not an area that you experiment with.

Mr. MAFFEI. Okay. Thank you, and thank all the witnesses.

Chairman BROUN. The gentleman's time is expired. Now Mr. Peters, you are recognized for five minutes.

Mr. PETERS. Thank you, Mr. Chairman. I just had a simple question because I think we are talking past it a little bit. Is there anyone representing the companies here with an interest in the mines?

Dr. KAVANAUGH. I am representing Northern Dynasty.

Mr. PETERS. Okay. So is there a plan to submit a permit with an EIS in the future?

Dr. KAVANAUGH. I am not familiar with the precise scheduling or any activities that they are undertaking. I was retained only to evaluate the watershed assessment.

Mr. PETERS. So no one has a sense of the timing of when they would like to proceed with this project?

Dr. KAVANAUGH. I think they have stated on their website and other places that they are shooting for the end of this year, but I am not privy to the internal workings of the company.

Mr. PETERS. So we don't know when the company itself might be ready to prepare an EIS?

Dr. KAVANAUGH. Well, not precisely, but I mean, they spent a substantial amount of money, I believe, in the hundreds of millions to do baseline studies, so I would assume they are ready, more or less, but I don't know the details.

Mr. PETERS. I mean, I just—I am new here, not even 7 months, but it does seem to me like we are—there is a basic question here about when is this going to come up because if it is going to come up this year that they are going to file this permit request and have to prepare the environmental documentation, which is what I used to do in a past life, we could run these processes concurrently, agree on what the scientific protocols were and so forth and there wouldn't be this pressure that some people feel to get things moving now. So wouldn't it be helpful for us to know kind of what the company's intention was?

Dr. KAVANAUGH. Absolutely.

Mr. PETERS. So has anyone asked them? I mean, here we are at a congressional hearing, right? That was a simple question. The company could tell us. Maybe there is someone from the company here. When do they want to start this process up? If they are going to be filing their permit request in three months, say, I would think it would be more than reasonable to say, okay, let us do this concurrently in 3 months, but it is just a simple, basic piece of, you know, a multimillion-dollar or hundred-million-dollar project that no one is answering. So that to me would give ammunition to the people who say well, we have to do it now because the company is not giving us information about when they actually want to do it.

Dr. KAVANAUGH. Well, Congressman, that is a very good point. Again, I was retained by Northern Dynasty to undertake an assessment of the EPA study, the EPA report, but I am not an employee of the company. So I am not aware of the precise details but I am sure that could be figured out, and I think your approach is a valid one.

Mr. PETERS. You know, in my old world, I wasn't in Congress, I would just try to do things in ways that made more sense, but it does seem to me that if they would like to let us know that they are planning to do this soon, this might obviate the need for a big conflict and we could figure out a cooperative way to do this. This is my observation, and clearly you don't have the answer but I appreciate at your least addressing the question for me, Doctor.

Dr. KAVANAUGH. Sure.

Mr. PETERS. Thank you, Mr. Chairman. I yield back.

Chairman BROUN. Thank you, Mr. Peters. Now Ms. Bonamici, you are recognized for five minutes.

Ms. BONAMICI. Thank you very much, Mr. Chairman, for allowing me to participate in this important hearing. I appreciate it.

I would like to thank the witnesses for being here today. I represent the northwest part of the State of Oregon and so this is an issue that is very critical to the economic and environmental priorities of my constituents up and down the West Coast, but in Oregon, for example, many of my constituents have commercial fishing permits for Bristol Bay. They travel there every summer to make a living. Still more work as fishing guides. They lead tours of recreational fishermen to the thriving ecosystem in Bristol Bay. According to a recent report by the University of Alaska, Anchorage's Institute of Social and Economic Research, as many as 2,000 Oregon jobs are supported by Bristol Bay salmon fisheries. So my constituents have made it clear to me that they are very concerned about the impact of a proposed mine on the ecosystem and on their livelihood, so it is important that we get the science right on this.

I want to ask you, Mr. Nastri, much has been made about the EPA assessing a hypothetical project. In your testimony, you indicated that while final details of the plan may diverge from the public documents filed so far, what won't change are the size, scope and location of the mine. So based on your experience, especially with EPA, how much more information would EPA have to have about a project that had been officially proposed compared to what has been already discovered about the Pebble Limited Partnership plans through public documents?

Mr. NASTRI. The key issue here is the fill-and-dredge permits, the 404 permits, and one of the key aspects of that is that the fisheries are protected, and under 404 requirements, you have to show unacceptable adverse harm. The physical dimensions of the mine itself will create significant impacts to the ecological resources in terms of impacts to streams and so forth. So from that perspective, EPA has enough information to address the 404 question, and that is, are there unacceptable and adverse impacts, and if so, then the agency has a series of decisions that it can make with regards to how to address that.

Ms. BONAMICI. Thank you. And following up, how does the data that the EPA used in the assessment, the watershed assessment,

compare to data that would be considered during a traditional NEPA process, which supporters of the mine proposal have said would be sufficient to protect the ecosystem?

Mr. NASTRI. Well, much of the data that is utilized in the watershed assessment would certainly also be utilized in the NEPA process, but again, the decision aspects of both processes are designed to inform policymakers, and the information certainly with regards to a 404(c) issue is certainly there, assuming that the watershed assessment is finalized.

Ms. BONAMICI. Thank you. And you described the—you discussed the Riley Yocum report in your testimony, which describes the actions that the EPA could prohibit under its 404(c) authority including discharge of dredge material into salmon habitat, discharge of dredge material if it does not meet testing requirements showing that it is not a threat to salmon, aquatic life, and the discharge of dredge material that requires treatment in perpetuity. So would the performance standards in the report permit the Pebble Limited Partnership to file for a permit if it was able to engineer a solution to meet those requirements?

Mr. NASTRI. Absolutely.

Ms. BONAMICI. Thank you.

And I wanted to talk briefly with my remaining time about, apparently, Mr. McGroarty, earlier this year, you wrote an opinion piece in the Wall Street Journal in which you described the United States as being tied with Papua, New Guinea, for last place in the time it takes to get a permit for a new mine, and I suspect that perhaps the history of what happened in New Guinea is a call to our government to slow down, and I hope the United States does move carefully on this because we don't want to repeat the mistakes that were made there, and I just read a quote from the journal *Organization and Environment* where they detailed the destruction that was left and the operation of the, I think it is Panguna mine. "Thousands of acres of rainforest were cut down and billions of tons of mine waste were dumped into local rivers and their surrounding oceans, degrading drinking water quality and destroying fisheries and local fishing economies. Mine pollution may also have increased death rates on the island, especially among children. In addition, villagers living on or near the mine property were forcibly removed from the area to make way for the mine." And I cite this as an example of the environmental damage that can occur in mining operations. I point out that it is my understanding that this operation in New Guinea was managed by one of the entities involved with this proposed Pebble mine in Bristol Bay, and I trust that all of you will agree that we don't want this to happen in our country. Anybody want to agree with that?

Mr. NASTRI. We agree. I agree.

Dr. KAVANAUGH. Well, I certainly agree, and I think—but the point here again is that you are talking about a mining situation under strict regulatory control in Alaska. You are using examples of systems that were installed under poor regulatory oversight, and the example that I mentioned, the 135 case studies, all of those were not relevant to the modern engineering design of a treatment, storage and disposal facility. Another example of the exaggerations that we keep hearing, 11 million tons of ore that are all acid gener-

ating. In fact, only 17 percent of the material is estimated to be acid generating as documented in the report, in the assessment. Eighty-three percent is not acid-generating materials. So I think the problem that keeps coming up on this project is, again, exaggerating the probability of failure and exaggerating the consequences of those failures.

Ms. BONAMICI. Thank you. I see my time is expired. Thank you, Mr. Chairman.

Chairman BROUN. Mr. Schweikert, you are recognized for five minutes.

Mr. SCHWEIKERT. Thank you, Mr. Chairman, and I apologize to you and the Committee and the witnesses for my tardiness and so I may be asking you something that you have already spoken about, but it will be helpful for me.

Being from Arizona, I have grown up around a lot of both underground and pit and other types of ore extraction. My understanding is, even what I seen in the southwest United States, that both the technology and the mechanics, everything from SX to everything else out there, have changed dramatically in the last couple decades, and I would love to start from Mr. Rothschild—and work my way down. Tell me how mechanically and technologically, both from an impact mitigation standpoint, for a large mine would look different today than it might have four decades ago?

Mr. ROTHSCHILD. Well, I can tell you that I am not the mining expert, I am the lawyer, but I would tell you that that is exactly what the EIS process is intended to identify is those changes and the impacts. I will defer to the scientific experts on the panel to answer your question specifically.

Dr. KAVANAUGH. Well, Congressman, I am the only engineer on this panel so I can give you a few examples if that would be sufficient, but you certainly should take a look at written testimony that outlines a number of the areas where mitigation measures would in fact be undertaken. But let me just focus on a couple of examples. The tailings storage facility is a large facility, and certainly, any kind of failure there would have dramatic consequences. So those systems have to be designed to minimize the probability of failure. They are designed with an appropriate safety factor. They are designed with a downstream method, which has been proven to be successful. Many of the failures in the 135 case studies that are documented in the assessment are based on other ways of designing the dams and many of those failed because they were improperly designed. So—

Mr. SCHWEIKERT. And to that—

Dr. KAVANAUGH. Just to finish my statement there, the point being that you can design a tailings storage facility with appropriate safety factors so that the probability of a failure is very, very low.

Mr. SCHWEIKERT. And Doctor, back to the nature, the focus of my question is, tell me on that engineering, how would you be engineering it differently today than you might 40 years ago?

Dr. KAVANAUGH. Absolutely.

Mr. SCHWEIKERT. —with the materials, the linings? Walk me through a couple of those, materials, engineering, design, technology changes that have happened in those decades.

Dr. KAVANAUGH. Well, that is fairly comprehensive so I will give it a stab. Again—

Mr. SCHWEIKERT. You have got two whole minutes.

Dr. KAVANAUGH. Again, with the TSF, it would be designed in a manner that has been proven to be effective at withstanding seismic threats, overtopping, slope stability, all of the modes of failure that geotechnical engineers are fully aware of these days. The whole 135 case studies is intended to be lessons learned. You don't do it the way that has failed in the past. So with respect to that particular engineering component, again, it would be designed with appropriate safety factors to meet a permit requirement for a failure probability, one in a million, for example.

With respect to all the water treatment and wastewater treatment facilities, they are all designed to have redundant systems. If there is a power failure, there is a way to assure that the system shuts down. There are diagnostic measurements that can monitor a system as detailed as you want with real-time measurements. That is in the water and wastewater management arena. One of the issues is the containment of the acid drainage from the tailings. You can design that to be of sufficient capture to capture all of the acid-generated wastes. In the report, they estimated 50 percent would be lost. I think that is a poor assumption. Other components of the mine involve the pipelines. You can do pipeline designs that are double-walled. All of these things, of course, can add to the cost, but they can be done in a way that minimizes the probability of any releases.

Mr. SCHWEIKERT. Mr. Chairman, in the last 40 seconds, Mr. Nastri, same sort of question.

Mr. NASTRI. As a former EPA—

Mr. SCHWEIKERT. And can you hit your button?

Mr. NASTRI. As a former Regional Administrator who was involved in both the cleanup of legacy mines as well as the permitting of new mines, I think I have a good grasp on the issue. I am sure that any mine in its time said they were going to meet the requirements, that they were going to do the absolute best and that nothing would be the case. Unfortunately, in the Southwest, we have the greatest concentration of Superfund mine sites that are being cleaned up. There are a number of—

Mr. SCHWEIKERT. But Mr. Nastri, to that point, the legacy and time frame of those, having some education in this area—

Mr. NASTRI. Sure.

Mr. SCHWEIKERT. —are almost all 50-year-old from their original permitting dates, and the design and manufacturing and engineering and mitigation that you would permit a new mine today would look dramatically different in your requirements, correct?

Mr. NASTRI. Absolutely, they would look different. However, accidents happen. Things happen that don't—

Mr. SCHWEIKERT. And that is why now in your mechanics and your rules you do the layers of redundancy that have been modeled from previous experiences, correct?

Mr. NASTRI. You do do that, but they are not foolproof and they are not—

Mr. SCHWEIKERT. Well, also, you know, life isn't foolproof but at some point you play the statistical part of your tale, and sorry, I am way over time, but Mr. Chairman, thank you for your patience.

Chairman BROUN. We will start a second round of questions, and try to get through as far as we can go. We have votes at about 2:30, 2:35.

Mr. Nastri, back to the question that Mr. Maffei gave you. All I heard was economic issues, not environmental harm, and if you can in your written statement or answering the written questions, if you can show us what you mean by environmental harm. I have not heard anything from you regarding that.

But let us go to Mr. Rothschild with that same question. Would allowing the Pebble project to present a plan to go through the NEPA permitting process result in any environmental harm?

Mr. ROTHSCHILD. No.

Chairman BROUN. Yes or no?

Mr. ROTHSCHILD. No, Mr. Chairman.

Chairman BROUN. Okay. Dr. Kavanaugh?

Dr. KAVANAUGH. Not that I am aware of.

Chairman BROUN. Okay. Dr. Kavanaugh, one argument made by people opposed to the mine in Bristol Bay is that Geosyntec was hired by one of the mining companies exploring mining options in Bristol Bay so it naturally raises concerns shared by the mining company. Is that a fair characterization? Would Geosyntec's report have been different had the company been retained by an environmental group or organization opposed to the mining in Bristol Bay?

Dr. KAVANAUGH. Well, I appreciate that question, Mr. Chairman. Geosyntec has been in business since 1983. We have a thousand staff. We consider ourselves independent environmental consultants. Our fee was paid by Northern Dynasty but we have no commercial interest in the outcome. We are not advocating one way or another. We are simply commenting on the scientific and technical credibility of a document. I would make the same comments were I retained by an environmental organization with respect to the limitations of the assessment that has been prepared.

Chairman BROUN. I take it that if all these groups that are opposed to the mine had hired Geosyntec, you would have—the results would have been the same? Is that what you are telling us?

Dr. KAVANAUGH. Yes, it would.

Chairman BROUN. Thank you.

Mr. Rothschild, what role do avoidance and mitigation impacts play in the mining permit process?

Mr. ROTHSCHILD. Under the Clean Water Act permitting process, a permit applicant is required to submit all practicable avoidance, minimization and mitigation measures, and so there is a detailed analysis about what can be done practicably in every permit case to ensure that the impacts are avoided, minimized and mitigated to the greatest extent.

Chairman BROUN. Okay. Dr. Kavanaugh, following up on Mr. Rothschild's response, what is your assessment of the role of avoidance and mitigation of impacts in either the first or second draft of EPA's watershed assessment?

Dr. KAVANAUGH. Well, in the second draft, they included greater discussion about mitigation in the document but they did not incor-

porate, in my opinion, mitigation into minimizing or discussing the probability of failure. They still retain, for example, four examples of tailings storage facilities' failures, four case studies, if you will, that are not relevant to a modern mine. They were based on well-known causes of failure, and those failures are again lessons learned.

One of the mistakes, in my view, that permeates the report is the use of historical information to predict what may occur in the future, and I understand the limitations of making these predictions into the future, and it is not a straightforward analysis. But to give equal weight to worst-case scenarios leads to, in my opinion, not a credible risk analysis.

Chairman BROUN. Dr. Kavanaugh, EPA described this assessment as a watershed assessment in 2012. Subsequently, the revised version of the document has been referred to as an ecological risk assessment and an environmental assessment. Is there a difference between a watershed assessment and ecological risk assessment and an environmental assessment?

Dr. KAVANAUGH. Well, I think there is some confusion as to what exactly the nature of this document is. It is not really an ecological risk assessment because it doesn't quantify a lot of ecological risks. It talks about the potential risks in a qualitative way. It also is not really a risk analysis, in my view, because of the limitations that I have already mentioned, and it is not an Environmental Impact Statement because it is a hypothetical mine scenario. So I honestly don't exactly know what kind of a document it is. It is a unique document, and it does not follow any guidance, principles related to processes that have been identified by EPA, for example, in ecological risk assessment.

Chairman BROUN. Very good. My time is expired. Mr. Maffei, you are recognized for five minutes.

Mr. MAFFEI. Thank you, again, Mr. Chairman.

Mr. Rothschild, if the EPA decided to move forward with 404(c) action in Bristol Bay, does it have the authority to do so strictly speaking as a legal matter?

Mr. ROTHSCHILD. Well, with the caveat that I wasn't asked to talk about 404(c), I can tell you that EPA has not historically issued a preemptive 404(c) veto so it is not exactly clear what it would need to do to prepare a record for that. I do note that as early as this morning, Administrator McCarthy was quoted in the Washington Post as saying that with regard to the mine, "Any act that EPA would take would be carefully considered. There are significant natural resources in that area along with significant economic resources. We have got to get that balance right." It is that balance that really NEPA is intended to inform the decision making.

Mr. MAFFEI. Thank you. That is helpful.

I want to quote from a letter by Senator Lisa Murkowski on this. She wrote on July 1, 2013, that at least as far back as November 3, 2004, Northern Dynasty Minerals asserted that the submission of permit applications was imminent, and then she goes on to describe how this occurred again in 2005 and 2006, 2008, 2009, 2010 right up to most recently in June of 2013. The PLP representative said they hope to have a project to take into permitting this year,

and she says, "By failing to take the next step, by failing to decide whether to formally describe the project and seek permits on it, PLP has created a vacuum that EPA has now filled."

Mr. NASTRI, is this—does this context affect your assessment of the EPA's responsibilities here, the context of all of these times that the companies have said they are going to seek a permit and then they pull back?

Mr. NASTRI. Well, the agency is being responsive to those who actually requested they get involved, those being the Alaska Natives, the residents, the commercial and sport fishermen and a whole host of other groups. So I guess the lack of submission of a timely permit application that created the uncertainty, the confusion and the anxiety has certainly contributed to where we are today. Had that been done, I am sure we would not be here today. But the fact of the matter is, for EPA to respond to various residents and groups and so forth, this is the way that they respond. They have to look at the issue.

Mr. MAFFEI. I would like to note that there are some representatives of the native tribes that requested the EPA look into this here today, and I am honored that they would make the trip.

Just to elaborate a little bit further on that, Mr. NASTRI, so the fact that it may be fairly unprecedented if the EPA were to go ahead with 404(c) action but do you feel that this is a somewhat unprecedented situation with a company postponing, you know, bringing to the brink that they are going to have a permit and then continuing to postpone it time and time again?

Mr. NASTRI. Well, I think the area and the resource is unprecedented in terms of the value and its importance both from an economic perspective, from a jobs perspective, and there is the cultural importance, and so in that light, I think it is important to address and provide certainty to those people. But as far as, you know, people have said that this is a precedent, you know, as was said earlier, hundreds of thousands of permit applications for fill-and-dredge permits, the agency has only taken 13 times, and the issue of being proactive, I mean, here we are in the world's greatest salmon fishery left. If we are not going to be careful and protective of this, when would we be? And so that is why it is so important to address this issue, provide that certainty now to everybody involved.

Mr. MAFFEI. Well said, sir, and I will yield back the balance of my time.

Chairman BROWN. Thank you, Mr. Maffei. Mr. Schweikert, you are recognized for five minutes.

Mr. SCHWEIKERT. Thank you, Mr. Chairman. And Dan, help me with the last name so I don't screw it up.

Mr. MCGROARTY. McGroarty.

Mr. SCHWEIKERT. McGroarty? Okay. I was going to get it. I wanted to make sure I was being fair in my chain because part of the discussion we have also had in our office about this is not only some of the abnormalities we think have happened, sort of the pattern of heading towards NEPA, heading towards this and people trying to cut it off and those things, but just also understanding, are we also making sure—and this is from both those who want to extract the materials to the communities around there to everyone

with some type of interest—an understanding of current state of technology, current state of the mechanics, current state of rule sets so if you are going to set up the rules on how this is going to happen, if it is to happen, that we have learned from past mistakes, we have learned from things. I have learned in Arizona and how radically different at least from what I see in the Southwest of a new facility would be designed and managed.

I know you spent some time sort of on the information side. How are we doing in disseminating to all levels what the newest technologies are?

Mr. MCGROARTY. I think that is precisely the kind of argument for having the NEPA process and having a detailed EIS because it is a kind of discovery, and what it means, instead of having a hypothetical construct is, there is a particular plan with particular technologies, particular best practices in a particular place and that experts on all sides of those questions have the opportunity to bring their information to bear. It is very much like Mr. Rothschild said about that process. That process is in place and it takes us very far downfield to making a good decision, a scientifically informed decision. In my oral remarks today, it is interesting that I am quoting from National Resource Defense Council in praise of the NEPA system, which I think is an accurate statement, and so I don't understand why we would want that or possibly circumvent or prevent that when it is precisely the kind of process that would reveal those answers and would air those questions that you have raised here.

Mr. SCHWEIKERT. Tell me that I am not looking at a situation where we have sort of a regulatory process to review mechanics and when certain parties are fearful they may not get what they want politically, that they are trying to find ways to head off that process.

Mr. MCGROARTY. I can't put my—

Mr. SCHWEIKERT. Or would that be just too cynical to say such a thing?

Mr. MCGROARTY. I can't put myself inside the mind of folks arguing that. I do say that the press often reports that the watershed assessment would be a tool to stop the process. That is all I can tell you.

Mr. SCHWEIKERT. Okay. Mr. Rothschild, you have expertise in the NEPA process?

Mr. ROTHSCHILD. Yes.

Mr. SCHWEIKERT. Tell me what you think works and doesn't work.

Mr. ROTHSCHILD. I think that NEPA process as a whole works. It analyzes the alternatives to and the impacts of a proposed project, and that is certainly something that is missing in this assessment regardless is, every NEPA assessment needs to look at the alternative of not doing anything. It is called the no-action alternative. And what comes with that analysis is the impacts that would result from not doing anything, the impact, the environmental, the economic impacts, some of the impacts that Mr. McGroarty was testifying to earlier with regard to the need for these metals, and so I think the NEPA process, while it has its kinks, is fairly successful at looking at impacts and alternatives.

Mr. SCHWEIKERT. Okay. Mr. Chairman, you know, that gets me where I needed to be informationally, so I yield back.

Chairman BROWN. Okay. Very good, Mr. Schweikert. I understand I have a unanimous consent request.

Mr. MAFFEI. Mr. Chairman, I ask unanimous consent that Mr. Kilmer of the State of Washington be allowed to participate in the Subcommittee hearing. He is a member of the full Committee but not the Subcommittee.

Chairman BROWN. Hearing no objections, so ordered.

Ms. Bonamici, you are recognized for five minutes.

Ms. BONAMICI. Thank you, Mr. Chairman, and I will just take a couple minutes. I wanted to recognize that again there are people here from some of the tribes. They have come all this way, and I appreciate their presence.

It is my understanding that Bristol Bay is home to 25 federally recognized tribal governments, and I wanted to talk a little bit about the public participation part of the assessment. Mr. Nastri, is it unusual for there to be two public comment periods? Because it is my understanding that during the first phase, there were more than 200,000 public comments, and during the second phase, 877,000 public comments came in. So can you talk a little bit about the effort to involve the public in this assessment process, especially with the federally recognized tribes?

Mr. NASTRI. There has been extensive outreach during this entire process and it was at every stage of the process from helping to define what the study would be, helping to select the charges that would be subject to peer review, to who peer reviewers could be. There was extensive outreach with regards to the one or two peer reviews. In my experience, there typically was one peer-review period and then the agency would go ahead and finalize and release. I think in an abundance of caution, the agency wanted to make sure that there was as much outreach as possible and to solicit as much input as possible from all of those, and it is continuing to do so, and right now they had recently closed that second comment period on the second revision that was released, and so they are in the process of compiling and reviewing all of the comments that are submitted, and I am sure that many of the issues that were discussed today will be addressed once that watershed assessment is finalized and released.

Ms. BONAMICI. Thank you. And can you comment briefly on the efforts that have been made to work with the federally recognized tribes in the Bristol Bay area?

Mr. NASTRI. There have been a number of communications directly with members of the tribal villages. Previously, there was visits to the actual area. I know that there were a number of visits. The Administrator herself, Administrator Jackson, had the chance to visit. EPA staff had the chance to actually fly over the proposed site, look at some of the areas that would be impacted by the potential development of the Pebble deposit. So there was an extensive ability for the actual staff of the agency to see firsthand what it is that was being discussed. I myself also had the opportunity to visit a number of those villages and see the challenge that they have. So I think that in terms of the agency itself providing the opportunity for engagement, they specifically formed a group to deal

with the tribal entities and so forth. They have had numerous opportunities for public input, and I would say that it is really quite extensive.

Ms. BONAMICI. Thank you very much, and I yield back the remaining time. Thank you, Mr. Chairman.

Chairman BROUN. Thank you, Ms. Bonamici. Mr. Kilmer, you are recognized for five minutes. Do you think you need all five?

Mr. KILMER. I don't think I will.

Chairman BROUN. Okay.

Mr. KILMER. Thank you, Mr. Chairman, and thank you for allowing me to participate in this important hearing. I would like to thank all the witnesses for traveling here today as well.

As mentioned, the Bristol Bay watershed is the world's largest sockeye salmon fishery, not only in existence but flourishing, and as a representative from Washington State, I have seen the detrimental effects of a struggling salmon population and how it can affect all stakeholders from fisherman to our tribal communities. In Washington State, we can all agree that the viability of our fisheries, whether in the State of Washington or in Alaska, are a key economic driver and a part of our cultural heritage, and healthy fisheries create jobs. Bristol Bay watershed supports over 14,000 jobs from Alaska to Maine and at least 5,000 Washington State jobs rely on the Bristol Bay sockeye fishery including a good number of my constituents.

In examining the proposal, I have serious concerns over the environmental effects of building this type of mine right on top of the largest sockeye run in the world. In fact, according to Pebble's own documents on file at the SEC, at least 80 miles of sockeye spawning streams would be destroyed during the construction of the mine. That is in addition to the lasting impacts that the toxic tailing pools would have on salmon. I hear the Pebble supporters say that the EPA should just wait for a permit application, and I guess I have got a few questions for Mr. Nastri.

First, in your opinion, why is it so important that EPA get this work done sooner than that? Second, I hear from a lot of commercial and sports fishermen in my district who oppose the Pebble mine and support the EPA's process. In the Bristol Bay region, what do residents think about the EPA process and what do they think about the mine? And then finally, you know, I have a number of tribes in my district and I understand the importance of access to fishing grounds for our tribal communities. Worst-case scenario or let us say medium-case scenario we have a leakage from the toxic tailing pools. What happens to subsistence fishers in the region? Are there other streams nearby that can sustain them? In your view, is the EPA doing enough to make sure subsistence fishers in the Bristol Bay region have a voice during the process? Thank you.

Mr. NASTRI. Thank you. You asked a lot of questions, and hopefully I will be able to answer them all, but if I forget one, please remind me.

With regards to the level of support, as I mentioned earlier, over 75 percent of the comments that were generated with regards to the watershed assessment were in support of, and within Bristol

Bay, over 95 percent of the commenters supported EPA's watershed assessment.

With regard to the subsistence aspect, there was a tremendous amount of outreach on the cultural and subsistence issue, and in fact, there were comments that were submitted by various villages that talk about the potential harm to a subsistence way of life and to a cultural identity should the salmon be impacted in a way that is feared. And so there is a tremendous amount of effort, both in terms of addressing the subsistence aspect. There is a tremendous level of support for EPA and its watershed assessment. And I am sorry, the very first portion of your question?

Mr. KILMER. In your opinion, why is it so important that the EPA get this work done sooner than waiting for a permit application?

Mr. NASTRI. So right now what we have and what really prompted the request to EPA is uncertainty, and as Senator Murkowski said, that uncertainty has caused anxiety and frustration within the communities. And that has a direct impact on the economic well-being of the area. We have heard from a number of groups and organizations that said they will not invest in the area because they don't know what the outcome is. There is also the ongoing threat of stigma, stigma in terms of, are these fish going to be something that is really valuable. Right now, the value of this fishery is tremendous, and so providing and addressing a response that addresses the uncertainty is extremely important, and not only are there the economic aspects, you know, the 14,000 jobs, the 1.5 billion contribution, but you have the social impacts as well, and I am sure that the village elders that are here today could share with you stories about what it is doing to their youth. I have had the chance to talk to some of those youth, and they say that this uncertainty has impacted them greatly. And so providing the certainty not only to all the people that are involved that rely on the fishery, that live on the fishery, but to everybody so that they know what needs to be done and how we can address this and move forward and continue to have that very viable and healthy fishery and economy.

Mr. KILMER. Thank you, Mr. Chairman. I yield back.

Chairman BROWN. Thank you, Mr. Kilmer.

Before I adjourn this hearing, I want to make a couple of points. As I stated in my opening statement, I am an avid hunter, fisherman and conservationist. In fact, it was those issues that started my political activism. I enjoy the great outdoors and strive to protect our natural resources so future generations may also enjoy the benefits that they provide.

I have serious questions about how a mine can coexist with fish in Bristol Bay, but I have reservations about EPA's action in regard to the potential Pebble mine. I cannot support actions by a Federal agency that disregards laws that already exist that provide a level playing field for both industry and environmentalists alike. We must be a Nation ruled by law, not ruled by the decision of man or woman.

If the Administration wants to keep its promise of transparency and accountability, it should start with projects like the Pebble mine in Bristol Bay and allow the NEPA process to occur once an

actual plan is submitted. If it turns out a mine cannot be developed without endangering the salmon in Alaska, then the EPA has the authority to deny the requisite permits, and should. But it will have done so by following the due process instead of setting a costly and chilling precedent that may send more jobs out of the United States to countries whose mining laws have little regard for the environment or their citizens. Following our system of existing laws and regulations would also help alleviate the uncertainty among industry, who right now are wondering which rules will prevail, the laws as we know them or the whims of an agency an Administration that apparently believes the ends justify the means.

My position has always been, if the Pebble mine will harm the fisheries and environment, as some believe, it should not be allowed. We must allow due process under the law to find the facts. Laws and facts should drive the decision.

Again, I thank everyone for their participation in this informative hearing today, and I suspect it won't be our last discussion on the topic.

I have allowed every letter that I have gotten, no matter how much they have impugned my process and my reasons for holding this hearing. I have put them all in the record. We have to be a Nation governed by law and due process, and that is the whole reason for this hearing.

Now, Members of the Committee may have additional questions for the witnesses, and we will ask you to respond to those in writing. The record will remain open for two weeks for additional comments and written questions from Members.

The witnesses are excused. I thank you all for your presence. This hearing is adjourned.

[Whereupon, at 2:31 p.m., the Subcommittee was adjourned.]

Appendix I

ANSWERS TO POST-HEARING QUESTIONS

ANSWERS TO POST-HEARING QUESTIONS

Responses by Mr. Lowell Rothschild

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September 17, 2013

Chairman Paul Broun, M.D.
U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Oversight
2321 Rayburn House Office Building
Washington, DC 20515-6301

Re: Responses to Questions for the Record and Transcript Edits Regarding the Subcommittee's August 1, 2013 hearing titled, "EPA's Bristol Bay Watershed Assessment - A Factual Review of a Hypothetical Scenario."

Dear Chairman Broun:

As requested in your September 3, 2013 letter, the following are my responses to the Questions for the Record submitted to me regarding the Subcommittee's August 1, 2013 at the hearing titled, "EPA's Bristol Bay Watershed Assessment - A Factual Review of a Hypothetical Scenario." Also attached are several pages of the transcript containing typographical and transcription corrections I would suggest.

Questions submitted by Chairman Paul Broun

Question 1: What is the EPA's role in the NEPA process and how much weight does its influence carry - more or less than other involved parties?

Response 1: EPA has two different roles in the NEPA process. First, it has the same role as all other agencies, in that the action agency asks it for, and it typically provides, comments on the Draft and Final EISEs as to subjects on which it has particular expertise and/or interest. Given its regulatory mission, those comments often cover a wide range of the EIS's impact analysis. EPA's comments are usually given significant credence by the action agency and third parties.

In addition, EPA has a unique role in the NEPA process. Congress has required that EPA review and comment on the environmental impacts of all major federal actions and, if it determines that the environmental impacts of any action is unsatisfactory, it is to refer the matter to the Council on Environmental Quality (CEQ). As a result, EPA receives a copy of

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every DEIS and its comments on both the environmental impacts of the project and the adequacy of the DEIS, assigning the DEIS a grade in both categories.

Question 2: Generally speaking, how long does the NEPA process typically take and how does that contrast with the length of time it took EPA to release the first draft of the Bristol Bay Watershed assessment?

Response 2: The time to comply with NEPA can vary widely. This is true even ignoring the shorter methods of complying with NEPA – identifying Categorical Exclusions (CatExes) or issuing Environmental Assessments (EAs) coupled with Findings of No Significant Impact (FONSI). That being said, a “typical” Environmental Impact Statement (EIS) process takes approximately 18-30 months from start to finish. It is not unusual, however, for the process to extend beyond this period.

Question 3: What advantages are there to conducting a watershed assessment prior to an actual permit being submitted through the NEPA process?

Response 3: There are a few advantages, but they are limited. To the extent that the Assessment provides baseline information on certain resources, it provides some analysis which would need to be undertaken in the EIS. It is likely that a good bit of the baseline information may translate, but it is less clear exactly how much of the impact analysis would.

Information on the baseline – the current status of the resources in the area – will have to be prepared for an EIS. Thus, to the extent that EPA has already prepared it, it could be used for the EIS. It is possible, depending on the scope and timing of the application that even this information will need to be supplemented. That being said, much of the baseline information gathered for and presented in the Assessment would likely be of use for EIS baseline purposes.

It is less clear how much of the Assessment’s impact analysis would be useful for purposes of an eventual EIS’s impact analysis, even for the limited resources studied in the Assessment. That is largely the result of the avoidance, minimization and mitigation measures that will be incorporated into the project. If such measures are sufficiently different from the hypothetical scenarios described in the Assessment, some degree – perhaps even a large degree - of the impact information in the Assessment will likely not be useable in the EIS. The reason is that impact assessment varies widely with the extent of the impacts. Impacts are not always linear and relatively small changes can sometimes make significant differences. Similarly, EPA consistently allows projects to go forward after the project proponent makes relatively small, incremental reductions in impacts. This is because

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a large percentage of the avoidance and minimization EPA thought was necessary had already been accomplished – it just wanted to see an incremental additional effort.

Other than this, there is limited advantage to undertaking a watershed assessment before starting the NEPA process, at least for purposes of the NEPA process.

Question 3a: Can an assessment be used to supplement future reviews if it was completed prior to a permit being submitted?

Response 3a: The response to this question is included in my response to question 3a. In short, it is possible that it might be used to do so, particularly for the baseline information. It is less certain how much the impact analysis will translate. It depends, among other things, on the scope of the eventual permit application and the time of the delay between the watershed assessment and the NEPA assessment,

Question 3b: In contrast, are there any disadvantages to performing an assessment before a permit or plan is submitted?

Response 3b: The primary disadvantage is the expense of the study.

Question 4: Besides mines, what kinds of development proposals require dredge or fill permits, and is the EPA typically involved in such projects?

Response 4: Almost all development proposals require a wetland permit of some kind – everything from individual and multi-family housing, commercial developments and highways, to schools, office buildings, pipelines, and schools. Many are addressed through streamlined “nationwide permits” which authorize certain limited impacts in advance, so long as certain conditions are met. Others require project-specific individual permits.

EPA is involved in both types of permits, but more involved in individual permits. EPA can be heavily involved in individual permitting and ultimately has what is essentially veto authority over the permitting process.

Question 5: Many individuals and groups have expressed concerns that the EPA may invoke authorities within section 404(c) of the Clean Water Act to preemptively veto any mining proposals in Bristol Bay before developers even file a permit application. Should EPA embark upon such a course of action, could that automatically prevent projects such as hospitals and schools from being built in that area?

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Response 5: It is possible that it could, yes. On its face, the law states that “[t]he [EPA] Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site. . . .” In the absence of a particular permit, based on this language, it appears that EPA might have to completely prohibit the use of a “defined area” for disposal; she or he might not be authorized to prohibit it for just one (or one type of) use.

Question 6: A preemptive veto by EPA would mean eliminating the U.S. Army Corps of Engineers from the process. Has there ever been any guidance from Congress suggesting such an act to be an appropriate interpretation of implementing Section 404 of the Clean Water Act?

Response 6: I have not previously researched whether there is any Congressional guidance on this question.

Question 7: Please find attached a letter to the Committee from Mr. Thomas Yocom, who served as National Wetlands Expert for the EPA from 1984 until 2005. Mr. Yocom's letter includes comments on portions of your testimony for the August 1, 2013 hearing. Do you have any response to his comments?

Response 7: I appreciate Mr. Yocom taking the time to provide such a lengthy analysis to the Subcommittee. A good deal of his analysis addresses the propriety of EPA's potential use of a prospective Clean Water Act § 404(c) veto, a subject on which I was not asked to testify. Similarly, Mr. Yocom has interpreted certain subcommittee statements made during the hearing “to suggest that EPA's use of its authority under Section 404(c) of the Clean Water Act denies due process to potential permit applicants that would be otherwise afforded them under NEPA” or otherwise “short-circuit the environmental review process.” p. 2. I did not make any such statements, but nevertheless note that some of Mr. Yocom's responses to this perceived concern are not entirely accurate.¹

For example, Mr. Yocom describes the 404(c) regulations under 40 C.F.R. 231.1 *et seq.* as “very much like a permit process.” p. 2. To the contrary, while the regulations do

¹ I also did not suggest, as Mr. Yocom indicates “that a 404(c) action by EPA could fail to fully assess all of the potential impacts of a mining project because the 404(c) process would have a narrower focus.” p. 4. My testimony addressed only EPA's Clean Water Act Section 104 watershed study, not a potential 404(c) veto. That being said, I do believe that the factors established by Congress for the EPA to properly take a 404(c) action are more limited than those required for a proper NEPA analysis. Mr. Yocom's comments appear to agree. See pages 4-5, comparing his eight 404(c) factors with my 20 NEPA factors.

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establish a fair bit of process, including an opportunity for public notice and comment, they differ significantly from the permit process. Under the permit process, the project proponent submits an application specifying its proposal and its avoidance, minimization and mitigation measures. For large projects, the process then often involves a great deal of back-and-forth discussion where the Corps and/or EPA express their approval or disapproval of certain aspects of those measures; for portions which meet agency disapproval, the project proponent typically modifies them, sometimes numerous times, as needed to eventually satisfy the Agencies' concerns. For major projects which may significantly affect the environment, it also includes an Environmental Impact Statement analyzing all of the impacts of and alternatives to the project, including to the approximately 20 resources I noted in my written comments.

In the case of a prospective veto, the 404(c) process need not include any of these things. The regulations require that the general public be notified and allowed to comment on EPA's proposed veto, but they do not require that EPA interact with the project proponent. In some cases, like for the Pebble mine, there is not even a requirement that EPA contact the project proponent. This is because the regulations require EPA to notify ". . . the owner of record of the site, and the applicant, if any." 40 C.F.R. § 231.3(a)(1). In the case of a prospective veto, there is no applicant yet, so no requirement exists to notify the project proponent unless it also owns the property. In the case of the Pebble mine, the state owns the property, so the regulations do not require EPA to even notify the project proponents.

Mr. Yocom's recitation on page 3 of the notification requirements and the "additional opportunities [for the project proponent] to take corrective action" may exist for contemporaneous vetoes, but they do not for prospective ones. Similarly, his identification of situations where "EPA withdrew its 404(c) recommendation when project sponsors were able to modify their proposals in order to avoid impacts that EPA considered to be potentially unacceptably adverse" (p. 3), again, is only relevant if there is a proposal to modify. In the case of a prospective veto, there is, by definition, no proposal.²

The 404(c) process is also unlike the full permitting process in that a much more narrow range of factors are analyzed. Under the statute, EPA may

² Of course, the project proponent can provide general comments on EPA's proposal, just like any other member of the public, but this is much different from engaging in a constructive, interactive dialogue with the agency. Indeed, the 404(c) regulations only require EPA to provide public notice and an opportunity to comment – they do not require EPA to respond to those comments. Thus, in the case of a prospective veto, there is no requirement that EPA ever respond to, let alone interact with, the project proponent.

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prohibit the specification. . . of any defined area as a disposal site. . . whenever he determines. . . that the discharge of such materials in to such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.

33 U.S.C. § 1344(c). The regulations define "unacceptable adverse impact" to mean

impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies (including surface or ground water) or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas.

40 C.F.R. § 231.2(e). Thus, under the regulations, EPA could veto a project based solely on its potential significant damage to recreation areas; it would never need to examine the other 19 resources which would be analyzed under NEPA.

Mr. Yocom hypothesizes that an EPA 404(c) analysis "would likely consider other impacts insofar as identifying the least damaging practicable alternative." p. 5, referring to the "LEDPA." I do not believe that such an analysis would be possible, at least as envisioned under the law, without a permit application. For EPA to undertake such an analysis without a permit application would require it to hypothesize what alternative would be the LEDPA analysis only to deem it insufficient. The LEDPA process, like the judicial adversarial one, is most effective when two different points of view are engaged.³

Finally, in response to Mr. Yocom's statement that, in the other 13 vetoes EPA has issued, there is no restriction on all discharges of dredged or fill material but instead project specific limitations (p. 4), I note that all of those projects involve permits which had already been sought, so they offered EPA a simple way to identify the prohibited specification - by referencing the fill sought by the permit applicant.

The remainder of Mr. Yocom's comments are essentially directed at the concept that "[i]t is reasonable and appropriate for the federal government to act proactively when there is

³ To the extent that Mr. Yocom suggests that certain portions of the 404(c) analysis would be more expansive than that of the NEPA analysis, those analyses are not foreclosed if EPA and the Corps follow the NEPA process. To the contrary, NEPA compliance alone is insufficient to support the issuance of a permit - the Corps would still need to complete the 404 process, and EPA would have an opportunity for its 404(c) analysis (and veto, if it wished) at that time. Thus, those more expansive alternatives would still be reviewed even without a prospective 404(c) veto.

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clear evidence that a proposed project will not comply with federal regulations" (p. 3) and that the potential Pebble Mine is one such situation.

As to the former (whether it is "appropriate" "to act proactively when there is clear evidence that a proposed project will not comply with federal regulations"), there is little, if any, harm in allowing the process to move forward.⁴ It is entirely funded by the project proponent. The government's only investment is the time and salaries of the government employees overseeing the process.⁵ As to any potential environmental harm, NEPA is the cornerstone of the environmental review process, frequently cited by project proponents as mandatory before decision affecting the environment should be allowed to proceed. There is no environmental harm at all in allowing it to proceed in any particular situation.

As to the latter, (whether Pebble Mine is a situation where the government should act prospectively), I am fairly unfamiliar with the potential Pebble Mine project and so not in a good position to opine on the potential for any such mine to operate without conflict with the 404(c) criteria. That being said, as I stated in my written testimony

It is often difficult to know in the abstract what those avoidance, minimization and mitigation measures are, for several reasons.

First, the project applicant can often move the footprint of the project in order to avoid certain quantities of impacts or certain high-quality wetlands. Avoiding certain quantities of wetlands is an obvious way to avoid impacts – instead of impacting ten acres, the project only impacts eight. Avoiding certain high-quality wetlands is less obvious and can't really be done until project-specific information is gathered. At the time of a project application, the project proponent will have completed an assessment of the functions and values of the wetlands in the project area and is often able to shift the project so that even though the same number of acres is impacted, those impacts are

⁴ I also note that Mr. Yocom is not consistent with the standard he wishes to apply. Later in his comments he notes that "it serves no one to proceed through a long and costly EIS process if a project is *likely* to fail to qualify for a permit (emphasis added). I strongly disagree that this is a proper standard - if a project is unlikely to qualify for a permit, a project application should most certainly be allowed to proceed through the NEPA process

⁵ Mr. Yocom's suggestion that his recommendation of a prospective veto is offered in part to conserve the financial resources of the project proponent (p. 6) and "in the best interests of the regulated community" (id.) is unpersuasive - those entities should be allowed the opportunity to spend their money as they wish.

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to lower-quality wetlands. These facts and the resultant possible modifications do not appear to be part of the Bristol Bay Assessment.

A second reason that abstract analysis of avoidance, minimization and mitigation is also not very fruitful is because it is difficult for an agency to know what the most current avoidance and minimization measures are that can be undertaken by a project developer. The dynamic nature of business means that new methods are always being developed that can avoid and minimize impacts. Not all the methods result in significant impact reductions, but some do, and it is difficult for a federal agency to stay current with an industry's current best practices. And this is just a wetland example – there are similar ways to avoid and minimize impacts to groundwater, surface water, wildlife, air and other resources. As a result, being able to rely on a specific project application significantly aids the federal agency in undertaking its analysis.

Further, while Mr. Yocom and others outside of EPA may believe the mine would not be able to operate without conflict with the 404(c) criteria, that is not their decision to make - it is EPA's. While Mr. Yocom may have a good sense of what an eventual mining project would entail (pp. 7-9), neither he (nor EPA at this point in the process) are aware of either (1) the footprint limitations and alterations the project proponents would be willing to undertake or (2) the current state of the art minimization measures available to the project proponents, among other avoidance and minimization options.

At its core, however, how close Mr. Yocom's analysis is to what the potential mine might look like is irrelevant, since his comments themselves refute his assertion that EPA should act proactively in this instance. He states that he has "recommended that EPA initiate a 404(c) process to restrict, not prohibit, discharges of dredged or fill material associated with mining the Pebble deposit and other large-scale mines that may be proposed in the Bristol Bay watershed." p. 9. He continues on by stating that this restriction "could result in restricting discharges of dredged or material" in a way to limit certain environmental harms and risks. *Id.* This statement confirms Mr. Yocom's view that there are mining alternatives which could be accomplished that do not conflict with the 404(c) prohibitions (since he is suggesting that EPA prospectively mandate them). Given this belief, there is no harm with moving forward with the permitting and NEPA processes and allowing the project proponent to submit such potentially "compliant" alternatives. If, after the normal permitting process, EPA believes the project proponent's alternative is insufficient, EPA can issue such a "restrictive" 404(c) veto at that time.

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Questions submitted by Rep. Daniel Maffei (D-NY)

Question 1: Please describe your familiarity with the Bristol Bay region and the Pebble prospect?

Response 1: I am only slightly familiar with either the region and the project. In fact, most of my familiarity comes from my brief review of the EPA Watershed Assessment prior to my testimony. The remainder of my familiarity came from reading the occasional news story about the Watershed Assessment

Question 2: In preparing to appear before the Subcommittee, did you review the Letter from Six Federally Recognized Tribes to Lisa Jackson, EPA Administrator and Dennis McLerran, EPA Regional Administrator, Region X, May 2, 2010?

Response 2: I did not.

Question 3: The Six Tribes letter argues that because of an improper State designation of the lands forming the Pebble prospect, the NEP A process would be flawed and inadequate. Your testimony suggests that the NEP A process, particularly the Environmental Impact Statement (EIS) done for that process, would necessarily be more complete and more robust than any review that EPA might do of the area under its Clean Water Act (CWA) authorities. You stated to the Subcommittee:

"EPA's assessment is not an adequate substitute for an EIS, and even for the resources it does analyze, its impact assessment is less informed and therefore less useful than the analysis which would occur under a project-specific EIS."

However, while the EIS would deal with matters that go well beyond the scope of EPA's concerns under the CWA, it is not obvious that those other matters are germane to the agency. As for the specific analysis that the EIS would contain for matters germane to EPA and the CWA, the implication of the Bristol Bay Area Plan (BBAP) is that the designation of the land as mineral land brings with it a very different set of expectations regarding environmental impacts and protection.

Question 3a: Do you agree or disagree with the Six Tribes' letter in viewing the BBAP as having a material impact on the NEPA process?

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Response 3a: In response to this request, I have briefly reviewed the portion of the Six Tribes' letter related to the BBAP. I agree with the letter that an EIS would analyze and address the applicable state land use plans, as the Tribes state on page 7 of their letter. However, I do not believe that the BBAP would materially impact the information presented in the EIS. As I noted in my written testimony, land use is only one of approximately 20 categories of resources analyzed in an EIS. Further, the EIS is not a decision-making document – it only presents the impacts and alternatives. At most, the EIS would note consistencies or inconsistencies between alternatives and a land use plan like the BBAP. It would be in the decisionmaking stage – in this case, the Corps' permitting process, that any consistencies or inconsistencies would become relevant to the Corps' decision.

Question 3b: If you disagree, please explain why.

Response 3b: Please see the response to question 3a.

Question 3c: If you agree, please describe in detail how the NEPA process would differ for lands designated by the state as mineral land as opposed to lands that may be designated as habitat for the purposes of protecting native species of fish and mammals.

Response 3c: As I disagree, I have not responded to this question.

If you have any questions or would like to discuss my responses, please do not hesitate to call or email.

Very truly yours,

Bracewell & Giuliani LLP

/s/

Lowell Rothschild
Senior Counsel

Responses by Dr. Michael Kavanaugh

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15 September 2013

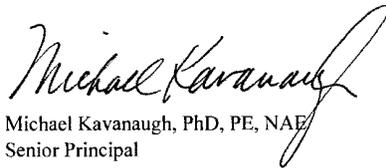
Rep. Paul Broun, M.D.
Chairman, Subcommittee on Oversight
Committee on Science, Space and Technology
House of Representatives
2321 Rayburn House Office Building
Washington DC 20515-6301

**Subject: Response to Questions for the Record following the August 1, 2013 Hearing on
“EPA’s Bristol Bay Watershed Assessment – A Factual Review of a
Hypothetical Scenario”**

Dear Representative Broun:

Attached to this letter are my responses to the questions submitted by you and by Congressman Maffei, and my responses to comments made by Mr. William Riley in his letter dated August 14, 2013. In addition, as it addresses one or more of the questions asked, I am also attaching Geosyntec’s letter dated 22 May 2013 presenting our assessment of the 2nd Draft of the EPA’s Bristol Bay Watershed Assessment.

Sincerely,



Michael Kavanaugh, PhD, PE, NAE
Senior Principal

Attachment: Responses to Questions for the Record
Geosyntec Review of 2nd Draft BBWA

Transmittal - BBWA Hearing - Kavanaugh Responses to Questions - 09-15-13

engineers | scientists | innovators

HOUSE COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON OVERSIGHT**"EPA's Bristol Bay Watershed Assessment - A Factual Review of a Hypothetical Scenario"****RESPONSES TO QUESTIONS FOR THE RECORD**

**Dr. Michael Kavanaugh, Senior Principal, Geosyntec Consultants,
and Member, National Academy of Engineering**

Questions submitted by Chairman Paul Broun

- 1) *You say in your testimony that, "the BBWA exaggerates the probability of failures." Scientifically speaking, how could EPA's document be strengthened?*
- There are many ways in which the BBWA should be strengthened from an engineering analysis perspective as outlined in my written testimony and the Geosyntec reviews of the two versions of the BBWA, but one of the most important shortcomings is the reliance on an hypothetical mine scenario to assess the potential watershed impacts of the hypothetical project. The use of the Wardrop report¹ as a surrogate for an actual mine plan misrepresents the level of detail on analysis, design and mitigation that would be included in a plan required during a NEPA permitting review. The Wardrop report explicitly states its purpose as an economic assessment of three development scenarios, and while engineering calculations are needed to estimate the cost of the development, no formal design with engineering documentation is provided for the mine elements that are presented, or the mitigation measures and redundant design features that would be included in the mine plan.
 - The BBWA would need to focus on more than just worst case scenarios, including partial failures of components of the mining infrastructure. In addition, a proper scientific and engineering evaluation of the risks and consequences of these various scenarios would need to be performed. This evaluation is not a simple undertaking, and in my opinion is best left to the permitting process, when the regulatory agencies can work with Pebble based on an actual project plan. The permitting process identifies the scenarios that need to be evaluated, and the probability of those scenarios occurring can be subjected to detailed review by regulatory experts to provide the bases for a credible risk analysis, and identification of design changes or mitigation measures needed to meet acceptable levels of risk. EPA has not performed a risk analysis that meets quality requirements because they have failed to assess the probability of occurrence of the failure scenarios postulated for the mine infrastructure components.

¹ Wardrop. 2011. *Preliminary Assessment of the Pebble Project, Southwest Alaska*. Prepared for Northern Dynasty Minerals Ltd., February 15, Prepared by Wardrop (A Tetra Tech Company), Vancouver, BC.

2) *Does EPA's assessment use modern engineering standards to evaluate impacts of a potential mining project on the natural resources of the Bristol Bay? If not, what standards are used and do you know why these standards would be used instead of modern day standards?*

a. *Are you aware of any other instances when EPA or any other federal agency used antiquated standards for modern assessments?*

- I am not aware of other instances where antiquated standards have been used by EPA or other federal agencies in decision making on mine development.
- It is not entirely clear what standards were used by EPA in preparing the BBWA with respect to assessment of the probability of failure of mine infrastructure. In most cases, there were no standards referenced, or if they were, they were referenced but not applied as the basis for the failure scenarios. The most prominent example may be the use of literature supporting culvert failure rates (defined as blocking of fish passage) of 30%-58% which were often based on culverts that were not even permitted in the first place and clearly did not adhere to current design standards. The authors in the studies note that the issues observed could have been prevented with proper design, installation, and/or maintenance. A project being designed under current regulations with stringent environmental standards and regulatory oversight should be expected to be executed with much greater care such that fish passage standards are met at each crossing.

Another example is the BBWA's reliance on outdated case histories to represent the state of engineering associated with the design, construction and operation of tailings storage facilities (TSFs). As documented elsewhere, reliance on 135 case studies of TSF failures to estimate failure probability of a future TSF is scientifically inaccurate. A modern TSF, especially on the scale of the Pebble project, would be designed, built, and operated based on best science and engineering, and in a manner that would have learned from past mistakes. In fact, all of the failure modes responsible for the 135 failure studies are well recognized and these failures have been carefully analyzed, thus providing the basis for improved design and operational plans for modern mines.

The mining practice has continued to evolve, and Pebble must meet the challenge to demonstrate to the regulatory agencies that appropriately high standards will be used in designing, constructing, and operating the mine through its life cycle.

3) *As a member of the National Academies Report Review Committee, which oversees the quality program for all NRC reports, you have unique experience in reviewing products issued by the National Academies. Recognizing that there are different methods involved between NAS documents and EPA's watershed assessment, how does the assessment compare to the average NAS document in the categories of stating and meeting objectives as well as scientific soundness?*

- The BBWA has relied on a peer review panel process as well as a public comment period to oversee the scientific quality of the Report. The response to the comments was organized by a contractor for EPA, Versar, and the response document prepared for

the first version of the BBWA did not provide a detailed commentary on the major criticisms to the Report. While the NRC process is not public, the NRC staff provides a detailed response to all comments from each reviewer of an Academy report. This level of detail is missing in the EPA review process, with the result that it is unclear which comments were not addressed and for what reason(s). This is definitely a shortcoming of the review process applied to the BBWA.

- 4) *Do you believe that the composition of the peer review panel selected for EPA's watershed assessment was sufficiently diverse and knowledgeable on the subject matter? Do you have any recommendations relative to the expertise of the panel members?*
- Given that much of the focus of the BBWA is on the failures of engineered systems, it is unfortunate that there was only one engineer with mining expertise on the panel. I would recommend that several engineers be included on the peer review panel, with expertise in the various critical mining infrastructure elements being evaluated in the BBWA, given the importance of failure scenarios in assessing the potential impacts of the mine.
- 5) *Do you consider EPA's peer review process for both drafts of the Bristol Bay watershed assessment to be adequate and transparent? Do you have any suggestions on how EPA could have handled the peer review processes?*
- As noted in my previous response, the major shortcoming in the first phase of EPA's peer review process was the lack of transparency in response to comments for the public. While comments from the peer review panel members were discussed in some detail, it was still unclear why some critical comments were not discussed, nor responded to in the revised draft. In the second phase of peer review on the revised BBWA, documents have not yet been published by EPA to assess what responses will be forthcoming, or how the BBWA may be revised. Regarding the 2013 process, I will repeat two statements from my formal written testimony dated 29 July 2013:

“Even though the 2013 Assessment nearly doubled in size, with major organizational changes and substantial amounts of new information, no opportunities have been provided to allow for public interaction with the external peer review panel. Neither the charge to the external peer committee in this latest round, nor procedures to respond to committee questions have been made available on USEPA's website.”

“In addition, following peer review of the 2012 BBWA, USEPA undertook additional external peer review of seven documents selected by the agency as relevant to mining activities in Alaska. This component of the peer review process was not done in a transparent manner, with little information provided on how or why these seven documents were chosen, how the peer reviewers were selected, and how the USEPA responded to the comments prepared by the reviewers of these seven reports. The lack of transparency on this aspect of the peer review process is disturbing since the documents were widely quoted in the 2013 BBWA. Such lack of transparency on these

highly relevant documents undermines the credibility of the final document.”

6) *In its second draft, did EPA incorporate any of the concerns or recommendations submitted by Geosyntec for public comment?*

- Geosyntec prepared a review of the second draft of the BBWA. In that review letter, dated 22 May 2013, numerous examples were given of how Geosyntec’s comments on the first draft were not addressed nor incorporated (see Table 1 in the attached copy of the review letter). On occasion, obvious flaws identified in the first draft were removed in the second draft. However, the second draft BBWA is a much larger document and includes a substantial amount of new content. Our initial rapid review identified significant concerns with the new content, and more concerns would likely have been provided had there been sufficient time for review.

7) *Given the uniqueness of the Bristol Bay Watershed, is it more appropriate to try to protect the area from development through a watershed assessment, or should there be a more thorough process undertaken, via the, NEPA process, to analyze all aspects of potential mining?*

- Clearly a project of this magnitude warrants a very thorough and exhaustive review process with assurances that the project being reviewed is based on an actual proposed plan, with reference to all available documentation and including mitigation plans where appropriate. The BBWA has provided some value, in that it provides insight into regulatory concerns regarding the development. However, both in its scope and in its execution, the BBWA is insufficient for informing regulatory decisions.

That is the role of the NEPA/EIS process, which has been well tested over the years since the passage of the NEPA statute, and is a far more robust and thorough assessment of all aspects of a proposed mining project. This process is also well established in Alaska, as applied to applications for permits to construct and operate a hard rock mine. Furthermore, the NEPA/EIS process would carefully evaluate all components of an actual mine plan in the context of well-established regulations applied to all components of the mine. The NEPA/EIS process, by definition, would be far more thorough than the BBWA in analyzing the need for mitigation measures and specifying what those mitigation measures should be in order to satisfy permit requirements. In summary, the well-established NEPA/EIS process should provide a far more thorough risk analysis of the actual mining plan compared to the BBWA.

8) *Is EPA’s watershed assessment scientifically robust enough to be the basis of a preemptive veto under Section 404 (c) of the Clean Water Act?*

- In my opinion, the BBWA does not meet the standard of care for a scientifically defensible ecological risk assessment or risk analysis. Our (Geosyntec Consultants, Inc) review of the BBWA indicated that there were numerous flaws in the document such that it does not present a fair and unbiased assessment of the project. Among those

numerous flaws is a failure to make full use of the extensive baseline environmental data produced by the mine proponents.

- 9) *Please find attached a letter to the Committee from Mr. William Riley, who worked for the EPA's Region 10 Office in Seattle, Washington from 1980 to 2007. Mr. Riley's letter includes comments on portions of your testimony for the August 1, 2013 hearing. Do you have any response to his comments?*
- Thank you for the opportunity to comment on Mr. Riley's letter. My specific remarks in response to his critique of my testimony is provided after the responses to Congressman Maffei's questions.

Questions submitted by Rep. Daniel Maffei (D-NY)

Your testimony painted a rosy scenario of how new mining technologies would overcome all potential adverse impacts of hard rock mining in the Pebble prospect. You were particularly dismissive of "low probability" scenarios in the EPA assessment as simply painting an alarmist portrait. Curiously, the EPA draft assessment concludes that even without the "low probability" scenarios, the damage from the proposed mine would be significant. In any case, the Science, Space, and Technology Committee has heard many experts over the years assure us of the ability of technology to reduce risk, that nay-sayers overstate risks and that new techniques harnessed to expert knowledge render those who see risk irrelevant to an accurate assessment of a proposal. But year after year, we see how complex systems collapse through technological failure, human error or natural disaster. The worst cases often involve all three elements working in horrific concert--the Fukushima Nuclear Power Plant is the most recent example of such a failure. This leads me to ask that you provide the following information:

- I would first like to respond to the following statement:

"But year after year, we see how complex systems collapse through technological failure, human error or natural disaster. The worst cases often involve all three elements working in horrific concert--the Fukushima Nuclear Power Plant is the most recent example of such a failure."

I have repeated this statement from the Congressman's opening remarks because it represents a significant misunderstanding of what engineers and scientists do, and this misunderstanding is in part a root cause of disagreements over development projects. The essence of the human condition is the development of engineered systems designed to achieve some economic goal, while not causing unacceptable impacts to human health and the environment. Since the industrial revolution, the built environment has evolved to a point where the vast majority of engineered systems operate safely and effectively over their intended life span. Most bridges do not fail, but some do. Most modern buildings withstand earthquakes if properly designed. The first production

commercial jetliners suffered significant problems and three well publicized crashes occurred due to what was ultimately found to be design flaws, and yet we still fly in airplanes today.

To compare Pebble to the Challenger disaster, as EPA did in the second version of the Watershed Assessment, or to the Fukushima Nuclear disaster, is an unjustifiable distortion of the well-known engineering challenges facing the Pebble mine. The key structure that has been the focus of much attention, namely the Tailings Storage Facility (TSF) will be built based on the experiences gained from design, construction and successful operation of thousands of earthen structures that have been constructed over the past decades. This does not mean that any system is “fail safe” but it does mean that systems can and will be designed to withstand credible failure scenarios. It is important to note that no regulatory requirements demand that a system be “fail safe”, only that safety factors and design elements be incorporated that are “reasonable” and reflect “reasonable” assumptions. In the case of the Pebble Mine, the permitting process is designed to assess carefully the engineering requirements for a mining project that will meet permit requirements in Alaska. That is why the mine developers deserve an opportunity to present their case to regulators in support of an actual mine plan designed to minimize system failures and have systems in place to respond quickly should certain failure modes occur.

- 1) *For a mine equivalent in size to EPA's mid-scale model, how many years do you believe a tailings dam would have to perform perfectly to insure no watershed damage from acid waste runoff?*
 - A tailings dam for a modern mine should be designed, constructed, operated, and maintained to meet appropriate regulatory standards. These standards are established based on the best available science and engineering available at the time. Both the regulatory standards and the tools and knowledge available to the practice evolve over time. A project of this size should be held to the highest standards, both regulatory standards and construction, design, operations and maintenance standards, until it can be demonstrated that the both the anticipated long term performance and risk associated with discontinuing operations and maintenance are acceptable. This analysis is a key part of the permitting process.
- 2) *What evidence is there that a tailings dam could be built to last the duration of time you believe necessary to protect the wetlands?*
 - Clearly, there has not been a modern tailings dam in successful operation for the timescales being considered in the BBWA, i.e., hundreds of years. That does not mean that a tailings dam cannot be built for such duration. As stated in both of Geosyntec's review letters, as well as in the responses above, a successful project will require good design, construction, operations, and maintenance throughout its anticipated lifetime. There are ancient human structures that have been in existence for thousands of years. Imagine the Egyptian pyramids or the Roman aqueducts if they had been maintained through the years.

- 3) *Since the timescales of human institutions are rarely counted in thousands of years, and the need to maintain tailings dams extends well into that timeframe, please explain the most effective means, in your opinion, to communicate risk around a structure such as a tailings dam to insure that future generations understand that the dam must not be breached.*
- The issue of perpetual management of the residuals from mining is again one of the key issues to be addressed during the permitting process. The long-term management of the TSF will require a plan that includes discussion of risk communication to communities potentially impacted by any unplanned releases from the storage facility. Appropriate detection and reporting systems must be approved by the permitting agency to ensure that information is available on the continued performance of the tailings storage system. There are other examples of long-term storage of waste residuals that must be managed over generations. Commercial, industrial and sanitary landfills have been in existence since the industrial revolution, and modern management systems are designed to ensure continued and safe containment of the materials, including management of seepage and leachate from the waste storage unit. Most facilities managed under the RCRA statutes also contain solid waste management units that require a long-term management plan. Risk communication plans are an essential component of land use controls and other institutional methods established to ensure safe long-term storage of waste residuals. The long-term management of residuals from the mining activity will be a key part of the permitting process for a mine in Alaska.
- 4) *What role would electricity play in maintaining the safety, security and environmental performance of the mining operation? If there were an electrical failure lasting weeks or months, while the mine is still active, what potential effect could that have on waste management? After the mine is closed, would there be any continuing need for pumps (or other control devices) and electricity?*
- These types of questions regarding redundant equipment and power generation in the event of an outage are all appropriate for the formal regulatory review phase once a formal mine plan has been established and the detailed components of the design are presented. Redundancies in the system, including backup wastewater storage and backup power, will almost certainly be included in the design. Based on a formal evaluation of the risks, suitable measures can be put in place to mitigate those risks to the satisfaction of the regulatory agencies. Some form of pumping, and hence electricity, will certainly be needed for as long as wastewater treatment and overall water management is needed.
- 5) *Based on your expert knowledge, please list for the Subcommittee the top environmental threats that would come with a Pebble prospect mine that are either at the edge or beyond the reliable control of existing technology.*
- Based on decades of mining practice around the world, there are no environmental threats that are “either at the edge or beyond the reliable control of existing technology.” All aspects of mining operations that pose threats of releases of toxic materials to the

environment can be managed by existing and well established technology. Discharge standards can be met with available technology, with cost the main constraint, not the limits of the technology. "Reliable control" must be defined within the context of regulatory oversight, which defines the types of analytes to be measured, the frequency of the measurements and the reporting process to assure compliance with all permit requirements that define the quality and quantity of discharges to the environment from mining operations. Spill prevention plans will be in place to address any releases of toxic materials. Storm water management plans must also be in place. The TSF must be designed to retain the tailings under the stresses resulting from the Maximum Credible Earthquake. Operator training and continued management diligence will be needed to ensure that treatment systems operate properly and that water management occurs to minimize the potential for overtopping of the TSF under storm events. These details would again be part of the extensive permit review process.

Response to Portions of August 14, 2013 Letter from William Riley**The draft BBWA addresses realistic mining scenarios****Comment:**

"I would also point out that in my many years of reviewing and processing mining permit applications and managing NEPA analyses of those proposed projects, the Wardrop report and the water rights applications offer as much or more detail than most mining projects at this phase of what can be a lengthy and very complex permitting process. The Wardrop report details the size of structures and facilities (i.e., the overall footprint) as well as the proposed solid waste management plan and wastewater treatment process."

Response:

As stated in my response to Congressman Broun's first question, the use of the Wardrop report as a surrogate for an actual mine plan misrepresents the level of detail on analysis, design and mitigation that would be included in a plan considered during NEPA permitting review. The Wardrop report explicitly states its purpose as an economic assessment of three development scenarios, and while engineering calculations are needed to estimate the cost of the development, no formal design with engineering documentation is provided for the mine elements that are presented, or the mitigation measures and redundant design features that would be included in the mine plan.

As the Wardrop report does not provide sufficient detail to be a formal mine plan, the BBWA relies heavily on it for sizing of the hypothetical mining scenarios, but has to develop its own engineering evaluations, and those are for a mine assumed to fail that would never be permitted in Alaska.

EPA has used sound science to develop the draft BBWA**Comment:**

"Lastly, the expertise that EPA used in developing the BBWA draws from a pool of highly qualified scientists and experts in the following disciplines:

- o plant ecology,*
- o stream fish ecology and habitat,*
- o aquatic ecology,*
- o wetlands and watersheds,*
- o hydrology,*
- o ecosystem modeling,*
- o environmental assessment,*
- o ecological risk assessment,*
- o waste and chemical management,*
- o geotechnical and geoenvironmental engineering,*

- o geology, and
- o civil engineering/environmental restoration.”

Response:

No one is questioning that a wide range of scientists were involved with the BBWA. My concern, however, is the limited number of engineers tasked with conducting the assessment. For example, the Appendix on water management was not authored by an environmental engineer. The conclusions of the BBWA rest on assuming that failure scenarios for the mine system components are inevitable. Given the importance of the failure scenarios to the predicted impacts to the environment, the staff of the BBWA was noticeably limited in geotechnical, chemical and environmental engineering expertise.

EPA understands modern mining methods and practices

Comment:

“In his testimony, Dr. Kavanaugh asserted that modern mining methods would essentially eliminate the risks of failure as described in the draft BBWA and that EPA simply doesn’t understand modern mining methods. I strongly disagree. In Region 10 alone there are mining engineers, geologists and hydrologists who have all worked in the mining industry. In 1995 Region 10 organized a Regional Mining Team to develop a more informed and better coordinated and integrated approach to addressing environmental issues and policies associated with large-scale mining across all EPA programs.”

Response:

Mr. Riley misrepresents my written and oral testimony. I never stated that modern mining methods would “eliminate the risks of failure”. What I said, as noted in the transcript and in my written testimony, is that modern mining methods will reduce the probability of failures, under any reasonable failure mode (e.g. slope stability problems, overtopping, seismic risks in regards to the TSF) and that modern mining methods include use of design methods that have been tested over time to develop the safest design methods for earthen structures and for process equipment such as water treatment systems. Appropriate safety factors are used to limit the risk of failure under reasonably expected circumstances. EPA’s own documents specify that “reasonable” means should be used in constructing mining systems that will have a low probability of partial or complete failure. *“The challenge lies largely in determining with a reasonable degree of certainty what measures are needed to assure that a technically complex operation, which is often highly exposed to the variable forces of nature, will remain in compliance with applicable laws and regulations*

throughout active mining as well as during and following closure.² This very reasonable standard will be the basis for the permit application review by the appropriate regulatory agencies.

Modern mining methods will not reduce environmental impacts to acceptable levels

Comment:

“Dr. Kavanaugh asserts that modern mining methods would assure that the failure scenarios addressed in the draft BBWA would never occur or would at the very least be quickly corrected. Even if this were true, the unavoidable environmental impacts associated with the mining project footprint alone (mine pit, waste rock dumps, tailing storage facilities, access road and other infrastructure) of even the smallest scenario addressed would far exceed the impacts of any CWA dredge and fill permits previously issued in Region 10 or anywhere across the nation.”

Response:

This statement is incorrect. I have stated in Geosyntec’s submittals and my written and oral testimony that modern design, construction, operations and maintenance can mitigate the failure modes that are presented in the BBWA such that their outcome has a very low probability of occurring. Part of the permitting process would include assessing what level of risk is acceptable, and designing the mine components to meet that level of risk.

The issue of mining footprint impacts is very distinct from the majority of the direction of the BBWA which describes catastrophic failures of the tailings impoundments, water treatment systems, culverts, pipelines, and other facilities, with impacts beyond the mine footprint. The mine will have significant environmental impacts within the footprint, but it should be acknowledged that the mine footprint is a small portion of the overall watershed system draining into Bristol Bay. Through the permitting process, it will be established what mitigation measures must be implemented, and whether the unavoidable impacts are acceptable.

Comment:

“I seriously doubt that any modern mine anywhere in the world has been required, let alone succeeded, to meet such a minute effluent limit on an on-going basis, particularly when the waste stream is of a magnitude as that predicted for Pebble – on the order of 49 million cubic meters per year (approximately 35 million gallons per day) according to the draft BBWA.”

Response:

This issue clearly represents a technical challenge to the Pebble Project. Again, however, whether the water-quality based effluent standards can be met, and with what level of reliability, will be the subject of careful evaluations during the permitting process. This issue is exactly why an actual

² EPA. 2003. *EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska*. January 2003. Seattle, Washington. Page 2.

project plan must be assessed and why no decisions on the future of the project should be based on the project description in the economic analysis provided in the Wardrop report or on the opinions of non-experts on treatment technologies. The actual mine plan would address this technical challenge by presenting the details of the water treatment technology required to meet any water quality discharge standards. In my opinion, water technologies are readily available to meet any discharge standard specified by the lead regulatory agency overseeing discharge permits in Alaska.



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22 May 2013

Mr. Thomas C. Collier, Esq.
 Steptoe & Johnson, LLP
 1330 Connecticut Avenue, NW
 Washington DC 20036

**Subject: Assessment of USEPA Response to Geosyntec's Comments on
 the Bristol Bay Watershed Assessment**

Dear Mr. Collier:

In the summer of 2012, Geosyntec Consultants, Inc. (Geosyntec) was retained by Steptoe and Johnson (Steptoe) on behalf of Northern Dynasty Minerals, Inc (NDM), to provide an independent assessment of the quality of the scientific foundations used by Region 10 of the US Environmental Protection Agency (USEPA) in preparation of the draft report, "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" (USEPA, May, 2012)¹. At the time, that document, designated by the USEPA as a "watershed assessment" (referred to herein as the Bristol Bay Watershed Assessment (BBWA or "2012 Assessment")²) was available for public comment. Geosyntec submitted its independent technical review of the 2012 BBWA to Steptoe on 18 July 2012³ (referred to herein as the "2012 Review").

At approximately the same time, the USEPA had convened an Independent Peer Review Panel consisting of eleven scientists and one engineer to review the same document. The Peer Review Panel's comments were compiled by Versar, a USEPA contractor, in a Final Peer Review Report dated 17 September 2012⁴. Following receipt of the Peer Review Panel Report, which included a summary of comments received during the public comment period, the USEPA revised the

¹ USEPA. 2012. *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. External Review Draft. EPA 910-R-12-004a. Seattle, Washington. May 2012.

² For this report, the term "BBWA" will refer to the watershed assessment as a whole. "2012 Assessment" will refer to the first draft of the report. "2013 Assessment" will refer to the second draft of the report.

³ Geosyntec. 2012. *Technical Review of May 2012 Draft Report EPA 910-R-12-004a, An Assessment of Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. Prepared by Geosyntec Consultants, 18 July 2012.

⁴ Versar. 2012. *Final Peer Review Report, External Peer Review of EPA's Draft Document, An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. Prepared by Versar, Inc., 17 September 2012.

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BBWA and on 26 April 2013 released the second external review draft (“2013 Assessment”)⁵. The public comment period for the 2013 Assessment extends until 31 May 2013.

In early May, Geosyntec was engaged by Steptoe to perform a limited review of the 2013 Assessment within the short review period. This letter report presents Geosyntec’s independent technical review of the 2013 Assessment. Given the shorter timeframe, this review is not exhaustive, draws heavily on the comments from our 2012 Review, and focuses on an evaluation of how the 2013 Assessment addresses issues raised by Geosyntec in our previous review. In fact, in our current review we found that the vast majority of our 2012 comments are still valid and in general, have not been adequately addressed in the new document. As such, we suggest that Steptoe consider this “2013 Review” to consist of both this letter and Geosyntec’s 2012 Review. The sections that follow present general themes and specific examples identified by Geosyntec during both reviews that illustrate continued bias and lack of credible scientific analysis of a future mine scenario.

As an over-arching comment, while the USEPA has issued the 2013 Assessment as a second draft, it is for all practical purposes a new document. Volume 1 alone has almost doubled in size from 339 pages in 2012 to 618 pages in 2013. This growth comes from a complete reorganization of the report, removal of a limited amount of material, and addition of significant new technical content, including new and updated analyses. Were additional time available for review, it is likely that significant additional commentary could be provided on the new and revised sections within the 2013 Assessment.

1. THEMES OF GEOSYNTEC 2012 AND 2013 REVIEWS

1.1 Bias by Omission

As with the 2012 Assessment, the 2013 document focuses on “potential impacts” of the Pebble Project on the ecological resources of the Bristol Bay watershed. These “potential impacts” include impacts that may occur during normal development and operation of the mining project, as well as those that may occur should any specific engineering system (e.g. tailings storage

⁵ USEPA. 2013. *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*. Second External Review Draft. EPA 910-R-12-004Ba. Seattle, Washington. April 2013.

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facility (“TSF”) or pipelines) incur a partial or total failure. Considerable effort was expended by the authors of the BBWA to predict the effects of these potential failures on the ecological resources in the watershed, with particular attention given to the salmonid fish populations. In both 2012 and 2013, the authors failed to consider that modern mining practices are designed to reduce the probability of failures of these engineered systems to some established standard of safety, and to minimize the consequences of any failure scenario with the use of modern monitoring systems, contingency planning as part of a mining operations plan, and the establishment of response systems and strategies to control quickly any releases of hazardous materials at the mine site. By omitting the application of modern mine operating best practices designed to reduce the probability of failures and to mitigate quickly the consequences of such failures, the BBWA is clearly biased towards influencing decisions on the fate of the project by implicitly assuming “worst case” outcomes for operation of most of the engineered systems at the future mine site are inevitable.

1.2 Zero-Risk Framework – A Misapplication of Engineering Design Principles

The BBWA continues to be particularly misleading in addressing the issue of system failures through the use of data on past mining operations to imply by analogy that it is scientifically appropriate to realistically assess the probabilities of system failures. The USEPA has applied this approach for all system elements evaluated in the BBWA, including TSFs, pipelines, culverts, water collection and treatment systems and post closure residuals management systems. The document reflects either an intentional or an uninformed misapplication of modern engineering design principles that would be applied under stringent regulatory oversight, particularly when significant projects are implemented in sensitive ecosystems.

To this point, Appendix I, which identifies mitigation practices for mines, contains the following statements relating to failures of tailings dams:

“The failure rate of tailings dams depends directly on the engineering methods used in design and the monitoring and inspection programs in the other mine-life stages.”

“Azam and Li (Azam and Li 2010) report that failures in all but Europe and Asia have decreased since 2000; this is attributed to improved engineering practices.”

“Data presented indicate that failures peaked to about 50 per decade in the 1960’s through the 1980’s and has dropped to about 20 per decade over the last 20 years, with the frequency of failure occurrences shifting to developing countries.”

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These statements challenge the failure probability premise used by the USEPA, but are relegated to an appendix and barely referenced within the main body of the report.

Properly engineered systems are designed to meet appropriate safety standards commensurate with the nature of the consequences of failure. In no circumstances are engineered systems designed or constructed to eliminate the complete possibility of failure. This “zero-risk” bias is apparent in the use of literature data to suggest that failure of engineering systems is inevitable. The BBWA implies that because failures of TSFs and other engineered systems have occurred elsewhere in the past, such failures are an inevitable outcome of any mining operation. Use of case studies of past failures of engineered systems to predict the probabilities of future failures is inherently flawed, because of different project histories, variability in site characteristics and the evolution and application of improved engineering practices based on “lessons learned.” The use of past failures to predict future probabilities of failures is thus inherently biased toward older technical strategies, past maintenance and inspection failures and/or unique failure modes for the individual case studies.

2. EXAMPLES OF INADEQUACY OF 2013 ASSESSMENT

The attached Table 1 presents a review of how the 2013 Assessment addresses comments raised by Geosyntec in our 2012 Review. The table includes three primary columns as follows:

1. Summary of Geosyntec’s 2012 Review comment;
2. Geosyntec’s evaluation of how the 2013 Assessment responds to that comment; and
3. Geosyntec’s evaluation of the adequacy of the 2013 Assessment’s response.

The comments cover the same focus areas described in the 2012 Review, including:

- Tailings dam failures;
- Dam breach analysis;
- Water collection and treatment failures;
- Pipeline failures;
- Road and culvert failures;
- Seismic environment; and
- Water quality.

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The following sections present several examples, most from Table 1, of how the 2013 Assessment consistently fails to address the significant concerns raised in Geosyntec's 2012 Review or identified during this review regarding the scientific credibility of the BBWA.

2.1 Improper use of Historical Tailings Dam Failure Case Histories

The most widely quoted reference in the 2013 Assessment in relation to the historical record of tailings dam failures is the 2001 ICOLD⁶ report which documents accidents and failures at 220 tailings dams reported between 1917 and 2000. After removing accidents that did not result in a failure with tailings release, the BBWA reports that 135 TSF failures from the ICOLD database remained. In reviewing these cases, the BBWA correctly interprets the data as indicating that the stability of tailings dams may increase with time. However, in the 2013 Assessment, this assertion is caveated with the following new discussion:

“However, failures do occur after operation. In December 2012, the tailings dam at the closed Gullbridge Mine, Newfoundland, failed leaving a gap 50 m wide and the height of the dam (Fitzpatrick 2012). The mine opened in 1967, rehabilitation of the site occurred in 1999, and an inspection in 2010 found that the dam was deteriorating (Stantec Consulting 2011).” (Pg. 9-4)

The new case history provided is one that can be readily mitigated with appropriate design, construction, operations and management. The Gullbridge Mine was operational between 1967 and 1971. An October 2012 Stantec⁷ report, prior to the failure, indicates that the 10 m high tailings dam was in poor condition. There was evidence of past failures and past repairs. Stantec's stability assessment indicated a static factor of safety (FS) of 1.0, indicating very high potential for a slope failure.

The TSFs at Pebble will not be designed or constructed at an FS of 1.0 after closure. As such, the inclusion of this case history clearly demonstrates the bias of the BBWA. Consistent with the intent of the ICOLD report, the best use of failure case histories is *“to learn from them, not to condemn.”*

⁶ ICOLD (International Commission on Large Dams). 2001. *Tailings Dams, Risk of Dangerous Occurrences. Lessons Learnt from Practical Experiences*. United Nations Environmental Programme, Bulletin 121.

⁷ Stantec. 2012. *Dam Safety Review (DSR), Gullbridge Mine, Newfoundland*. prepared for Government of Newfoundland Labrador, October 26, 2012.

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2.2 Overtopping Failure Scenario can be Readily Mitigated with Freeboard

The BBWA (2012 and 2013) points out that among the failure case histories in the ICOLD (2001) report, overtopping is a leading cause of dam failure. As such, even though the probability of failure is low, it is selected as the triggering mechanism for a dam breach at a hypothetical Pebble mine. Based on the probable maximum precipitation (PMP) storm event presented in Box 9-3 (pg 9-14) of the 2013 Assessment, the water surface elevation in the TSF would increase by 0.36 m in the Pebble 2.0 Scenario (Table 6.1, pg 6-10). This increase would be the catalyst for a dam breach by overtopping. With a Pebble 2.0 TSF dam height of 209 m, the 0.36 m freeboard requirement is extremely small (0.2% of the TSF dam height). This freeboard requirement to manage the probable maximum flood (PMF) generated from the PMP will likely be far exceeded in design and operation of the TSF dam, where freeboards will likely be several meters.

While the report does not explicitly state what freeboard height was included in their scenario, it does explicitly state that the storm loads can be mitigated easily with freeboard:

"If sufficient freeboard were maintained, it would be possible to capture and retain the expected volume of the PMF in the TSF." Box 9-4 (Pg 9-15)

The 2013 Assessment is therefore basing their dam failure analysis on an extremely improbable event, once again demonstrating the bias in the report. In fact, the report gives clear indication of this bias:

"Although a tailings dam failure is a low-probability event, the probability is not zero."
(Pg. 9-13)

The probability of overtopping may not be zero, but it is extremely small for a modern TSF of this size and importance. Such a small probability of failure does not warrant the alarmist dam breach analysis included in the BBWA.

2.3 Oversimplified and Unreliable Dam Breach Analysis

Geosyntec's 2012 Review pointed out that the HEC-RAS⁸ model used for the dam breach

⁸ U.S. Army Corps of Engineers (USACE). 2010. HEC-RAS River Analysis System User's Manual Version 4.1. U.S. Army Corps of Engineers, Institute for Water Resources, Hydrologic Engineering Center. Davis, California.

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analysis in the 2012 Assessment was likely flawed, resulting in an over prediction of flow depth and velocities. A table with questionable data from the 2012 Assessment that was referenced in the Geosyntec comment was removed from the 2013 Assessment, but that was the limit of the changes made.

In fact, the maximum flow depths in the failure scenario have increased dramatically relative to the 2012 Assessment. This appears to be a result of a significant change in the peak discharge rate from the dam breach analysis. For the 2013 Assessment's "Pebble 2.0" dam breach scenario, which assumes breach of a 209 m high tailings dam and release of 20% of the stored tailings, the maximum discharge rate is now 149,300 m³/s (Table 9-4), greater than 12 times the 2012 maximum discharge of 11,915 m³/s (Table 4-11) for what is presumably the same failure scenario.

The analysis modeled a dam breach over a 30 km path from the TSF to the confluence of the North Fork Koktuli and South Fork Koktuli Rivers. A comparison of several stations near the end of the analysis show:

- Station 10: maximum flow depth has increased from 8.8 m to 35 m;
- Station 5: maximum flow depth has increased from 8.1 m to 53 m; and
- Station 1: maximum flow depth has increased from 14 m depth to 44 m.

One set of assumptions was made in 2012. A very different set of assumptions was made in 2013, with very different results. Given the limitations of the HEC-RAS model, the coarse nature of the inputs to the model, and the sensitivity of the model to changes in parameters, it is clear that neither result is a reasonable representation of what would actually happen in the very unlikely event of a dam breach. Either full details of the model should be provided in an appendix for review, or the model results should be removed from the report completely.

2.4 Unreliable Sediment Deposition Prediction

Geosyntec's 2012 Review pointed out that sedimentation deposition from the dam breach in the 2012 Assessment was being improperly calculated when the flood wave was at its maximum predicted depth. When river flows are at their maximum flood stage, river velocities are often at their highest, which is not conducive to sediment deposition. The majority of sediment deposition occurs on the receding limb of the flood curve, when river velocities are starting to decrease.

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The 2013 Assessment continues to assume that deposition occurs at high velocities, extending out across the width of the inundated area at the peak of the flood wave. Box 9-3 of the 2013 Assessment states:

“It was also predicted that deposition could occur in the channel and the floodplain of each section following the maximum predicted flow depth during the peak of the flood wave as the flood and debris flow receded.”

However, for the most part the revised evaluation disconnects sediment depth from the dam breach analysis. Box 9-3 also states:

“We assumed that sediment deposition would be greatest near the dam, forming a “wedge” from the lowest elevation of the breach and extending downstream. The calculated sediment depths ranged from 45 to 10 m and extended 1.3 and 3.3 km for the 90-m (Pebble 0.25) and 209-m (Pebble 2.0) dam failures, respectively. ... Using this maximum width of inundation, a 0.3-m depth of sediment was deposited on the floodplain and channel.”

Sediment thicknesses are now almost entirely controlled by assumptions:

- Sediment “wedge” up to 45 m thick near the dam, extending at a slope of 15:1 (H:V) (pg. 9-19); and
- Sediment thickness at a constant 0.3 m thick beyond the toe of the “wedge.”

If deposition of the sediments from the dam failure is no longer the outcome of the dam breach analysis, its continued inclusion in the BBWA further demonstrates the bias of the document.

2.5 No Accounting for Advances in Technology Relative to Historical Case Studies

Geosyntec’s 2012 Review identified that, in relation to mine water collection and treatment system failures, inferences drawn in the report do not account for advances in technology or operational practices between the historical case studies examined and present practices. The 2013 Assessment acknowledges that technological advances exist, but then dismisses them with the following discussion:

“The use of data from the historical, operational records of mines, pipelines, and roads is necessary but controversial. It is essential and conventional for risk assessments to use the history of a technology to estimate failure rates. However, developers argue, with

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some justification, that the record of older technology is not relevant because of technological advances. Despite advances, no technology is perfect, and rates of past failures may be a better guide to future outcomes than the expectation that developers can design a system that will not fail. A classic example is the NASA space shuttle program, which denied the relevance of the failure rate of solid rocket boosters and declared that the shuttle's rate of failure on launch would be one in a million. The Challenger failure showed that the prior failure rate was still relevant, despite updated technology." (Pg. 2-4)

The 2013 Assessment acknowledges technological advances exist and then uses an example of a very complex and sophisticated system from the NASA space shuttle program to show that even with "updated technology" that the "prior failure rate was still relevant." The technology used in mine water collection and treatment does not approach the same level of complexity or sophistication as the NASA space shuttle. Similarly, the years of operating experience in the mining industry far exceed the years of experience with space travel. The comparison to NASA further demonstrates the bias in BBWA.

2.6 Unreasonable Pipeline Release Scenario

Geosyntec's 2012 Review pointed out that the pipeline release scenario, which incorporated an assumption of 14 km between isolation valves, resulted in unrealistically high release volumes as 14 km worth of concentrate drained by gravity into the creek. Proper design would include more frequent and strategically placed points of isolation, which would work in concert with automatic leak detection to minimize potential leakage along critical stretches of the pipeline. The 2013 Assessment removes this 14 km scenario. In its place, they include the following scenario:

"In the concentrate pipeline failure scenarios, a single complete break of the pipeline would occur at the edge of the stream, just upstream of an isolation valve. These valves would be placed on either side of major crossings (Ghaffari et al. 2011) and could be remotely activated. Pumping would continue for 5 minutes until the alarm condition was assessed and an operator shut down the pumps. The estimated total slurry volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and local high point in the pipeline (i.e., the nearest watershed boundary) (Table 11-2). During the entire spill, gravity drainage governs the flow rate based on calculations for free-flowing pipes." (Pg. 11-8)

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The 2013 Assessment replaces one unjustified scenario with another. The assumption that the “volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and the local high point in the pipeline (i.e. the nearest watershed boundary)” completely disregards proper planning and design for the stream crossings. By forcing the failure upstream of the isolation valve and still allowing all of the spilled material to enter the creek, the existence of the isolation valves and any other features that might be designed to protect the streams from failures on land are made obsolete. If the topography and alignment are such that this extreme scenario could exist, unlikely as it may be that a failure would occur in exactly the worst place for the creek, other engineering and/or operational controls can be established to mitigate against it and protect the environment.

2.7 Escape of Leachate from Waste Rock Piles is Overpredicted

The 2013 Assessment includes a new analysis of leachate generation from waste rock piles that was not discussed in the 2012 report, presented as follows:

“The mine scenarios (and the plan put forth for Northern Dynasty Minerals in Ghaffari et al. 2011) do not include liners for the waste rock piles. Instead, leachate within the pit’s drawdown zone would be captured and pumped to the WWTP. Outside the drawdown zone, half the leachate would be captured by extraction wells or other means and the rest would flow to surface waters. This is considered reasonable given the likelihood that water would flow between wells and below their zones of interception in the relatively permeable overburden materials and upper bedrock. Wells would not catch all flows from the mine site given its geological complexity and the permeability of surficial layers. As a result, 84% of PAG leachate and 82% of total waste rock leachate would be captured by the pit and the wells for the Pebble 2.0 mine.” (Pg. 8-12)

The statement that half (50%) of the leachate from waste rock outside of the leachate zone will escape and flow to surface waters is unsubstantiated. While the 2013 Assessment references the Wardrop (2011)⁹ (i.e. Ghaffari et al., 2011) report, it fails to include the discussion in the report where it is stated that a low permeability cutoff wall will be installed around the waste rock piles and extraction wells will be installed within the cutoff wall to capture water and leachate

⁹ Wardrop. 2011. *Preliminary Assessment of the Pebble Project, Southwest Alaska*. Prepared for Northern Dynasty Minerals Ltd., February 15, Prepared by Wardrop (A Tetra Tech Company), Vancouver, BC. [Note: This report is referenced as Ghaffari et al. 2011. in the BBWA]

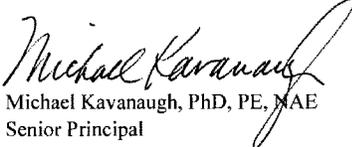
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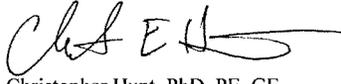
infiltrating below the waste rock piles. This system can be optimized by adding wells, increasing pumping rates, and/or installing cutoff walls deeper in order to achieve significantly more than 50% capture. In tandem with proper management of potentially acid generating (PAG) waste rock to maximize its placement within the drawdown zone, the capture of PAG waste rock leachate can be close to 100%.

3. SUMMARY

As with its predecessor, the 2013 Assessment conceptualizes the important engineered components of a large mining project, but fails to provide a risk analysis that: a) is based on data applicable to the mine scenario, b) yields reasonably accurate estimates of probability and implications of failure for all the mine components, and c) accounts for modern mining design and operations strategies that would reduce the probability and consequences of low probability failure events. Geosyntec continues to assert that these limitations raise significant concerns on the scientific credibility of the BBWA and the appropriateness of using this document to inform stakeholders on the future of mining in the Bristol Bay watershed.

Sincerely,


Michael Kavanaugh, PhD, PE, MAE
Senior Principal


Christopher Hunt, PhD, PE, GE
Associate

Attachments: Table I – Evaluation of How the 2013 Assessment Responds to Geosyntec’s
2012 Comments

Copies to: Mr. Bruce Jenkins, Northern Dynasty
Mr. Stephen Hodgson, Northern Dynasty

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Table 1: Evaluation of How the 2013 Assessment Responds to Geosyntec's 2012 Comments

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
|-------------------|--|--|--|
| 2.1 | <p>Example case histories of TSF failures are either not relevant to Pebble, or their failure modes can be readily mitigated through proper design, construction, operations and management.</p> | <p>A preamble has been added to the presentation of examples of TSF failures (Box 9-1), which states: 9-3 "The tailings dam failures below illustrate the characteristics and potential consequences of a tailings dam failure. The details of the design, construction, or operation of any tailings dams constructed for mines in the Bristol Bay watershed would not be the same as these mine tailings dams, but these examples demonstrate that tailings dam failures can occur, and illustrate how these failures may affect downstream areas. In addition, the dams in these failure examples were significantly smaller than the dams in our mine scenarios."</p> | <p>While the response recognizes that "details" of design, construction and operation at Pebble will be different than those in the TSFs that failed, the original 2012 comment remains true. The four failure examples stem from poor construction, poor operations, and/or poor design. Therefore, they are not relevant to a TSF of the caliber that will be proposed at Pebble.</p> <p>If these case histories are to remain in the report, they should be presented as lessons from the past. The lessons learned from those failures and how the failure modes can be prevented should be included in the report. Much of that discussion is included in Geosyntec's 2012 report.</p> |
| 2.2 | <p>Perhaps the most widely quoted reference in relation to the historical record of tailings dam failures is the 2001 ICOLD¹ report which documents accidents and failures at 220 tailings dams reported between 1917 and 2000. In the 2012 Assessment, after removing accidents that did not result in a failure with tailings release, 135 TSF failures from the ICOLD database remain. No significant attempt is made to interpret the implications of these failure case histories on the hypothetical mine scenario. Only the total number of failures is used in these failure probabilities. It is our opinion that all of these failure probabilities should be mitigated with proper design, construction, operations and maintenance, and, as possible, consistent with the intent of the ICOLD report, we consider that it is more appropriate to use these case histories "to learn from them, not to condemn."</p> | <p>TAILINGS DAM FAILURES</p> <p>The use of the ICOLD data, now summarized in Table 9-1, remains unchanged in the 2013 Assessment. The interpretation in the 2012 Assessment that the ICOLD data indicate that the stability of tailings dams may increase with time is now elevated with the following new discussion: 9-4 "However, failures do occur after operation. In December 2012, the tailings dam at the closed Gullbridge Mine, Newfoundland, failed leaving a gap 50 m wide and the height of the dam (Fitzpatrick 2012). The mine opened in 1967, rehabilitation of the site occurred in 1999, and an inspection in 2010 found that the dam was deteriorating (Samuec Consulting, 2011)."</p> | <p>The ICOLD data continues to be presented without recognition that these historical failures are not directly applicable to a modern mine. Consistent with the intent of the ICOLD report, we continue to consider that it is more appropriate to use these case histories "to learn from them, not to condemn."</p> <p>Additionally, we note that the new case history provided is one that can be readily mitigated with appropriate design, construction, operations and management. The Gullbridge Mine was operational between 1967 and 1971. An October 2012 Stantec² report, prior to the failure, indicates that the 10 m high tailings dam was in poor condition. There was evidence of past failures and past repairs. Stantec's stability assessment indicated a static factor of safety (FS) of 1.0, indicating very high potential for a slope failure.</p> <p>The Pebble TSFs would not be designed or constructed to sit at an FS of 1.0 after closure. As such, what is the purpose of including this case history without focusing on the lessons to be learned?</p> |

¹ ICOLD (International Commission on Large Dams), 2001. Tailings Dams, Risk of Dangerous Occurrences, Lessons Learnt from Practical Experiences, United Nations Environmental Programme, Bulletin 121.

² Stantec, 2012. Dam Safety Review (DSR), Gullbridge Mine, Newfoundland, prepared for Government of Newfoundland Labrador, October 26, 2012.

Table 1 - Evaluation of 2013 Responses - 05-22-13

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
|-------------------|---|---|---|
| 2.2 | <p>The probability of failure discussed in the 2012 Assessment would be one tailings dam failure for every 2,000 mine years. This probability is not relevant to a modern mining project. An analysis that simply utilizes a retrospective failure rate to estimate future failures at a modern mining site significantly exaggerates the likelihood of a TSF failure, and therefore results in a biased assessment of future outcomes.</p> | <p>The report has added two new caveats in relation to these data: 9.7 "It is difficult to estimate the probability of low-frequency events such as tailings dam failure, especially when tailings dam is a unique stressor made of natural materials and subject to its individual loading conditions." 9.7 "The historical frequencies of tailings dam failures presented above may be interpreted as an upper bound on the failure probability of a modern tailings dam. Morgenstern (2011), in substantial downward trend in failure rates over time. However, improvements in the understanding of dam behaviour, dam design, construction techniques, construction quality control, dam monitoring and inspection programs have helped to reduce the probability of failure for dams designed, constructed and operating using more modern or advanced engineering techniques."</p> | <p>The revised report recognizes the uniqueness of each dam and the improvements in the practice, but this does not go far enough to counter the bias inherent in the "1 tailings dam failure every 2,000 mine years" discussion. Additionally, we do not agree that these retrospective failure statistics represent an upper bound on failure probability for modern mining practices.</p> <p>Appendix 1 of the 2013 Assessment, includes the following statements:</p> <p>"The failure rate of tailings dams depends directly on the engineering methods used in design and the monitoring and inspection programs in the other mine-life stages."</p> <p>"Azam and Li (Azam and Li 2010) report that failures in all but Europe and Asia have decreased since 2000, this is attributed to improved engineering practices."</p> <p>"Data presented indicates that failures peaked in about 50 per decade in the 1960's through the 1980's and has dropped to about 20 per decade over the last 30 years, with the frequency of failure occurrences shifting to developing countries."</p> <p>Unfortunately, Appendix 1, which addresses mitigation practices for mines, is relegated to an appendix and is barely referenced within the main body of the report.</p> |
| 2.3 | <p>Performing a review of tailings dams that are successful is challenging, as the literature focuses more on problems than success stories. However, the literature does provide documentation related to several recent earthquakes that have subjected modern tailings dams to significant stresses. The following four case histories⁴ of large active tailings dams, while certainly not an exhaustive review, do illustrate that analogies to seismic risks at the Pebble site exist and that applying modern engineering standards and options and measures processes can result in successful performance under significant stress with no, or minimal, damage reported.</p> | <p>The only indication within the 2013 Assessment that tailings dams can perform adequately was also in the 2012 Assessment: 9.7 "Very few existing rockfill dams approach the size of the structures in our mine scenarios, and none of these large dams have failed."</p> | <p>No new discussion in the 2013 Assessment addresses the comment made by Geosyntec.</p> |
| NEW | N/A | <p>The 2013 Assessment expands on the discussion of probability of TSE failure by performing a statistical evaluation assuming that the TSFs at Pebble will be constructed as Class II (standard engineering practice) or Class I (state-of-the-practice engineering) facilities. Starting from base rates of 1 in 10,000 (Class II) and 1 in 1,000,000 (Class I) dam year probabilities of slope failure, the 2013 Assessment multiplies these values by four to account for other modes of failure, by eight to account for eight total dams at Pebble 6.5 buildout, and follows an exponential distribution to predict failure rates at 1,000 years of 96% (Class II) and 3% (Class I).</p> | <p>This statistical analysis oversimplifies a very complex process. At each step of the way, the assumptions can introduce significant error and bias. Had the authors of the reference document (Silva et al., 2008)⁵ which was used to obtain the starting failure probabilities (e.g. 1 in 10,000 for a Class II dam) been asked whether they considered their method suitable for predicting a 96% failure rate for a TSE constructed with standard engineering practices, they would most likely disagree.</p> <p>We also note that, as described in our 2012 report, the Pebble TSFs will almost certainly be designed and constructed to Class I standards, consistent with a State of Alaska "High Hazard" classification, and hence the 96% failure rate is not only an unreliable statistic, it is not relevant.</p> |

⁴ Four cases described by Geosyntec (2012) include Tranque Ovejuna and Tomillas in Chile, Antamina Copper-Zinc Mine Tailings Dam in Peru, and Fort Knox Gold Mine Tailings Dam in Alaska.

⁵ Silva, F. T., W. Lambie, and W. A. Marr. 2008. *Probability and Risk of Slope Failure*. Journal of Geotechnical and Geoenvironmental Engineering 134:1:1591-1599.

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| 2.4.1 | <p>The Manning's friction coefficient was increased to "better reflect the influence of sediment-rich water during tailings dam failures" (pg. 4-53). However the 2012 Assessment does not supply the reader with information as to how they evaluated the appropriate Manning's coefficient, nor do they state the value used. The implications of changes in model parameters would likely be significant given the scale and likely sensitivity of the analysis.</p> | <p>The 2013 Assessment now states: 9-21. "When applied to tailings dam failure events, it is appropriate to increase channel roughness coefficients to better emulate flow characteristics of concentrated sediment flows. Manning's $n = 0.2$ for the channel and 0.6 for the floodplain were selected."</p> | <p>The 2013 Assessment does not state what Manning's n was used. However the report does not provide any analysis or justification for these numbers. In addition the report does not indicate if multiple model runs were run to evaluate sensitivity of model results to Manning's n, as recommended in the original comments.</p> |
| 2.4.2 | <p>The analysis in the 2012 Assessment relies on a very coarse 30 meter digital elevation model (DEM) to develop channel bathymetry (pg. 4-33). The coarse nature of the 30 meter DEMs does not account for channel complexity in the floodplain where side channels or wider braided channels are only activated during floods and are available for sediment transport. Channel wetlands and wetland courses are also present. The lack of channel detail and the resulting simplification over-simplifies the channel roughness and leads to river channels characterized as too "clean" and "smooth". As a result the coarse model very likely over predicts flows, velocities and sediment transport relative to what would be expected in reality (Crosby, 2006)⁵.</p> | <p>There is no significant change from 2012. The 2013 Assessment continues to rely on the coarse 30 meter DEM.</p> | <p>The 2013 Assessment does not address Geosyntec's 2012 comment. The analysis continues to be based on the use of a coarse 30 meter DEM (box 3-4, pg. 3-15). In addition, we note the use of this coarse DEM has now expanded. On Page 3-20 of the 2013 Assessment, the authors discuss conducting a flow analysis using the DEM data to establish the gradient of streams and the channel morphology. The report (pg. 3-20) also uses the DEM data to evaluate the valley gradient for the stream network. This would result in grossly misrepresenting stream gradients as:</p> <ul style="list-style-type: none"> • The 30 meter DEM grid resolution is too coarse, and • In reality, high gradient streams are a step and pool system and NOT a straight shot down the valley floor. One must look at the hydraulically effective slope which is much lower. <p>Note that this calculated stream gradient was also used to evaluate slopes along the transportation corridor at stream crossings (pg. 10-15).</p> |
| 2.4.3 | <p>The lateral extent of the cross-sections in the HEC-RAS model in the 2012 Assessment were likely insufficient, resulting in increased flow depth and higher velocities (Table 4-15; pg. 4-59).</p> | <p>The 2013 Assessment doesn't address this comment and no longer includes the cited table from the 2012 Assessment. We note that the maximum flow depths have increased dramatically relative to the 2012 Assessment. This appears to be a result of a significant change in the peak discharge rate from the dam breach analysis. For the 2013 Pebble 2.0 scenario, the maximum discharge rate is now 149,300 m³/s (Table 9-4), greater than 12 times the 2012 maximum discharge of 11,915 m³/s (Table 4-11) for what is presumably the same failure scenario. At station 10 (formerly station 9.4) maximum flow depth has increased from 8.8 m to 35 m. For station 5 (formerly 5.4) maximum flow depth has increased from 8.1 m to 53 m. For station 1 (formerly 0.6) maximum flow depth has increased from 14 m depth to 44 m.</p> | <p>The 2013 Assessment does not address Geosyntec's 2012 comment. More importantly, the extraordinary change between the 2012 and 2013 analysis is evidence that the dam breach analysis should not be relied upon. One set of assumptions was made in 2012. A very different set of assumptions was made in 2013, with very different results. Given the limitations of the HEC-RAS model, the coarse nature of the inputs to the model, and the sensitivity of the model to changes in parameters, it is clear that neither result is a reasonable representation of what would actually happen in the very unlikely event of a dam breach. Either full details of the model should be provided in an appendix for review, or the model results should be removed from the report completely.</p> |

⁵ Crosby, D. A. 2006. *The Effects of DEM Resolution on the Computation of Hydrologically Significant Topographic Attributes*. Master's Thesis. University of South Florida, Tampa, Florida. Page 3/13

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| 2.4.4 | <p>The mine tailings dam breach run-out scenarios in the 2012 Assessment are modeled to a distance of only 30 km and the analysis then utilizes a tailings run-out regression equation to calculate total mine tailings travel distances beyond the last segment of the model (pg. 4-57). Switching from a simplistic sediment transport approach to an even more simplistic regression equation once the mine tailings reach the confluence of the North Fork Kokoi and South Fork Kokoi Rivers only adds to the uncertainty in the estimates of the distance of sediment transport.</p> | <p>The 2013 Assessment did not address this comment as the HEC-RAS model continues to end at a distance of 30 km (Box 9-5, pg. 9-21), followed by use of the tailings run-out regression equation (pg. 9-20).</p> | <p>The 2013 Assessment does not address Geosyntec's 2012 comment.</p> |
| 2.4.5 | <p>Sedimentation of the dam break flood wave in the 2012 Assessment was calculated when the flood wave was at its maximum predicted depth (pg. 4-57). When river flows are at their maximum flood stage, river velocities are often at their highest, which is not conducive to sediment deposition. The majority of sediment deposition occurs on the receding limb of the flood curve, when river velocities are starting to decrease.</p> | <p>As described in Box 9-5, the 2013 Assessment provides a very different evaluation of sediment deposition. <i>"We assumed that sediment deposition would be greatest near the dam, forming a "wedge" from the lowest elevation of the breach and extending downstream. The calculated sediment depths ranged from 45 to 10 m and extended 1.3 and 3.3 km for the 90-in (Pebble 0.25) and 209-in (Pebble 2.0) dam failures, respectively. It was also predicted that deposition could occur in the channel and the floodplain of each section following the maximum predicted flow depth during the peak of the flood wave as the flood and debris flow receded. Using this maximum width of inundation, a 0.3-m depth of sediment was deposited on the floodplain and channel."</i></p> | <p>The 2013 Assessment continues to assume that deposition occurs at high velocities, extending out across the width of the inundation wave at the peak of the flood wave. However, for the most part the revised evaluation dismembers sediment depth from the dam breach analysis. Sediment thicknesses are now almost entirely controlled by assumptions:</p> <ul style="list-style-type: none"> • sediment "wedge" up to 45 m thick near the dam, extending at a slope of 15:1 (HFV) (pg. 9-19); and • sediment thickness at a constant 0.3 m thick beyond the toe of the "wedge." <p>This revised approach raises the following question: What is the purpose of the dam breach analysis?</p> |
| 2.4.6 | <p>The Hjulstrom curve was used in the 2012 Assessment to evaluate sediment transport velocity (pg. 4-57). While the Hjulstrom curve is a widely used reference to evaluate sediment transport in streams, it is not well-equipped to be used to evaluate sediment settling in a dense, mostly solid flow such as the scenario set forth in the report.</p> | <p>The 2013 Assessment did not address this comment as the reference to Hjulstrom remains in the text of Box 9-5 (pg. 9-21).</p> | <p>While the 2013 Assessment does not address the comment, the revised approach to sediment deposition, which is based on assumption and not on analysis, makes our 2012 comment, and the continued use of the Hjulstrom curve in Box 9-5 of the 2013 Assessment, irrelevant.</p> |

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| 3.1 | <p>In Box 4-1 the 2012 Assessment aggregates multiple worst-case failure scenarios into a single release event scenario which unreasonably overstates the probability of release due to a system failure in the water collection and treatment system.</p> <p>The cumulative effect of four worst-case factors (unlimited oxygen supply, higher concentration of metals in the waste rock, high leaching rates due to small grain size, and high water contact due to the absence of preferential flowpaths) sets an overly conservative bound on the hazardous characteristics of the leachate quality. Use of the additive result of multiple concurrent worst-case factors, represents an unreasonable overstatement of the potential impacts of leachate releases. A risk analysis based on these assumptions cannot be well supported scientifically.</p> | <p>The section has been re-written; this Box scenario has been replaced by three additional Box discussions which provide an overview of the use of best management practices, regulations, and financial assurances required:</p> <p>Box 4-1 "Reducing Mining's Impact";</p> <p>Box 4-2 "Permitting Large Mine Projects in Alaska"; and</p> <p>Box 4-3 "Financial Assurance".</p> | <p>The inclusion of discussion of best management practices would help the Assessment to be more balanced except that these Box references are later negated elsewhere in the document. The Assessment later asserts that most mines do not comply with regulations and that in the past financial assurances have been insufficient and that taxpayers have been left with closure costs.</p> <p>6-36 "In the past, however, financial assurance often has not been adequate, and taxpayers have been left with substantial cleanup costs (USEPA 1997). This may be changing, as agencies update bonding requirements to reflect cleanup costs more accurately, but projecting these costs far into the future is a difficult task."</p> <p>6-22 "The USEPA has observed that some operators continue to operate when they know that treatment is ineffective and not meeting standards. Hence, the record of analogous mines indicates that releases of heavy contaminants, beyond permit limits would be likely over the life of any mine at the Pebble deposit."</p> |
| 3.1 | <p>The references drawn in the report also do not account for advances in technology or operational practices between the historical case studies examined and present practices. The assessment acknowledges that some case studies cited incorporated historical and outdated mining practices that would not be allowed under current mining laws. Several passages of text use language that are not technically correct and, as a result, can be confusing or misleading.</p> | <p>Technological advances are acknowledged to exist, and are then cited as being additional sources of unforeseen and unpredictable failures:</p> <p>2-4 "The use of data from the historical, operational records of mines, pipelines, and roads is necessary but controversial. It is essential and conventional for risk assessments to use the history of a technology to estimate failure rates. However, developers argue, with some justification, that the record of older technology is not relevant because of technological advances. Despite advances, no technology is perfect, and rates of past failures may be a better guide to future success than the expectation that developers can design a system that will not fail. The example of the NASA space shuttle program which failed the test of the failure rate of the Challenger launch would be one in a million. The Challenger failure showed that the prior failure rate was still relevant, despite updated technology."</p> | <p>The report acknowledges technological advances exist and then uses an example of a very complex and sophisticated program from the NASA space shuttle program to show that even with "advanced technology" that the "prior failure rates would be relevant". The technology used in mine water collection and treatment does not approach the same level of complexity or sophistication as the NASA space shuttle. Similarly, the years of operating experience in the mining industry far exceeds the years of experience with space travel. The comparison to the NASA event simply highlights the bias in the BWWA in assessing the potential for failure of any engineered system.</p> |

| GeosynTec Section | 2012 GeosynTec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
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| 3.1 | <p>The 2012 Assessment states: "Following the termination of mine operations, collection and treatment may cease immediately (premature closure) or may continue for some period (planned closure), but eventually will cease (perpetuity). If the water is monoxic, in compliance with all criteria and standards, and its composition is stable or improving, the collection and treatment system may be shut down under permit. Otherwise, treatment would continue until institutional failures ultimately resulted in abandonment of the system, at which time untreated leachate discharges would occur." (pg. 6-36)</p> <p>This statement assumes that institutional controls will fail at some time and management of water residuals would cease, when considering "perpetuity". First, this is a contingency outcome that would be evaluated in the permitting process. All closures, referred to in the report as both "planned" and "unplanned," are planned for during the permitting process. This statement is misleading because it does not differentiate between leachate that is collected during mine operations and that which may be generated during the "in perpetuity" timeframe. If institutional failures result in the eventual abandonment of the water collection and treatment systems, a reasonable expectation is that by this time the site would have executed the closure plan and that the leachate quality would be stable or improving each year. In contrast, the BSWA implies that it is inevitable that untreated leachate will eventually be discharged to the local environment, resulting in a significant environmental impact that requires attention on future generations of citizens with accepted risk analysis practice, as a "reasonable" time frame must be considered.</p> | <p>The 2013 Assessment continues to assert the eventual release of untreated leachate is a certainty but now makes reference to the fact the water would be less toxic due to the elimination of PAG rock.</p> <p>8.2 "Following the termination of mine operations, it is expected that water collection and treatment would continue for waste rock and tailings leachates. If the water is non-toxic, in compliance with all criteria and standards, and its composition is stable or improving, the collection and treatment system may be shut down under permit. Otherwise, treatment would continue in perpetuity—that is, until ultimately water quality was acceptable or institutional failures ultimately resulted in abandonment of the system. If the mine operator abandons the site, the State of Alaska should assume operation of the treatment system; if both the mine operator and the State of Alaska abandon the site, untreated leachate would flow to streams draining the site."</p> <p>ES-18, 14-5 "When water is no longer managed, untreated leachates would flow to the streams. However, the water would be less toxic due to elimination of PAG waste rock."</p> | <p>GeosynTec's 2012 comments remain unchanged. The 2013 Assessment continues to refer to the discharge of untreated leachate at some future state as "Certain." (ES-18, 14-5)</p> <p>If institutional failures result in the eventual abandonment of the water collection and treatment systems, a reasonable expectation is that by this time the site would have executed the closure plan, potentially acid generating (PAG) waste rock would have been processed and tailings placed in the pit below water, many years of post-closure leachate management will have occurred, and the leachate quality would be stable or improving each year.</p> |
| 3.2.2 | <p>Figure 4-09A incorrectly depicts a post-closure scenario with no water management. As described in the Wardrop (2011)⁶ report, the closure planning process includes long-term water management and financial sureties to ensure that the closure plan will remain funded.</p> <p>Many mine closure plans include a move towards long-term passive management of mine water systems, including surface grading and vegetation to minimize infiltration. These passive methods to reduce leachate generation are sufficiently simple in nature that long term maintenance and care of failures are minimal. The passive management of tailings and waste rock is expected to stabilize during the active post-closure period such that minimal active management would be required.</p> | <p>Figure 4-09B is replaced by Figure 6.5. The explicit reference to no long-term water treatment is removed from the figure.</p> | <p>The reference to no water treatment being used post-closure is removed from this figure. However, as described previously, the 2013 Assessment continues to make reference to untreated leachate being discharged in perpetuity.</p> |

⁶ Wardrop, 2011. Preliminary Assessment of the Pebble Project, Southwest Alaska. Prepared for Northern Dynasty Minerals Ltd., February 15. Prepared by Wardrop (A Terra Tech Company), Vancouver, BC. (Note: This report is referenced as Ghaffari et al., 2011, in the BSWA)

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| 3.2.3 | <p>In the 2012 Assessment a fourth timeframe is considered, post-closure "in perpetuity," beyond the "limited lifetime of human institutions." (pg 3-5) Consideration of this scenario suggests a broader USEPA policy issue, as there are other facilities, such as closed hazardous and non-hazardous waste landfills, that are intended to remain in perpetuity. Consider the following statements from the 2012 Assessment:</p> <p>"Further, it is much too soon to know whether mines that are permitted for perpetual water collection and treatment (e.g., the Red Dog Mine in Alaska) can in fact carry out those functions in perpetuity." (pg. 6-41)</p> <p>"... given the relatively ephemeral nature of human institutions over these timeframes, we would expect that eventual monitoring, maintenance, and treatment would cease." (pg. 7-14)</p> <p>The report calls into question the ability of the Red Dog Mine operator to meet the obligations of its approved permit for perpetual operation. The ability to operate a water management system for 200 years can only be proven with absolute certainty following 200 years of demonstrated operation. By placing doubt on the ability to operate perpetually, the BBWA creates an unrealistic standard that is impossible to meet.</p> | <p>There is no significant change for 2012. The 2013 Assessment continues to call into question the ability to operate any system "in perpetuity."</p> <p>6-50 "... need to be maintained for hundreds to thousands of years. It is impossible to evaluate the success of such long-term collection and treatment systems... because these timeframes exceed both existing systems and most human institutions... The uncertainty that human institutions have the stability to apply treatment for these timeframes applies to all treatment options."</p> <p>8-22 "... it is much too soon to know whether mines that are permitted for perpetual water collection and treatment (e.g., the Red Dog Mine in Alaska) can actually carry out those functions in perpetuity."</p> <p>13-31 "In light of the relatively ephemeral nature of human institutions over these timeframes, we would expect that monitoring, maintenance, and treatment would eventually cease, leading to increased release of contaminated waters downstream."</p> <p>14-16 "Human institutions change. Over the long time span of mining and post-mining care, generations of mine operators must exercise due diligence. Priorities are likely to change..."</p> | <p>Geosyntec's 2012 comments remain unchanged. The assumption on the quality of mining practices (i.e., good versus best) that may be applied to mines in the Red Dog mine is consistent with the BBWA. Likewise, the proposed best practices will have to perform to a plan approved by the oversight regulatory agencies, and will be designed to meet the unique requirements of the site. All indications are that Pebble will be designed to "best" practices, and yet the 2013 Assessment has not changed their mine scenario to match.</p> |
| 3.3 | <p>The 2012 Assessment states: "Our mine scenario represents current good, but not necessarily best, mining practices." (pg. 4-17)</p> <p>The current practices in use at some porphyry copper mines are the result of years of the evolution in engineering design. Implementing current best practices at some older sites may be hampered by historic mine development decisions and may therefore be limited to mitigation or remediation efforts.</p> | <p>The 2013 Assessment re-asserts that the development scenarios represent plausible mine development scenarios.</p> <p>6-1 "These three mine scenarios represent realistic, plausible descriptions of potential mine development alternatives, consistent with current engineering practice and precedent."</p> | <p>Geosyntec's 2012 comments remain unchanged. The assumption on the quality of mining practices (i.e., good versus best) that may be applied to mines in the Red Dog mine is consistent with the BBWA. Likewise, the proposed best practices will have to perform to a plan approved by the oversight regulatory agencies, and will be designed to meet the unique requirements of the site. All indications are that Pebble will be designed to "best" practices, and yet the 2013 Assessment has not changed their mine scenario to match.</p> |
| 3.3 | <p>The 2012 Assessment states: "During mine operation, collection or treatment of leachate from mine tailings, pit walls or waste rock piles could fail in various ways. This water collection and treatment failure could be continuous (e.g., failure to collect all leachate from the tailings storage facility) or episodic (e.g., failure due to a power loss). In such cases, leachate might enter groundwater and not be collected by the pit pumps or the tailings impoundment's collection system, or could discharge to surface waters directly or through a non-functioning water treatment system." (pg. 6-56)</p> <p>No supporting documentation or references are listed in the assessment to support the claims relating to water collection and treatment failure. Neither the "continuous" nor the "episodic" failures mentioned represent current "best practices" for operating mines.</p> | <p>8-19 "There are innumerable ways in which wastewater treatment could fail under the mine scenarios in terms of failure type (e.g., breakdown of treatment equipment, ineffective leachate collection, wastewater pipeline failure), location, duration, and magnitude (e.g., partial vs. no treatment). Box 8-1 presents an example wastewater collection failure, and mechanisms of treatment failure are discussed in Box 8-2. To bound the range of reasonable possibilities, we assess a serious failure in which the WFTF allows untreated water to discharge directly to streams. This type of failure could result from a lack of storage or treatment capacity or treatment efficacy problems. Chronic releases would occur during operation if a lengthy process were required to repair a failure. We evaluate potential effects of this type of failure using the following assumptions... Duration of a release could range from a few days to several months, depending on the nature of the failure and difficulty of repair and replacement."</p> | <p>Although a range of outcomes is presented, the relative likelihood of each is not given weight in the Assessment. Based on our experience with industrial facilities, most equipment breakdowns would be resolved within hours, some might require a few days for replacement parts to arrive at the site. The only malfunctions that take months to remedy are those that depend on suitable weather to facilitate the repair. These are a rare and usually temporary measures are constructed to manage the situation during the interim period.</p> <p>The scenario described in the 2013 Assessment is considered extremely unlikely given the multiple redundancies that will be incorporated within the treatment plant system design, and the proposed operational approach where untreated water will be stored in the TSP such that if the treatment plant were to go offline, water would not be transmitted to the plant in the first place.</p> |

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| 3.4 | <p>The 2012 Assessment states: "When a mine reopens after premature closure, the owners may change the mining plan, may not implement the same mitigation practices, or may negotiate new effluent permits. For example, the Gibraltar copper mine in British Columbia was permitted as a zero-discharge operation. When it closed, then reopened under new ownership, it was permitted to allow effluent discharge to the Fraser River, and this permit included a 92-m dilution zone for copper and other metals." (Pg. 4-33)</p> <p>The BWA appears to suggest the reopening of this mine under a new permit was inappropriate. Updates to the permit are appropriate based on new information and an improved understanding of the risks associated with discharge to the receiving environment. Stakeholder consultation and regulatory approval is required before any such alteration of the discharge permit could take place. This statement overlooks the process that is required to obtain approval of any changes to permit conditions, which includes careful analysis by the lead regulatory agency.</p> | <p>The 2013 Assessment expands on the original text with the following discussion, which includes reference to Fort Knox mine in addition to the Gibraltar Mine.</p> <p>6-36 "When a mine re-opens after premature closure, the owners might change the mining plan, implement different mitigation practices, or negotiate new effluent permits. An example is the Gibraltar copper mine in British Columbia. The Gibraltar mine began operations permitted as a zero-discharge operation. However, when it was re-opened under new ownership after having closed prematurely, the new permit allowed treated water to be discharged to the Fraser River with a 92-m dilution zone for copper and other metals. On October 1, 2012, an Alaska Pollution Discharge Elimination System permit authorized the Fort Knox Mine near Fairbanks, Alaska, to discharge wastewater to nearby Fish Creek. Although this mine has never been closed, it was originally designed and permitted in 1994 as a no-discharge facility."</p> | <p>Updates to the permits are appropriate based on new information and an improved understanding of the risks associated with discharge to the receiving environment. Stakeholder consultation and regulatory approval is required before any such alteration of the discharge permit could take place. This statement overlooks the process that is required to obtain approval of any changes to permit conditions, which includes careful analysis by the lead regulatory agency.</p> |
| 3.4 | <p>The 2012 Assessment states: "Water collection and treatment failures may be acute or chronic. A recent example is the overfilling of the tailings impoundment at the Nixon Fork, Alaska, mine that resulted in overtopping of the dam (Box 6-2)." (Pg. 6-36)</p> <p>The Nixon Fork example serves as a warning of the importance of water management at mine sites. Inadequate or inappropriate instrumentation was used to monitor the level in the tailings impoundment. Staff elected to not monitor the freeboard level as the gauge was frozen in ice. Additionally, a major change was made to the production process (moving from batch to continuous operation) without an adequate understanding of the consequences to the site water balance and water management. Note that, as described in Box 6-2, for this release it was found that water from the tailings impoundment was not likely to have reached nearby streams.</p> | <p>Box 6-2 was reorganized and renamed to Box 8-1, pg. 8-20. The following concluding statement is added to Box 8-1:</p> <p>"This case illustrates the diversity of potential failures that can happen and suggests the practical impossibility of predicting all possible failure modes."</p> | <p>Geosyntec's 2012 comments remain unchanged. Water management is an important component of mine operation.</p> <p>We note however that the addition of the concluding statement is biased in that it indicates that failure modes cannot be predicted. Nothing about the Nixon Fork case indicates a failure mode that could not have been predicted. In reality, the overtopping at Nixon was both predictable and preventable if appropriate effort and oversight had been applied to managing the site's water balance.</p> |
| NEW | <p>N/A</p> | <p>The 2013 Assessment incorporates a new evaluation of leachate from the waste rock piles around the mine pit, as follows:</p> <p>8-12 "The mine scenarios (and the plan put forth for Northern Dynasty Minerals in Chaffart et al. 2011) do not include liners for the waste rock piles. Instead, leachate within the pit's drawdown zone would be captured and pumped to the WWTP. Outside the drawdown zone, half the leachate would be captured by extraction wells or other means and the rest would flow to surface waters. This is considered reasonable given the likelihood that water would flow between wells and below their zones of interception in the relatively permeable overburden materials and topsoil bedrock. Wells would not catch all flows from the mine site given its geological complexity and the permeability of surficial layers. As a result, 84% of PAG leachate and 82% of total waste rock leachate would be captured by the pit and the wells for the Probable 2.0 mine."</p> | <p>The statement that half (50%) of the leachate from waste rock outside of the leachate zone will escape and flow to surface waters is unsubstantiated. While the 2013 Assessment references the Wardrop (2011) (i.e. Chaffart et al., 2011) report, it fails to include the discussion in the Wardrop report where it is stated that a low permeability cutoff wall will be installed around the waste rock piles and extraction wells will be installed within the cutoff wall to capture water from leachate containing metals. This system will be designed to capture and contain leachate from waste rock piles that are outside of the drawdown zone. This system will maximize the placement within the drawdown zone, the capture of PAG waste rock leachate can be close to 100%. This relatively straight forward approach to enhanced leachate collection is standard best engineering practices, a fact that is ignored in the 2013 Assessment.</p> |

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment PIPELINE FAILURES | Discussion on Adequacy of 2013 Response |
|-------------------|--|---|--|
| 4.1 | <p>Pipeline failure rates are being estimated based on questionable statistics and with unreferenced source data. Underlying mathematical analysis is not shown and cannot be verified. Failure data is obtained from the Oil and Gas (O&G) industry with no justification as to its applicability to the mining industry. The underlying classification of failure data (does each population include all of the same failure types?) is not considered. The possibility of using buried piping is ignored, and impact failures/human error are unreasonably reinforced.</p> | <p>Failure rate data are now all referenced and new failure data has been added to the summary Table 1-1. The new failure data is once again from the O&G sector and its applicability to mining failure rates has not been established. The following statement is added relative to relevance to the mining industry: <i>11-6: "Although data are insufficient to determine failure probabilities specific to the metal mining industry, the record suggests that pipeline failures at mines are not uncommon. Review of 14 operating U.S. porphyry copper mines in the United States (including all operating for less than 2 years) found that all had experienced pipeline spills or accidental releases and that pipeline failures have continued into 2012 [Earthworks 2012]."</i></p> | <p>Geosyntec's 2012 comments remain largely unchanged. While data is now referenced and new data has been added, since the underlying analysis is not shown, it is not clear whether the new data should change the conclusions being drawn. The new failure data is once again from the O&G sector and its applicability to mining failure rates has not been established. Reference is made to the inadequacy of the data relative to the metal mining industry, and qualitative reference is made to pipeline failures data in the mining industry. However, as the failure rate used for analysis (0.001 failure/km-yr) did not change from 2012, the mining specific information does not appear to have influenced the evaluation.</p> |
| 4.2 | <p>Statistical methods used in the assessment of piping failure rates are of questionable validity. Use of the exponential distribution to model pipeline failures, and assumptions of constant failure rate along the length of a pipe, are inappropriate. The failure rates thus derived (98% chance of line failure over 25 years) are misleading at best.</p> | <p>With the exception of an adjustment for length of the transportation corridor, the 2012 statistical analyses and associated inaccuracies appear to be unchanged.</p> | <p>No adequate response appears to have been provided, and failure rates continue to be misleading.</p> |
| 4.3 | <p>The volume of release due to a pipeline failure, as described in the 2012 Assessment, is heavily dependent on the length of pipeline between two isolation points which define the maximum trapped volume which could be released. In Table 4-15, for the concentrate pipeline, the volume of flow over 2 minutes is 2.1 m³, while the volume between isolation valves is 470 m³. The 2012 Assessment characterizes this minimum distance as 14 km based on the need to isolate either side of every river crossing. However, the 2013 Assessment (the Waite 2011) characterizes this distance as 1 km based on the Waite 2011 report (pg. 332) characterizes river crossings as 600 ft (0.18 km) wide for design purposes. The 14 km representative release volumes in Table 4-15. Proper design would include more frequent and strategically placed points of isolation, which would work in concert with automatic leak detection to minimize potential leakage along critical stretches of the pipeline.</p> | <p>Reference to 14km distance appears to have been removed. The updated spill volume is based on the following scenario: <i>11-8: "In the concentrate pipeline failure scenarios, a single complete break of the pipeline would occur at the edge of the stream, just upstream of an isolation valve. These valves would be placed on either side of major crossings (Chaffin et al. 2011) and could be remotely activated. Pumping would continue for 5 minutes until the alarm condition was assessed and an operator shut down the pumps. The estimated total slurry volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and local high point in the pipeline (i.e., the nearest watershed boundary) (Table 11-2). During the entire spill, gravity drainage governs the flow rate based on calculations for free-flowing pipes."</i></p> | <p>The 2013 Assessment replaces one unjustified scenario with another. The 14 km assumption is removed and the associated volume of the spill is also reduced, but an assumption is added that the "volume draining to the stream would equal the pumped flow rate times 5 minutes, plus the volume between the break and the local high point in the pipeline (i.e. the nearest watershed boundary)." Once again, the Assessment completely disregards proper planning and design for the stream crossings. By forcing the failure upstream of the isolation valve and still allowing all of the spilled material to enter the creek, the existence of the isolation valves and any other features that might be designed to protect the streams from failures on land are made obsolete. If the topography and alignment are such that this extreme scenario could exist, unlikely as it may be that a failure would occur in exactly the worst place for the creek, other engineering and/or operational controls can be established to mitigate against it.</p> |

Table 1 - Evaluation of 2013 Responses - 05-22-13

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
|----------------------------------|---|--|---|
| 4.3 | <p>Iliamna Lake should not be considered the main receptor for spills since a proportion of spill events will be distant from the lake and/or isolated and cleaned up before reaching a waterway.</p> | <p>11-9 "Estimated mean velocities of the streams (1.8 m/s for Chukiyevs Creek and Knutson Creek and 1.1 m/s for the Iliamna River) are consistent with those described for these streams (PLP 2011), and are well above the transport velocities. Therefore, the fine sand-sized concentrate would be carried downstream during typical or high flows, even given that the concentrate is denser (3.8 metric tons/m³) than typical rock (2.8 metric tons/m³ for granite) and would move less readily. Concentrate would be deposited in any backwaters, pools, or other low-flow locations. If the spill occurred during a period of high flow, it would be carried downstream immediately, potentially reaching Iliamna Lake within 4 hours (via Chukiyevs Creek and Iliamna River) or 0.5 hour (via Knutson Creek). Because flood flows are a potential cause of pipeline failure at stream crossings, this is a reasonable possibility. If the spill occurred during low flows, concentrate that is not collected would be spread downstream by erosion during subsequent typical or high-flow periods, eventually entering Iliamna Lake."</p> | <p>The 2013 Assessment described conditions under which transport of spilled product would occur. We note that the extreme failure scenario now has to occur during a period of significant flow in the creek in order for significant product to reach Iliamna Lake. Otherwise it is likely that cleanup operations could isolate the majority of the spilled product.</p> <p>In relation to failure during high flows, the statement that "because flood flows are a potential cause of pipeline failure at stream crossings, this is a reasonable possibility" now creates an even more remote possibility that the extreme failure scenario would occur. Such a failure during a flood flow (if the pipe were somehow not protected from such a condition) would most likely occur between the isolation valves, and hence they would shut down and the volume of product released would be far smaller than that assumed in the 2013 Assessment.</p> |
| ROAD AND CULVERT FAILURES | | | |
| 5.1 | <p>Cited culvert failure rates on the order of 30-66% are not applicable. The 2012 Assessment cites literature supporting culvert failure rates of 3-69% (30% from Price et al. 2010,³ 35% from Gibson et al. 2007,⁴ 38% from Langill and Zamora 2002,⁵ and 60% from Flanders and Garcello 2000).⁶ In these studies the authors note the issues also noted here. They have already been addressed by design and/or maintenance. There are a number of design and installation standards under current regulations with stringent environmental standards and regulatory oversight should be expected to be executed with much greater care such that fish passage standards are met at each crossing.</p> | <p>The 2013 Assessment has removed the 66% statistic (Flanders and Garcello, 2000). The new range is 30-58%.</p> | <p>Geosyntec's 2012 comments remain essentially unchanged as these case histories are not applicable to a future mine.</p> <p>While the Flanders and Garcello (2000) data were clearly not applicable, it is interesting to note that the 2013 Assessment removes this data set from Alaska, but keeps a data set from Nova Scotia (Langill and Zamora, 2002) which focused on small culverts that never required a permit for construction in the first place.</p> |

³ Price, D. M., T. Quinn, and R. J. Barnard. 2010. Fish Passage Effectiveness of Recently Constructed Road Crossing Culverts in the Puget Sound Region of Washington State. North American Journal of Fisheries Management 30:1110-1125.
⁴ Gibson, R. J., R. L. Haefrich, and C. M. Wermerheim. 2005. Loss of fish habitat as a consequence of inappropriately constructed stream crossings. Fisheries 30:13-17.
⁵ Langill, D. A. and P. J. Zamora. 2002. An Audit of Small Culvert Installations in Nova Scotia: Habitat Loss and Habitat Fragmentation. 2422. Canadian Department of Fisheries and Oceans, Habitat Management Division, Dartmouth, Nova Scotia.
⁶ Flanders, L. and J. Garcello. 2000. Tongass Road Condition Survey Report. Technical Report No. 00-7, Alaska Department of Fish and Game, Juneau, AK.

Table 1 - Evaluation of 2013 Responses - 05-22-13

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
|-------------------|---|--|---|
| 5.2 | <p>Probability of failure estimates for culverts during mine operation and after closure are inaccurate and not applicable to the Pebble Project. Table 8-1 of the 2012 Assessment shows a low probability of failure for culverts during the operation of the mine and cites frequent inspections and regular maintenance as the reasons. Post-operation failure probability is indicated as 0.3 to 0.6, which has already been shown to not be applicable. The failure probability does not account for the use of bridges, box culverts and fish friendly culverts in place of typical culvert designs. The surveys of road culverts used as justification for the high failure rates were rarely designed for fish passage. Additionally, the report does not account for the possibility of decommissioning (removal) of some or all of the culverts post-operation.</p> | <p>Probability of failure estimates for culverts during and after mine operation and after closure remains unchanged in the report. However, as the 2013 Assessment reports that 35 salmonid streams would have culverts as opposed to 14 salmonid streams in the 2012 Assessment, the number of blocked culverts has increased significantly.</p> | <p>Geosyntec's 2012 comments remain unchanged. The failure probabilities do not account for the use of bridges, box culverts and fish friendly culverts in place of typical culvert designs. The surveys of road culverts used as justification for the high failure rates were rarely designed for fish passage. Additionally, the report does not account for the possibility of decommissioning (removal) of some or all of the culverts post-operation.</p> |
| 5.3 | <p>Road culvert failure modes do not consider existing state of the practice guidance. The 2012 Assessment states: "Road crossings in the mine area are designed to meet the minimum design depth in culverts, but not to meet the design depth in culverts below culverts, or a combination of these conditions (Furniss et al. 1991)." The culvert failure modes presented in the report are comprehensive and relevant. Guidance exists for fish friendly designs that mitigate each of the failure modes, such as the Memorandum of Agreement between Alaska Department of Fish and Game and Alaska Department of Transportation and Public Facilities for the Design, Permitting, and Construction of Culverts for Fish Passage (ADFG and ADOT&PF, 2001). Each of the modes of failure cited can be addressed using modern fish passage and channel stability design principles.</p> | <p>The 2013 Assessment includes a new Box 10-2, Culvert Mitigation. This box describes "guidance to project designers and permitting agencies that culverts are designed or modified to provide sufficient fish passage and to work in a statewide consistency in Title 16 permitting of culvert related work."</p> | <p>Unfortunately, while Box 10-2 describes some of the relevant guidance, that is the extent of the 2013 Assessment's acknowledgment of modern fish passage and channel stability design principles. As in the 2012 Assessment, the 2013 report falls back on the following statement to justify the use of implausible failure statistics: "10-27: "...for mine operations end, traffic would be reduced to that which is necessary to maintain any residual operations on the site, and inspections and maintenance would likely decrease. If the road was adopted by the state or local governmental entity, the frequency of inspections and quality of maintenance would likely decline to those provided for other roads. Either of these possibilities could result in a proportion of failed culverts similar to those described in the literature." Under this scenario, it would appear that any road under government supervision is likely to have a 30% to 60% failure rate.</p> |
| 6.2 | <p>The seismic analysis provided in the 2012 Assessment is biased by unsupported hypothetical faults rather than relying on the substantial geological, geophysical and seismological evidence of the seismic environment in the vicinity of the Pebble Project.</p> | <p>SEISMIC ENVIRONMENT Box 4-3 of the 2012 Assessment has become Section 3.6, Seismicity, in the 2013 Assessment, with the language largely unchanged. 3-35 "Although there is no evidence that the Lake Clark Fault extends closer than 16 km to the Pebble deposit, and there is no evidence of a continuous link between the Lake Clark Fault and the northeast-trending faults at the mine site, mapping the extent of subsurface faults over long, remote distances is difficult and has a high level of uncertainty." 3-35 "Large earthquakes have return periods of hundreds to thousands of years, so there may be no recorded or anecdotal evidence of the largest earthquakes on which to base future predictions."</p> | <p>Geosyntec's 2012 comments remain unchanged. The statements in the 2013 Assessment do not serve to quantify risks, but rather to raise alarm and bias the assessment. Certainly mapping faults and interpreting the geologic record is challenging. That is why the project should be designed based on appropriate design techniques and based on the best available knowledge of seismology, geology, and engineering.</p> |

Table 1 - Evaluation of 2013 Responses - 05-22-13

| Geosyntec Section | 2012 Geosyntec Comment | How 2013 Assessment Responds to Comment | Discussion on Adequacy of 2013 Response |
|----------------------|---|---|---|
| 6.2 | The Wardrop (2011) report indicates that the TSF design will be based on the Maximum Credible Earthquake (MCE). The MCE, as defined by ADNR (2005) ¹³ as "the greatest earthquake that reasonably could be generated by a specific seismic source, based on seismological and geologic evidence and interpretations." As such, every potential fault that could impact a project has its own MCE, and the design must consider the most critical fault(s) for the project. The seismic analysis provided in the 2012 Assessment does not acknowledge that seismic risks will be evaluated thoroughly during the permitting process. | Box 4-4 of the 2012 Assessment has become Box 9-2, with the language largely unchanged. We note the addition of the following statement: <i>"Although the design specifications proposed in Chaffert et al. (2011) exceed those used in previous assessments, the potential deterministic hazard used is small and contains considerable uncertainties, which could lead to an underestimate of the potential seismic risk."</i> | Geosyntec's 2012 comments remain unchanged. The seismic analysis provided in the 2012 Assessment does not acknowledge that seismic risks will be evaluated thoroughly during the permitting process. |
| 6.2 | While the seismic discussion in the three boxes (Box 4-3, 4-5 and 4-6) in the 2012 Assessment is extensive, the references within the main text of the report are limited and very general. It appears that the only references in the boxes is included to alarm the reader, the authors of the 2012 Assessment are not certain how to incorporate the actual seismic risk into their analyses, and hence they choose not to. | Other than moving Box 4-3 into the main body of the text (Section 3.6), the 2013 Assessment does not make any new attempts to incorporate the actual seismic risk into their analyses. | Geosyntec's 2012 comments remain unchanged. The authors of the 2013 Assessment are not certain how to incorporate the actual seismic risk into their analyses, and hence they choose not to. |
| WATER QUALITY | | | |
| 7.1 | The 2012 Assessment discounts the effectiveness of established sediment and erosion control practices for road construction and operation (Appendix G). | The 2013 Assessment includes Box 10-3, Stormwater Runoff and Sediment Mitigation. No significant modifications appear to have been made to Appendix G to address this comment. | The discussion of erosion and sediment control measures in Box 10-3 (pg. 10-33 and 10-34) partially addresses Geosyntec's 2012 comment. However, there is no discussion on how these control practices can impact the exposure and risk characterization for road construction and operation. |
| 7.2 | The 2012 Assessment has not considered mitigation strategies for addressing concerns over road salts for dust & ice control (pg. 5-62). | Revised sections of the 2013 Assessment, including Stormwater Runoff (pg. 10-29) and Dust (pg. 10-35), provide some expanded discussion on this topic. Discussion of mitigation strategies is limited to Box 10-3 (pg. 10-33 and 10-34). | The discussion of erosion and sediment control measures in Box 10-3 (pg. 10-33 and 10-34) partially addresses Geosyntec's 2012 comment. However, there is no discussion on how these control practices can impact the exposure and risk characterization for road construction and operation. |
| 7.3 | The 2012 Assessment has not considered mitigation strategies for addressing concerns over sediment contribution and effects (pg. 5-62) | Revised sections of the 2013 Assessment, including Stormwater Runoff (pg. 10-29), Fine Sediment (pg. 10-32) and Dust (pg. 10-35), provide some expanded discussion on this topic. Discussion of mitigation strategies is limited to Box 10-3 (pg. 10-33 and 10-34). | The discussion of erosion and sediment control measures in Box 10-3 (pg. 10-33 and 10-34) partially addresses Geosyntec's 2012 comment. However, there is no discussion on how these control practices can impact the exposure and risk characterization for road construction and operation. |
| 7.5 | The 2012 Assessment has not considered the role of mine reclamation to mitigate habitat loss during the post-closure period. The report does not appear to recognize that there is an opportunity to mitigate habitat loss in the mining process through reclamation design and implementation. When addressed early in planning and design, there are elements of mine reclamation that can be engineered to reduce the short and long-term impacts of mining operations. Working within operational constraints, standard reclamation activities such as the placement of grass seed, erosion control, and stabilization of fill can be modified to consider final re-vegetation, habitat and land use considerations | The 2013 Assessment does not include discussion of mine reclamation for mitigation of habitat loss during post-closure. | Geosyntec's 2012 comments remain unchanged. |

¹³ ADNR (Alaska Department of Natural Resources). 2005. *Guidelines for Cooperation with the Alaska Dam Safety Program*. Dam Safety and Construction Unit, Water Resources Section, Division of Mining, Lands, and Waters. 230 pp. Page 13/13

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Responses by Mr. Wayne Nastri

HOUSE COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON OVERSIGHT

"EPA's Bristol Bay Watershed Assessment—

A Factual Review of a Hypothetical Scenario"

QUESTIONS FOR THE RECORD

Mr. Wayne Nastri, Co-president, E4 Strategic Solutions;
Former Regional Administrator, USEPA Region 9

Questions submitted by Chairman Paul Broun

- 1) In an April 2013 letter to the Committee, EPA states that the "Bristol Bay Watershed Assessment is being conducted as an ecological risk assessment." Does either the May 2012 or the April 2013 versions of EPA's document meet agency guidelines for an ecological risk assessment?

Yes, both documents meet the current agency guidelines as specified in the May 14, 1998 publication of the Federal Register 63(93): 26846-26924.

- 2) Did you come up with the idea that EPA should or could consider a preemptive veto of a mine plan in the Bristol Bay area under either Section 404(c) of the Clean Water Act or via a watershed assessment? If not, when did you first learn of such a possibility in regards to Bristol Bay and from whom?

I did not come up with the idea that EPA should consider a pre-emptive veto of a mine plan in the Bristol Bay area under either Section 404(c) of the Clean Water Act or via a watershed assessment. I became aware of the possible use of 404c action sometime in late May 2010 by colleagues who had attended a Trout Unlimited event.

- 3) What are the limitations of EPA's watershed assessment, and has the agency been upfront in acknowledging them?

The EPA has done an excellent job of identifying upfront potential uncertainties and limitations within the Watershed Assessment. The Executive Summary provides a good overview of uncertainties and limitations (see pages ES 27-29). Many chapters of the Watershed Assessment also contain specific references to limitations (i.e., See Mine Footprint pg 7-33 and 7-58; Water, Collection, Treatment, and Discharge 8-57 and 8-64; Tailings Dam Failure pg 9-11 and 9-23; Scour, Sediment Deposition, and Turbidity pg 9-31; Transportation Corridor pg 10-40; Pipeline Failures pg 11-18 and 11-31; Fish Mediated Effects pg 12-16; and finally, Integrated Risk Characterization pg 14-13 and 14-16).

- 4) You stated during the hearing that allowing Pebble to present a plan to go through the NEPA process would result in environmental harm. Despite being given multiple opportunities to clarify your comments, your answers seemed to be based on economic and cultural reasons. I ask you once again: what possible environmental harm could occur between today and a decision on a Pebble mine proposal following a NEPA process that a preemptive EPA veto might avoid?

Environmental harms have already occurred through Pebble Limited Partnership exploration activities. Over 1 million feet of core samples have been drilled from 1,075 core holes throughout the upper watersheds of the Nushagak and Kvichak Rivers.¹ These drilling activities involve disruptive surveys and studies of the landscape and mineral deposits, including the use of deep drilling machines, water pumps, helicopters, diesel generators, and work platforms all located in or adjacent to sensitive wetlands and streams. Pebble Limited Partnership's exploration activities have led to unauthorized water withdrawals and uses, diesel and hydraulic fluid spills, leaching from exploration wells, and depositing of drilling muds and liquids. These impacts are occurring on sensitive tundra habitat, in valuable caribou, bear, and moose habitat, and within the headwaters of highly sensitive salmon spawning and rearing habitat.

These environmental harms and other impacts from exploration activities such as unauthorized water withdrawals were evidenced in the settlement between Alaska Department of Natural Resources and Pebble Limited Partnership dated February 10, 2010,² in numerous field reports issued by the Alaska Department of Natural Resources,³ and in photos taken by area residents. Attachment A provides photos and descriptions of environmental harm caused by PLP exploration activities. Attachment B describes further findings of harm described by ADNR with regard to Pebble Limited Partnership operations. For example, the most recent spill activity occurred June 28, 2013. It is important to note that ADNR has conducted limited oversight of historic and ongoing PLP operations. In fact, they have conducted less than 50 inspections on over 1,075 wells over a 10-year period. The Pebble Limited Partnership is permitted into the future by the State of Alaska to withdraw as much as 130,000 gallons of water per day from streams and ponds⁴, and thus these activities could continue up to and through any NEPA process.

These environmental harms have not gone unnoticed by the residents of Bristol Bay. In relaying concerns to the EPA, residents have commented extensively on these ongoing environmental harms. Here are a few such examples:

- “Since I have lived here, 32 plus years, travelling up and down the river, I have noticed that ever since the mine started doing exploration up in the Kuktuli, the fish and game have been depleting more and more every year. So there has been some point of effect from exploration.”⁵
- “Our Mulchatna caribou herd has moved away from the Pebble exploration because of the noise factor. It was already stated during the report that the cause of the herd moving away was because of the noise. They moved up to join the Kuskokwim caribou herd. About 25% of the caribous that used to live around the Mulchatna moved up to major upper Nushagak River.”⁶

¹ Northern Dynasty Minerals Ltd., *Pebble Project Drill Program Achieves Million Foot Milestone* (Oct. 11, 2012), available at http://www.northerndynastyminerals.com/ndm/NewsReleases.asp?ReportID=551962&_Type=News-Releases&_Title=Pebble-Project-Drill-Program-Achieves-Million-Foot-Milestone.

² Settlement Agreement & Release: Pebble Limited Partnership Unauthorized Water Withdrawal Violations (Feb. 10, 2010), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/water-settlement/settlement.pdf>.

³ <http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/index.cfm>

⁴ See ADNR, Pebble Project – Water Rights Applications, available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/water-right-apps/index.cfm>.

⁵ U.S. EPA Draft Bristol Bay Watershed Assessment Record of Public Comment Meeting – New Stuyahok, Alaska, at 18 (June 7, 2012), available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4154>.

⁶ *Id.* at 23.

- “What I didn’t see in the [the EPA Watershed Assessment] was anything addressing the ongoing damage from the exploration . . . it’s ongoing, it’s happening now, it is doing damage.”⁷
- “. . . [There is a] reason why the tribal fishermen are asking for your help and action now. I’m talking about impacts [to the] region that are going on right now on a massive scale with no end in sight. Effects of fuel spills, water generation, connection of generation, degradation of significant and going on unchecked.”⁸

5) Are you aware that during the public comment period following release of EPA’s revised draft watershed assessment this year, a group you once considered a client, Trout Unlimited, encouraged visitors to its website to comment on the assessment, and those who told a friend to comment were automatically entered in a drawing to win a free fishing trip to Bristol Bay?

Yes.

- a. As a former Regional Administrator for EPA, if you had learned that a mining company was employing similar tactics to encourage comments on an EIS, would you have any questions or concerns about the integrity of those comments?

As a former Regional Administrator, I understood that project proponents and opponents actively engaged with other stakeholders in efforts to impact an Agency decision. Consequently, I welcomed and appreciated efforts by all parties to increase public participation, which is important to informed agency decision-making. I acknowledge it would have been interesting to see a mine company offer visits to a mine site as a way of eliciting support, and even more interesting to see what those visitors thought of a potential mine site located in the headwaters of the largest remaining wild sockeye salmon fishery on the planet.

6) Did you participate in a conference call with Dennis J. McLerran, Regional Administrator, USEPA Region 10, on April 22, 2013, four days before the EPA released its revised Bristol Bay assessment?

I participated in a meeting with EPA HQ personnel on April 22, 2013. Regional Administrator McLerran participated in the meeting via teleconference.

- a. If so, what was discussed and what was your role on the conference call?

Various representatives of the Sportfishing and Commercial Fishing sectors, along with representatives of the Bristol Bay Native Corporation, met with EPA officials to discuss their views related to the Watershed Assessment. I had no role on the conference call.

- b. Who initiated scheduling the call?

⁷ U.S. EPA -- Region 10 Bristol Bay Watershed Assessment Public Hearing -- Dillingham, Alaska, at 39 (June 5, 2012), available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-1290>.

⁸ Id. at 56-58.

I requested the meeting with EPA but am unaware of who initiated scheduling the call.

- c. How were you invited to participate in the call and who invited you?

As noted above, I requested a meeting with EPA HQ personnel. I was not invited to participate in a call.

- d. Were any representatives of the Pebble Partnership invited to participate in the call? Did they?

I am not aware of any representatives of the Pebble Partnership being invited to participate or actually participating in the call.

- e. Was there anyone on the call who supported allowing the Pebble Partnership to submit a mine application? If yes, who?

As I recall, there was no discussion of the Pebble Partnership. Therefore, I am not aware of anyone in the meeting or on the call who expressed support or opposition for the Pebble Partnership to submit a mine application.

- 7) Do you believe the EPA should do anything it can to prevent any mining activity in Bristol Bay?

I believe that EPA should fulfill its obligations as authorized by Congress with the passage of the Clean Water Act (CWA). Specifically, EPA must, "... restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Further, CWA Section 404(c), authorizes EPA to prohibit, restrict, or deny the discharge of dredged or fill material at defined sites in waters of the United States (including wetlands) whenever it determines, after notice and opportunity for public hearing and comment, that use of such sites for disposal would have an unacceptable adverse impact on one or more of various resources, including fisheries, wildlife, municipal water supplies, or recreational areas.

I do not believe the EPA should do anything it can to prevent all mining activity in Bristol Bay. To the contrary, I believe EPA has the opportunity, through a proactive 404c action, to provide certainty and clarity to mining proponents and potentially affected people, communities and businesses/industries on what would be necessary to mine porphyry-copper deposits in the Bristol Bay watershed in a way that meets the requirements of the Clean Water Act.

Questions submitted by Rep. David Schweikert (R-AZ)

1) Following are a series of questions that merely require a 'Yes' or 'No' response. Please do not expend any additional time on expanding your responses because a 'Yes' or 'No' reply will sufficiently address my concerns:

a. As a former Regional Administrator for EPA, is it fair to say that EPA has the capacity to conduct reviews of complex projects for development when a project proponent submits an application for a permit under the Clean Water Act?

Yes.

b. Is EPA able to work with the U.S. Army Corps of Engineers to ensure that its concerns regarding environmental impacts of a project are known?

Yes.

c. Does EPA have the expertise to review a project application and make a sound determination whether a project should receive permit authorization under the Clean Water Act?

Yes.

d. Does the National Environmental Policy Act (NEPA) require an action agency to take a hard look at all reasonable alternatives to a proposed project requiring federal action?

Yes.

e. As a former Regional Administrator for EPA, did you support robust reviews of permit applications including examination of alternatives?

Yes.

f. As such, are specific answers to a project's components and the background area considered to be important facts requiring review prior to a permitting decision going forward under the Clean Water Act?

Yes, and that includes before a permit application is filed. During my time as Regional Administrator I was often approached by project proponents in advance of a permit application to help inform them of the likely challenges and best path forward for permitting. In my opinion, this approach often allowed the proponent, and the agency, to be more time- efficient and cost-effective.

g. Are the economic impacts of a proposed project and the employment provided by the project considered to be important factors in a project's review?

Yes, as are the risks associated with the project, including to existing economies and jobs.

- h. When you were Regional Administrator, did you consider the impact of jobs and economic benefits of proposed projects that sought approval from EPA and Region 9?

Yes, as well as many other factors. Most importantly, every decision I made was based on the statutory and regulatory authority specific to the issue in question.

- i. Is it fair to say that it is difficult to review a hypothetical project or a project that may have inaccurate or incomplete aspects in its project description?

No. Project evaluation and permitting is an iterative process. As noted earlier, project proponents often approached the EPA with the intent of obtaining information that would ultimately make their submittal more likely to be approved. The more information the project proponent and agency exchanged, the better the Agency could provide assistance. Not unexpectedly, project proponents would often modify various aspects of their project to address the issues identified in pre-permitting discussions.

- j. Is it true that one of the requirements for a complete application for a Clean Water Act permit is a fully described and accurate project description?

Yes, although as noted earlier the project almost invariably changes from the time an application is submitted to the time a decision is made on the permit.

- l. Have you reviewed an accurate and current project description for the Pebble Project?

Yes. The most recent project description that I have reviewed is the Wardrop Report, prepared and submitted to the US Securities and Exchange Commission by Northern Dynasty Minerals (NDM), one of the two partners in the Pebble Limited Partnership. In my previously submitted testimony, I noted that NDM described the mining scenarios in the report as "economically viable, technically feasible and permittable."

- m. Do you know exactly where the proposed tailings facility will be located for the Pebble Project?

No, although I am aware of geographic and other limitations that influence where tailings facilities could be located.

- n. Do you know exactly how the tailings facility will be constructed?

No, although I am aware of technologies and other limitations that influence how tailings facilities could be constructed.

- o. Do you know what specific mitigation proposals the Pebble Project has made to address environmental impacts?

Yes. NDM, in its May 23 2013 submittal to EPA, identified several mitigation measures, including, but not limited to, water management, increasing habitat connectivity, increasing quality of existing off-channel habitats, creating new habitats through development of semi-natural channels, increasing the productivity and productive capacity for fish, repair or

replacement of culverts impairing or preventing fish habitat (Appendix D, pgs 70-75).

- p. Other than the size of a mine, does the current Bristol Bay Watershed Assessment examine any alternatives?

No, EPA only focused on industry standard and accepted bulk mining techniques of porphyry-copper deposits.

Questions submitted by Rep. Daniel Maffei (D-NY)

Mr. Kavanaugh described the EPA draft assessment as having "significantly exaggerate both the probability of failures of engineering mining components and the environmental consequences of the failure scenarios. It is my understanding that even absent failure, the environmental impact of mining the Pebble prospect is found in the draft assessment as being severely damaging to the wetlands used by salmon for spawning. Would you care to comment on the picture painted by Mr. Kavanaugh of the draft assessment's overstating failure scenarios, their impacts and understating how technology can meet all potential environmental threats?

Mr. Kavanaugh's portrayal of the draft assessment's overstating failure scenarios, their impacts and understating how technology can meet all potential environmental threats is sadly misguided. Mr. Kavanaugh would have one believe that history and human nature are irrelevant and not applicable. Further, his claims when it comes to mining are unsubstantiated. There have been several examples of recently constructed mines where actual operational conditions varied from engineered plans. The Red Dog Mine in Alaska is a good example, with a long history of water quality violations that has required investments in treatment technology far in excess of what was anticipated at the time of permitting and NEPA review. Also, the original closure/reclamation plan for the Red Dog mine has been deemed woefully inadequate and long-term, perhaps perpetual treatment of mine site wastewater may be required.

It should also be noted that even if Mr. Kavanaugh was correct and that no failure would occur in spite of the scale of the project and the harsh environmental conditions at the project site, the footprint of the Pebble mine would dwarf that of all other Alaska mining projects combined, resulting in the loss of tens of miles of wild salmon spawning and rearing habitat and thousands of acres of wetlands. Such impacts, even without the inevitable equipment failures and human error, are far in excess of any project that has been the subject of a 404(c) action by EPA to date.

Accidents happen and that is a given. We learn from our past mistakes and take measures to improve but we can never be perfect. One unexpected failure or accident is all it would take to severely damage and perhaps destroy the most productive salmon fishery in the world. This is not the place to experiment with new and unproven technology.

ATTACHMENT A.:

PHOTOGRAPHS AND DESCRIPTIONS OF ENVIRONMENTAL HARMS

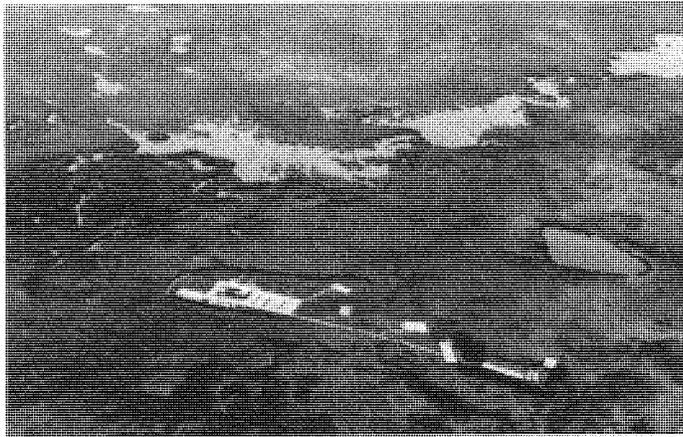


Figure 1. Aerial view of PLP drill rig platform located adjacent to an anadromous stream with a beaver dam in it. This stream flows south into Frying Pan Lake and then into the South Fork of the Koktuli and into the Nushagak River. Photo shows the platform situated on wetland tundra prior to installation of the heavy drill rig. Right-hand side of photo shows six excavated holes used for settling ponds. Clear ground water has seeped into these holes, which are later filled with drilling muds and cuttings (see Figures 2-4). Photographer Rick Halford, August 1, 2011.

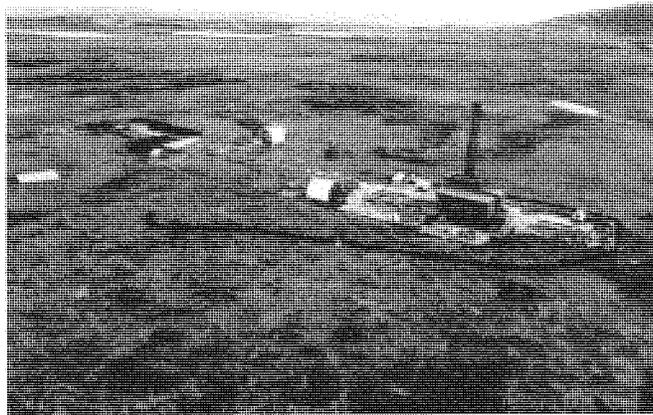


Figure 2. Aerial view of the PLP drill rig platform from Figure 1, one month later. With the heavy drill rig now installed, the platform and silt fences have been pushed down into the tundra. Grey water from the drilling muds and operation surrounds the silt fences on tundra adjacent to the anadromous stream, as seen on the right-hand side of the photo. Photographer Rick Halford, September 1, 2011.

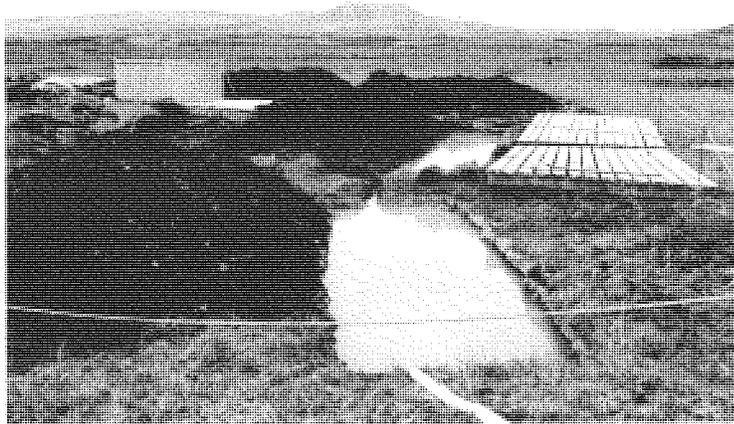


Figure 3. Excavated settling ponds (sumps) located at the PLP rig platform shown in Figures 1 and 2. Sumps are approximately 5' deep, 8' wide, and 10' long. Operation is pumping drilling muds (such as bentonite) and drilling fluids and additives into the sumps. The drilling muds and fluids are coating the walls of the holes. Photographer Rick Halford, September 1, 2011.

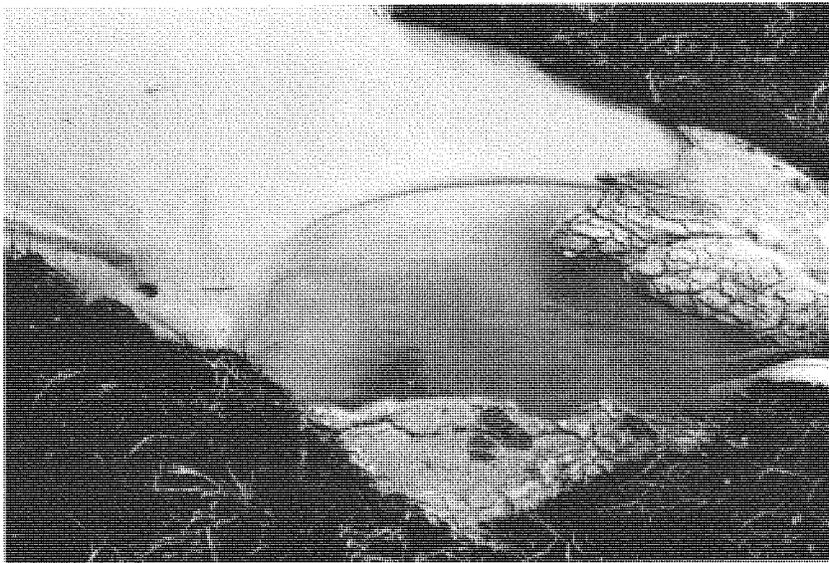


Figure 4. Excavated sump located at the PLP rig platform shown in Figures 1 and 2, now filled with drilling muds, fluids, additives, and drill cuttings. These sumps were later filled in with soil and left behind. Photographer Rick Halford, October 2011.

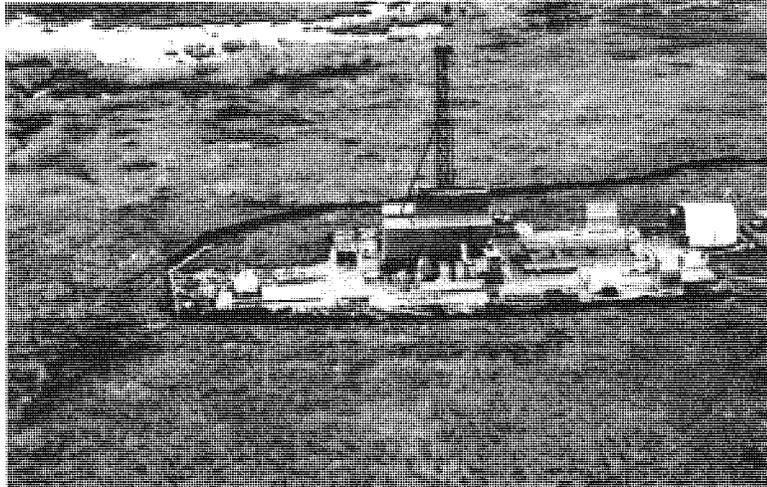


Figure 5. Aerial view of the PLP drill rig platform from Figures 1 and 2. To the left of the drill rig there is visible grey water settling on the tundra from the drilling muds and operation. This operation occurred close to an anadromous stream (top of photo). Silt fences and operation platform have settled into the tundra due to the vibrations from drilling.

Photographer Rick Halford, September 1, 2011.



Figure 6. Aerial view of PLP drill site shown in Figures 1-5. Photo is taken after the site was supposedly remediated. The six mounds on the tundra are the sumps filled with cuttings, drilling muds, and excavated soil. The grass under the operations platform is still matted down. The area is surrounded by wetlands. Photographer Rick Halford, June 2012.



Figure 7. An exploratory drill rig pumps water containing drilling muds and fluids out of settling ponds, depositing the fluid on upland tundra vegetation. This operating drill rig is also located close to PLP's biggest basecamp north of Frying Pan Lake. Photographer Rick Halford, September 2009.

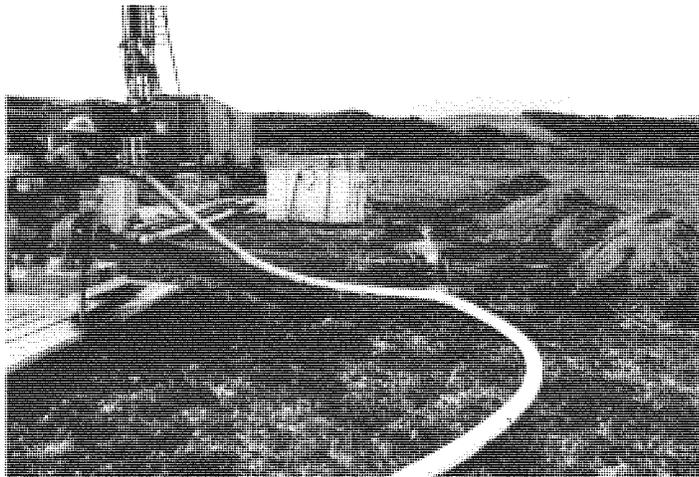


Figure 8. PLP employees pumping water containing drilling muds and fluids out of the sumps through a hose to be deposited on upland tundra (as seen in Figure 7). Photographer Rick Halford, September 2009.

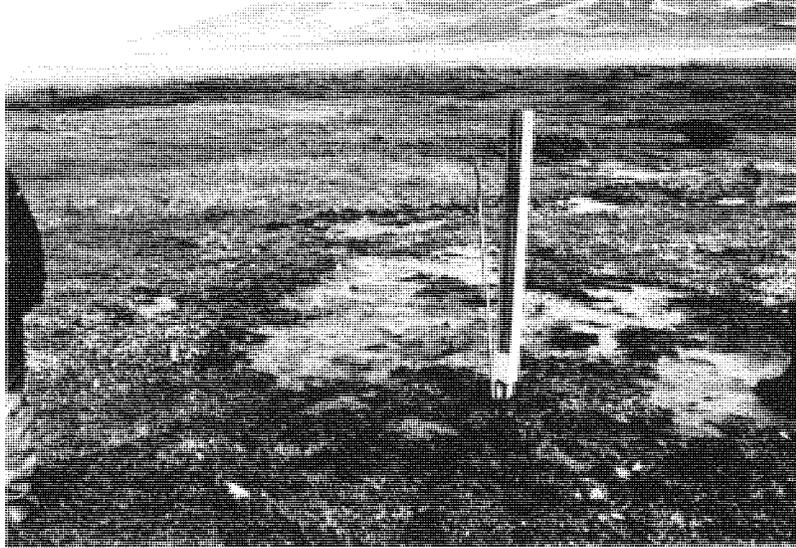


Figure 9. An uncapped well hole from the drill rig shown in Figures 8-9, three years after operations ceased. This well hole was not properly plugged, leading to artesian flow with groundwater and minerals leaching on the site. This flow occurred for three years before PLP pumped high pressure concrete and materials into the well hole to stop the artesian flow.

Photographer Rick Halford, September 1, 2012

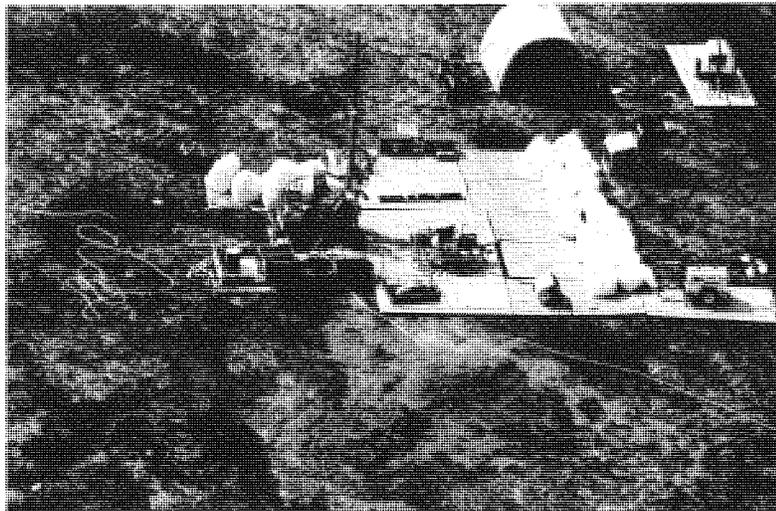


Figure 10. Aerial view of the well shown in Figures 7-9. The orange stain on the tundra is from water and minerals spilling from the well hole. Photographer Rick Halford, June 25, 2012.

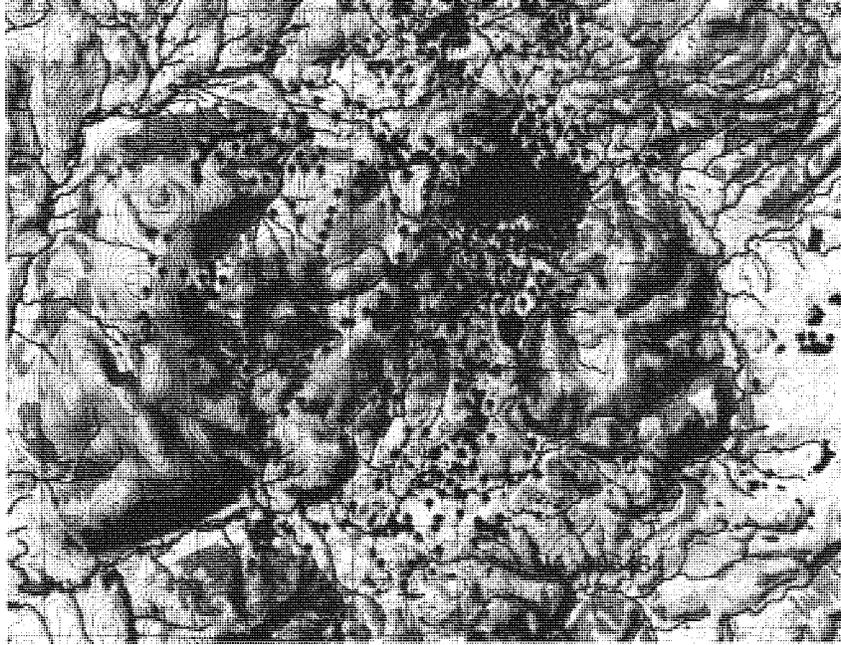


Figure 11. Map depicting locations of PLP drill sites through 2011.

ATTACHMENT B:

ADNR FINDINGS RELATIVE TO PLP OPERATIONS AND ENVIRONMENTAL HARM

Since 2003, the Alaska Department of Natural Resources (“ADNR”) has conducted 46 field investigations and reports on PLP drilling exploration activities.⁹ It is important to note the limitations of this data, as exploration activities have occurred over a ten-year period on more than 1,075 well hole-drilling operations. The following are a few selected environmental harms from PLP operations as noted by the Alaska Department of Natural Resources:

- May 19, 2004: DNR describes exploration drill rig as located in a “wetland area” and provides photos showing that the drill site was located in standing water. DNR’s Conclusions and Recommendations state: “Disbursement of drilling fluids and mud beyond the sump area at drilling locations in wetland areas needs to be curtailed so that the clay size fraction in the mud does not become disbursed in the wetland environment any more than necessary.”¹⁰
- June 14, 2006: “They were drilling and pulled up cores as we visited the site. Fresh water was used from a nearby pond for drilling operations. Unused fresh water drained into one of the drainage ditches to the sump. Freshwater was mixed with bentonite in the black mixing tank which goes down the drill hole. When this mixture flows back out of the hole, it is captured in a separate tank for recycling back into the drilling operation. Overflow is captured in a third tank to settle fines before muddy water flows into a ditch to the sump. Overflow was captured with earthen berms. A large pump moved water uphill from the sump approximately 1000 feet to an upland pond.”¹¹
- June 14, 2006: “Drill three had become an artesian well when the drill hit pressurized underground water. Before we landed the drillers said water spurted 20 feet into the air. When we arrived water was flowing from the drill hole through a hose to a ditch flowing into a sump. The sump was overflowing onto the tundra.”¹²
- April 5, 2007: At a drilling site on the northwest flank of Koktuli Ridge, “Water and sediment from the drill cuttings was discharged as permitted onto the uplands directly from the drill rigs. A thin layer of sediment and water (less than half an inch thick) was observed within 100 feet downslope of the drill rig.”¹³
- April 5, 2007: DNR describes NDM’s operations in 2007 as including 5 drill rigs

⁹ See ADNR, Pebble Project – Inspections and Field Reports, *available at*

<http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/index.cfm>.

¹⁰ ADNR, Memorandum re: Trip Report to Pebble (May 19, 2004), *available at*

<http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble05192004.pdf>.

¹¹ ADEC, Inspection Report Pebble Copper Mine Site (June 14, 2006), *available at*

<http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebbledec06142006.pdf>.

¹² *Id.*

¹³ ADNR, Field Report Pebble Copper/Gold Project (April 5, 2007), *available at*

<http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble040507.pdf>

drilling up to 5,700 feet below ground surface, 5 helicopters hauling equipment and crews, approximately 100 people actively working in Iliamna and on-site and “Fuel is shuttled to storage at this location year-round; one depot holds 3000 gallons and is 200 feet from the lake, the other depot holds 2000 gallons and is 100 feet from the lake.”¹⁴

- July 26, 2007: “Various additives are mixed into the water for drillings. These additives are intended to maintain hole integrity and prevent fluid loss... In high concentrations two of the additives do have toxicity to fish, however, and must be kept from fish bearing water bodies.”¹⁵
- July 26, 2007: “For most holes the fluids are pumped out of the sump and discharged either onto the tundra or into dry depressions in the tundra. These fluids are largely water, with powdered rock from the drilling, clay, and lesser amounts of other additives. If a hole is in or near a wetland the fluids are pumped to higher ground, well away from the wetland. This keeps the ground cuttings, clay and drilling additives out of wetlands and other bodies of water. The practice results in the deposition of finely ground rock, bentonitic clay, and other additive materials being deposited on the tundra. Where the fluids have been discharged directly onto tundra, there is only a small buildup. Gray coatings of clay were seen in areas where drill fluids have been recently discharged.”¹⁶
- July 26, 2007: “On May 9, 2007 Northern Dynasty had a small spill of 2-5 gallons of diesel fuel while slinging a fuel tank away from DDH 7366... The diesel spilled onto the tundra approximately 200 yards east southeast of the hole. At the time, the tundra was frozen, so the spill only penetrated a few inches.”¹⁷
- August 22, 2007: Figure 6 shows the primary source of water withdrawals for drilling activities located east of the Kottuli Ridge on a saddle north of Frying Pan Lake. This image shows substantial water drawdown, approximately 15 feet.¹⁸
- June 17, 2008: Observations at an abandoned drill site: “Reclamation work had been done at this site. Water appeared to be discharging from the hole.”¹⁹
- June 15, 2010: “Site was messy and in poor condition. What appeared to be bentonite was present in clumps on the ground. Standing water around drill hole. The site did not look like reclamation was 100% complete.”²⁰

¹⁴ Id.

¹⁵ ADNR, Field Inspection of the Pebble Copper/Gold Project (July 26-27), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble072607.pdf>

¹⁶ Id.

¹⁷ Id.

¹⁸ ADNR, Field Report Pebble Gold/Copper Project (Aug 22, 2007), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble082207.pdf>.

¹⁹ ADNR, Field Inspection Report 9 (June 17-18, 2008), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble061708.pdf>.

²⁰ ADNR, Field Monitoring Report Pebble Copper/Gold Exploration Project 14 (June 15, 2010), available at <http://dnr.alaska.gov/mlw/mining/largemine/pebble/field-reports/pebble061510.pdf>.

ATTACHMENT C:

ADEC RECORD OF ENVIRONMENTAL IMPACTS/SPILLS

As shown in the tables below, from 2003 to 2013, PLP operations have caused the spill of more than 260 gallons of hydraulic oil, diesel fuel, and aviation fuel.

ADEC Record of Reported Spills from Pebble Limited Partnership, 2008-2013²¹

| Date | Spill Name | Gallons Spilled | Material Spilled |
|-----------|--|-----------------|------------------|
| 9/2/2008 | Pebble Hydraulic Spill | 5.0 | Hydraulic Oil |
| 6/1/2010 | Pebble Project Diesel | 1.5 | Hydraulic Oil |
| 7/8/2010 | Pebble Project Bore Hole DDH 10488 | 15.0 | Hydraulic Oil |
| 9/10/2010 | Pebble Bore Hole DDH 10512 | 25.0 | Hydraulic Oil |
| 10/7/2011 | Pebble Project Drill Site GH1129S | 13.0 | Diesel |
| 6/8/2012 | Pebble Limited Partnership, DDH 11540 | 10.0 | Hydraulic Oil |
| 8/7/2012 | Pebble DDH1549 Hydraulic | 13.0 | Hydraulic Oil |
| 6/28/2013 | Pebble BH DDH 12562 | 2.0 | Hydraulic Oil |

ADEC Record of Reported Spills from Northern Dynasty Minerals, Ltd., 2006-2008²²

| Date | Spill Name | Gallons Spilled | Material Spilled |
|-----------|---|-----------------|------------------|
| 3/12/2006 | Northern Dynasty Mine | 35.0 | Aviation Fuel |
| 6/23/2006 | Northern Dynasty Mine Connector | 20.0 | Diesel |
| 5/9/2007 | Northern Dynast Mine AK Plane zone 5 | 80.0 | Diesel |
| 9/12/2007 | Northern Dynasty Mines Diesel | 12.0 | Diesel |
| 2/15/2008 | Pebble Mine Hydraulic Oil | 30.0 | Hydraulic Oil |

²¹ ADEC, Spills Database Online -- Pebble Limited Partnership, available at http://dec.alaska.gov/applications/spar/SpillsDBQuery/AffiliateDetails.asp?str_ContactID=8659.

²² ADEC, Spills Database Online -- Northern Dynasty Minerals, available at http://dec.alaska.gov/applications/spar/SpillsDBQuery/AffiliateDetails.asp?str_ContactID=6113.

Responses by Mr. Daniel McGroarty

**ANSWERS TO POST-TESTIMONY QUESTIONS FROM
CHAIRMAN PAUL BROWN**

**HOUSE OVERSIGHT SUB-COMMITTEE ON SCIENCE, SPACE &
TECHNOLOGY**

AUGUST 1, 2013 HEARING

WITNESS:

DANIEL MCGROARTY

AMERICAN RESOURCES POLICY NETWORK

1. As I complete these answers for the Sub-Committee, Anglo American -- the senior investor in the Pebble Project -- has announced its decision to exit the project. Judging from initial reports, this looks to be an internal business decision by a new CEO brought in specifically to cut costs in the company's long-term development pipeline and refocus on operating assets. That said, there is little question in my mind that the Watershed Assessment and the "pre-process" it has spawned clearly contributed to the uncertainty surrounding the Pebble Project, which would weigh against it in any corporate consideration.

Northern Dynasty (now full owner of the Pebble Partnership), has stated that it hopes to begin the permitting process by the end of the year, which means the controversy around the value of the Watershed Assessment exercise -- and specifically the hypothetical construct at its core -- remains a live issue.

Looking at the EPA's Watershed study and the new decision by Anglo American to exit the Pebble Partnership, the mining industry will continue to watch these developments closely, with concerns that their prospective projects could be next in line for a pre-permitting review -- and potential pre-emptive veto.

2. A pre-emptive EPA veto would **indeed** set a precedent for future use. As I have said, the issue here is larger than a single mine or a single metal. According to a study by The Brattle Group, more than \$220 billion in new investment runs through Section 404 of the Clean Water Act -- investment in mine development, but also construction and agricultural projects. EPA's unilateral use of a preemption power would create a chilling effect across all

investment, with adverse consequences for the American economy and American competitiveness.

3. Answering this question based on the hypothetical constructs used in the Watershed Assessment seems to me to be an empty exercise. The direct and secondary economic impacts of developing the Pebble Mine will be clear when the project – with all of its particulars – is presented for permitting, and economic and scientific analysts can assess and evaluate a real project, not a hypothetical construct.

4. Any discussion of the geo-politics of copper, and its impact on the U.S., should begin with the recognition of our current annual copper shortfall: 600,000 Metric Tons.

China, with its far greater growth rate, is projecting increased copper demand – even as it maintains a copper stockpile, currently equal to one full year of U.S. usage, with reports that China continues to add to its copper holdings. Pressure to import copper to meet U.S. demand therefore strengthens a global market in which copper producers include Russia, Angola, Pakistan, DRC Congo -- even Iran (intent on doubling copper production by 2015). Even if we can't buy from Iran, this copper enters the global market and perhaps U.S. manufacturing sub-components.

Delaying or denying domestic copper mines (as in the case of other metals as well) seeking to enter the NEPA process needlessly perpetuates foreign import dependence that can threaten U.S. national security and skew U.S. foreign policy.

Copper's national security implications are important for an additional reason, having to do with common copper by-products, which have strategic applications. Regarding Rhenium, for instance, which can be captured during copper production and is key to high-performance jet fighters -- we currently import more than 80% of annual supply from Chile and Kazakhstan. The latter, in particular, is stable now -- but what about 10 or 20 years from now? Our weapons platforms can stay in service for more than 30 years. We need to be sure we can source materials critical to their continued functionality from domestic supply long into the future.

Lastly, on the national security front, DoD's Institute for Defense Analyses has identified copper as a "shortfall" material that has caused a major weapons system delay.

The Watershed Assessment offers no place for these compelling policy concerns to be addressed. NEPA, on the other hand, is expansive enough to allow expert analysis on such issues to be part of the decision process – which in my mind is another reason to prefer the established NEPA process to an ad hoc alternative unilaterally imposed by EPA.

5. In terms of outside groups, the Watershed Assessment has opened the door to letter and email campaigns for and against the Pebble Project, with communications numbering in the hundreds of thousands. If EPA is to assess each of these individually, the task will be enormous – in both manpower and cost. If EPA does not review each submission individually, on what criteria will it choose to officially “notice” some but not others? In making this comment, I must add that these sorts of public comments have a place in the existing NEPA process – adding them to a pre-permitting process as in the Watershed Assessment contributes nothing in terms of public comment opportunities that are not already available, and saddles the mine permitting process with new sources of duplication and delay.

6. As I indicated in my testimony, American Resources Policy Network sent a letter expressing our concerns to Senate and House committee leaders, as well as EPA officials. We have received no official reply from any of the officials or agencies.

#

Appendix II

ADDITIONAL MATERIAL FOR THE RECORD



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

Department of Natural Resources

OFFICE OF PROJECT MANAGEMENT & PERMITTING

500 West Seventh Avenue, Suite 1437
Anchorage, Alaska 99501
Mgmt: 907.269.8690
Fax: 907.269.5673
tom.craftford@alaska.gov

July 31, 2013

House Subcommittee on Oversight
2318 Rayburn House Office Building
Washington, D.C. 20515

Re: August 1, 2013, 1:00PM Hearing
-EPA's Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario

Dear Chairman Broun and Ranking Member Maffei:

The State of Alaska has previously submitted comments on multiple occasions to the EPA regarding its "*An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*" ("Assessment"). This letter reiterates the **Technical and Scientific Issues** contained in the June 28, 2013 comment letter jointly submitted by the Alaska Departments of Law and Natural Resources to the EPA regarding the Second External Review Draft of the Assessment.

While this letter focuses on technical and scientific issues, the State is equally concerned about the rationale and legality of EPA conducting such a review of hypothetical development that would necessarily have to be covered by the more thorough and technically detailed environmental review under the National Environmental Policy Act (NEPA) for an actual project proposal(s). Furthermore, the State questions the appropriateness of the diversion of funds, reportedly at least \$2.4 million in external costs alone per a statement by EPA's Ken Kopocis before the Senate Environment and Public Works Committee, for the hypothetical Assessment.

The State of Alaska appreciates the Subcommittee's Hearing on EPA's Assessment and, if requested, would be happy to provide a complete set of the State's comments to EPA on the Assessment.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Craftford".

Tom Craftford
Director

Cc: Governor Sean Parnell
Director Kip Knudson, Governor's Office, State - Federal Relations
Attorney General Michael Geraghty, AK Dept. of Law
Comm. Dan Sullivan, AK Dept. of Natural Resources
Comm. Larry Hartig, AK Dept. of Environmental Conservation
Comm. Cora Campbell, AK Dept. of Fish & Game
Comm. Susan Bell, AK Dept. of Commerce, Community & Economic Development

Senator Lisa Murkowski
Senator Mark Begich
Congressman Don Young

House Committee on Science, Space & Technology
Chairman Lamar Smith
Ranking Committee Member Eddie Bernice Johnson

Technical and Scientific Issues

In its July 23, 2012 cover letter addressing technical deficiencies with and questions about the first draft of the Assessment, the State summarized 88 pages of attached technical comments on the key issues again outlined below. Other comments to EPA, including those of the external peer review panel, expressed many of these same concerns. While EPA addressed some of these in the revised Assessment, the changes were minor reorganizations of information or better acknowledgment of the limitations of the data used and conclusions. However, the revised Assessment still does not meet the technical and scientific standards for potential use as a decision document.

The key points from the State's previous technical comments on the first draft of the Assessment were, and continue to be:

- 1) The assessment draws speculative conclusions about potential impacts from a hypothetical mine.

The State, in previous letters and official comments to EPA, has questioned the applicability of the assessment process in the absence of a detailed project proposal and CWA Section 404 permit application. The revised Assessment, while discussing potential mining development in the Bristol Bay area, has focused on the proposed Pebble project with three scenarios of mining projects of increasing extent and duration. In the first draft Assessment, a 25-year minimum and a 78-year maximum life mine plan were evaluated. The revised draft evaluates these three scenarios:

- a) Pebble 0.25 (approximately .25 billion metric tons of ore processed over 20 years duration, with a loss of 24 miles of streams and 1,200 acres of wetlands;
- b) Pebble 2.0 (approximately 1.8 billion metric tons of ore processed over 25 years with a loss of 56 miles of streams and 3,000 acres of wetlands); and
- c) Pebble 6.5 (approximately 6.5 billion metric tons of ore processed over 78 years with a loss of 90 miles of streams and 4,800 acres of wetlands).

In the revised Assessment, EPA considers the impacts of the mine footprint(s) themselves as well as the likelihood of accidents or failure. Downstream fish habitat degradation is predicted to occur due to reduced food resources, changing water volumes, and changing water temperatures. The revised Assessment evaluates risks of toxic leakage, wastewater treatment plant failure, culvert failures, truck accidents, tailings dam failure, pipeline failures, floods, earthquakes, and cumulative risks associated with more widespread development in the area. The revised Assessment also discusses the additional potential impacts from climate change.¹ EPA is still

¹ Section 3.8 and Box 3-4 at page 3-38.

grappling with how to incorporate climate change into the NEPA process, much less a speculative ecological risk assessment.²

These mine scenarios are largely based on the 2011 Preliminary Assessment document prepared for Northern Dynasty Minerals Ltd. by WARDROP, a consulting firm in Vancouver, British Columbia, and referenced in the revised Assessment as *Ghaffari et al. 2011*. Northern Dynasty has a 50% interest in the Pebble Limited Partnership (PLP) with Anglo-American plc (Anglo American). This document was prepared as part of corporate due diligence conforming to the standards of the National Instrument 43-101 (NI 43-101), which is a national disclosure instrument within Canada. The NI 43-101 is a codified set of rules and guidelines for reporting and displaying information related to mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada.

Northern Dynasty filed the NI 43-101 as part of disclosure to potential investors and it is intended to be an economic analysis, not a comprehensive environmental planning document. It represents the view of only one of the two PLP partners at that time. It is not a mine plan and would not be a principal support document for state agencies to review for any proposed Pebble mine. The documents upon which the state agencies would base permitting decisions is the actual mine proposal, supporting documents and baseline information, a Clean Water Act Section 404 permit application, the environmental impact statement (EIS), developed by a federal lead agency under the guidelines of the National Environmental Policy Act (NEPA), and any other associated permit applications. The use of an investor document as EPA's principal technical description of proposed mining on the Pebble claims is scientifically and technically unjustifiable.

Like the NI 43-101 filing and the water rights application, the EPA Assessment is now a document that will be used for further speculative analyses of mining in the Bristol Bay region. The revised Assessment compounds and overstates the risks from additional mining projects in the area. The original Assessment listed four potential mining projects in the Bristol Bay drainages and the revised Assessment lists six: Pebble South/PEB, Big Chunk South, Big Chunk North, Groundhog, AUDN/Iliamna and Humble. However, none of these projects have progressed beyond preliminary exploration and experience indicates that few exploration projects progress to development. Yet, the revised Assessment has estimated individual impacts from the development from these six prospects, totaled those impacts, and presented that total as a reasonably foreseeable event. This approach is statistically indefensible and does not constitute a reasonable consideration or analysis of potential cumulative effects.

2) Insufficient technical and scientific support for conclusions based on groundwater/surface water interconnections in the study area.

A major criticism of the first draft Assessment was the lack of surface and groundwater data to support how the mine would impair salmon habitat because of close connections of groundwater and surface water sources. An extensive amount of hydrological and water quality data collected for NEPA and permit application purposes by PLP was not considered in the first draft even though it was available.³

² See *Draft NEPA Guidance on consideration of the effects of climate change and greenhouse emissions*, Council on Environmental Quality memorandum dated February 18, 2010.

³ See PLP, 2011 *Environmental Baseline Document 2004 through 2008*.

The revised Assessment includes more data from the PLP Environmental Baseline Document (EBD), but EPA only used the PLP data in the absence of other data.⁴ EPA acknowledges that the “potentially largest source of uncertainty in [water balance] calculations is the net balance of water from groundwater sources.”⁵ The modeling described in Box 6-2 of the Assessment (page 6-25), Mine Pit Drawdown Calculations,⁶ is inadequate to determine the impact of drawdown at a mine pit for the purpose of a risk analysis. Furthermore, the revised Assessment uses temperature data collected by PLP to support conclusions that stream temperatures are moderated by cooler groundwater inflow,⁶ and inappropriately assesses regional environmental risk and impact through inference of a site-specific model of pit drawdown.

3) Inadequate consideration of mitigation measures.

The first draft Assessment did not incorporate the effects of permit stipulations and mitigation on the overall impact on the risks. Permit stipulations and mitigation through the permitting process would be an integral part of any large development project in the region. Without considering the robustness and completeness of the state and federal permitting processes, the Assessment has mischaracterized the potential impacts and their significance.

The revised Assessment has improved the discussion of mitigation and the role of permitting in mitigation.⁷ However, the revised Assessment does not adequately describe the measures that the State and federal permitting agencies would require before a mine could be developed in the Bristol Bay area nor the mitigation effect of these measures in the evaluation of environmental risk and impact.

4) Data presented is not representative, complete, or current.

The revised Assessment has included new information, some of which was identified during the public comment and external peer review panel comments. While EPA has stated that its “[o]bjective is to ensure that we are using the best available science,”⁸ many of the documents and data that the revised Assessment relies upon have not been vetted through rigorous technical and scientific peer review. Several of the documents cited in the revised assessment are produced by entities or individuals who are publicly opposed to mining activities, including those that might occur in the area studied in the Assessment.⁹

⁴ See Section 2.1.1 at 2-3.

⁵ See Assessment at 6.1.2.5 at 6-12.

⁶ See Assessment at 3.5.2

⁷ Section 4.2.3 and Boxes 4-1, 4-2 and 4.3 and Appendix J, Compensatory Mitigation and Large-Scale Hardrock Mining in the Bristol Bay Watershed, pp.23.

⁸ EPA April 2013 Factsheet website, http://www2.epa.gov/sites/production/files/documents/bristolbay_factsheet_april2013.pdf

⁹ See May 23, 2013 letter from John Shively, Pebble Limited Partnership, to EPA Acting Administrator Bob Perciasepe and EPA Regional Administrator Dennis McLerran.

5) Incomplete and selective discussions of socio-economic impacts and potential benefits of mining.

The revised Assessment, at page ES-9, acknowledges that “the economic effects of mining are not assessed.” The state’s previous comments provided information on current exploration expenditures and potential future economic benefit of mining activity.¹⁰ The revised Assessment, at page ES-1, expands on the economic benefits derived from fish resources, but not from the mineral resources in the study area, even though “the purpose of the assessment is to characterize the biological and mineral resources of the Bristol Bay watershed.” The revised Assessment, at page ES-9, briefly mentions that “some” Alaska Native villages have decided that large-scale hard rock mining is not the direction they would like to go, while “a few” are seriously considering the opportunity.” While the State objects to the Assessment and process undertaken here, the selective inclusion of economic benefits in Bristol Bay derived from salmon, but not from mining, gives the impression of bias.¹¹

6) Unclear risk assessment methodology used.

EPA stated that the revised Assessment is based on “well-established methodology of an ecological risk assessment” on the first page of the Executive Summary and emphasized the reliance on EPA’s 1998 Ecological Risk Assessment guidance.

The three endpoints for the assessment are listed as:

- the abundance, productivity, or diversity of the region’s Pacific salmon and other fish populations;
- the abundance, productivity, or diversity of the region’s wildlife populations; and
- the viability of Alaska Native cultures.

EPA’s 1998 guidance describes ecological endpoints and defines them based on ecological relevance, as well as susceptibility and relevance to management goals. Levels of ecological organization are described (individuals, populations, communities, ecosystems, landscapes) and multiple ecosystem processes.¹²

While obviously important, the endpoint for viability of Native culture does not appear to conform to the environmental and ecosystem endpoints described in the 1998 guidance. EPA may well be addressing the fact that local communities requested the Assessment, prompting the only new field research that informed the

¹⁰ See, e.g., page 14 of the State’s technical comments dated July 23, 2012.

¹¹ See Assessment, Appendix E, Bristol Bay Wild Salmon Ecosystem: Baseline Levels of Economic Activity and Values, pp 225.

¹² See USEPA, 1998. *Guidelines for Ecological Risk Assessment*. EPA/630/R-95/002F. April, Washington, DC; Environmental Protection Agency, Office of Research and Development, at Section 3.3, Selecting Assessment Endpoints page 28.

Assessment.¹³ However, a societal component to an ecological assessment seems unrelated to the accepted methodologies of risk assessment. Other methodologies have been developed since 1998 to assess the impacts of large development projects on residents, health, culture and reliance on subsistence foods such as Health Impact Assessments (HIAs). HIAs have been done or are in progress for large projects in Alaska and the information from them can be used to inform NEPA reviews.¹⁴

For the other identified endpoints, the revised Assessment takes the additional data from PLP and other sources to populate multiple models that are then used to calculate impacts and assign risk. EPA, at page ES-28, discusses the uncertainties and limitations in a summary:

- lack of quantitative information concerning salmonid populations in freshwater habitats; “Estimated effects of mining on fish habitat thus become the *surrogate* for estimated effects on fish populations” (emphasis added);
- the standard leaching tests on tailings and waste rock material from the Pebble deposit are “uncertain predictors of the actual composition of leachates;”
- capture efficiencies for leachates are uncertain;
- the effects of tailings and concentrates (assume from unintentional spillage?) deposited in spawning and rearing habitat are uncertain;
- probability of tailings dam failure is uncertain; historical experience is presumed to provide an upper bound; and
- the proportion of tailings spilled during a dam failure could be larger than the largest value modeled and the long-term fate of spilled tailings could not be quantified.

EPA outlined these specific uncertainties. However, the revised Assessment does not clarify the compounded uncertainty in the way data and model inputs are used. It does not clearly summarize data gaps. Section 2.1.2, at 2-4, states:

After these analyses and lines of evidence are presented, we characterize risk for each line of evidence by combining exposures and exposure-response relationships to estimate effects, and by considering uncertainties.

While EPA acknowledges the uncertainties, there is no way to interpret how they affect the conclusions. Given that the entire Bristol Bay area has not been extensively monitored or mapped, the base information on which to build models is speculative. Attributes for over 65,000 stream and river reaches in the Nushagak and Kvichak River watersheds were estimated from a USGS database, including such fundamental attributes as flow, gradients, and lowlands which in turn are the basis for fish habitat suitability.¹⁵ It appears that EPA has modified standard methods of determining some key physiographic and hydrologic attributes based on the

¹³ Assessment, Appendix D: Traditional Ecological Knowledge and Characterizations of the Indigenous Cultures of the Nushagak and Kvichak Watersheds, Alaska.

¹⁴ See State of Alaska HIA website, <http://www.epi.alaska.gov/hia/>

¹⁵ Assessment, Section 3.4.1, at 3-18; Box 3-1, at page 3-20; Box 3-2 at page 3-25; and Box 3-3 at page 3-27.

limitations of the data and then proceeds to use the information to determine habitat suitability. Habitat suitability is a surrogate for populations of salmon since EPA acknowledges the limitations of population data.

7) Inconsistent scale and scope of project area.

The criticisms the State had about “scope” and “scale” with the first Assessment have been partially addressed by reorganization of the executive summary and adding a new section on five spatial scales in the revised Assessment.¹⁶ The five scales are identified as: 1) Bristol Bay watershed, 2) Nushagak and Kvichak River watersheds, 3) the mine scenario watersheds, 4) the mine scenario footprints and 5) the transportation corridor. However, examining an entire ecosystem over an area as large as West Virginia and predicting impacts is still unprecedented for a document informing a CWA Section 404 action, despite the clarifications regarding scale.

8) Non-scientific presentation of the assessment

The revised Assessment still suffers from attempts to persuade the reader, using pre-regulatory, historic information on mines world-wide, to present worst-case information. Further, the McGrath-area Nixon Fork mine overtopping event, described in Box 8-1, at page 8-20, is still being presented as an example of tailings water release associated with a dam failure, when the cause was due to operation and maintenance error. The revised Assessment does not mention that the issue was immediately addressed by mine personnel, inspected by state and federal regulators, and that no demonstrable damage to surface waters or other receiving environments have resulted.

Intergovernmental Technical Team & Use of State of Alaska Data

The revised Assessment does not accurately represent the meetings and input for the Intergovernmental Technical Team (IGTT). EPA states, at 1-4 of the revised Assessment, the following:

Throughout the assessment, we have reached out to interested parties to ensure transparency of the assessment process (Box 1-1). Through public comment opportunities and by engaging an Intergovernmental Technical Team (IGTT) of federal, state and tribal representatives, we were able to identify additional information helpful for characterizing the biological and mineral resources of the watershed. These interactions with members of the community were also helpful in narrowing the scope of the assessment to what was most important to stakeholders.

The IGTT interactions, at least with the State participants, were few. On August 9-10, 2011, State staff from ADNRR, the Alaska Department of Environmental Conservation (ADEC), the Alaska Department of Fish and Game (ADF&G), and the Department of Health and Social Services attended an IGTT meeting in Anchorage at EPA's invitation. However, EPA denied the State full participation through the IGTT.

¹⁶ See ES-2 and 2.2.2.

First, as part of the State's representation on the IGTT, the State had proposed sending an attorney with significant CWA experience to this meeting, but EPA contacted the State just a few days before the meeting, asking that the state's attorney not attend. Second, those State employees in attendance were essentially asked to react to EPA's proposed approach for the Assessment, but were not asked for input on whether or how EPA should proceed. They participated in break out groups to respond to draft conceptual risk diagrams that EPA had brought already prepared to the meeting. Third, some of the suggestions State employees offered in response to EPA presentations were rejected such as separating construction from operational impacts in separate risk diagrams and considering options to tailings impoundment such as dry stack disposal. Thus, EPA's actions in limiting those who could attend and constraining the topics for discussion on an assessment approach show that EPA had already clearly and substantially laid a framework (including modeling) and significantly limited State involvement from the outset.

In addition to EPA staff, other federal agencies in attendance were the National Park Service, U.S. Fish and Wildlife, National Oceanic and Atmospheric Administration and the Bureau of Land Management. Contractors for the EPA and tribal representatives from Curyung Tribal Council, Ekwok Village Council, Iliamna Village Council, Koliganek Village Council, Levelock Village Council, Newhalen Tribal Council, Nondalton Tribal Council and South Naknek Village Council also attended. However, no staff members from the Corps (the lead federal agency charged with regulating and permitting dredge and fill activities), attended this meeting.

On September 9, 2011, EPA contacted ADNR Water Section to invite a state hydrologist or geomorphologist to attend a session in Anchorage on September 28 -29 to discuss fisheries, wetland hydrology, and a watershed model for Oregon developed by EPA's Corvallis lab. ADNR and ADEC did evaluate the model (which had not yet been peer reviewed through submission to a journal), and determined it was not applicable to the undeveloped Nushagak and Kvichak watersheds. The State subsequently was told that the invitation was for the watershed modeling session only, not the entire meeting. At that point, the State became very concerned about the way EPA was limiting State participation in a process that has expanded far beyond EPA's statutory and regulatory authority.

One additional webinar meeting of the IGTT was held on January 13, 2012. The purpose of this meeting was to update the IGTT on the progress of the watershed assessment, including the revised conceptual models based on the input from the August meeting. This was the last request from EPA for any technical participation by the state agencies, except for minimal contact by EPA with some agencies to access publicly available, existing data.

While the State agencies had limited involvement with the IGTT, with the exception of some University of Alaska researchers, the Assessment makes ample use of State-generated data particularly from ADF&G. EPA states, at page 2-2 of the revised Assessment:

In this assessment we prioritized peer-reviewed, publically accessible sources of information to ensure that the data we incorporated were of sufficient quality. In many cases, however, peer-reviewed data – particularly those directly relevant to potential mining in Bristol Bay region – were not available. Thus we also incorporated non-peer reviewed data from government sources, most notably the State of Alaska

(e.g. Alaska Department of Fish and Game [ADF&G], Alaska Department of Natural Resources [ADNR]).

It is important to note that ADF&G collects a variety of non-peer reviewed biological data to characterize fish resources and to manage the State's fisheries, including those in the Bristol Bay watersheds. For utilized fish stocks, these data are often compiled over many years to inventory and estimate populations, set harvest limits, and establish salmon escapement goals. These data may be used for real-time fisheries management decisions or to forecast annual run size. This type of raw data is useful and distinct from information in a peer-reviewed journal article that may use such data and test scientific hypotheses. The population assessment data collected by ADF&G that has not been subject to peer review should not in any way connote that the data is not of high quality nor impugn the collection techniques. While the use of some State-generated non-peer reviewed data may be appropriate to characterize certain resources within the assessment, it is inaccurate to suggest that the State had an opportunity to explain the data and participate in the IGTT when our opportunities were clearly limited, and it is inappropriate for the revised Assessment to utilize and draw conclusions using this State-generated data without affording the State agencies the full opportunity to participate in the IGTT.

The State points out that non-peer reviewed data and reports came from many state and federal agencies (e.g., U.S. Geological Survey, U.S. Fish and Wildlife) and from organizations both in and outside of the U.S. (e.g., Climate data from East Anglia University, U.K., the PRISM climate group from Oregon State University, the Commonwealth of Australia, and the British Geological Survey). Reports from non-governmental organizations (NGOs) were also included as sources despite the considerable potential for bias and publicly stated opposition to mining in Bristol Bay (see document referenced in Footnote 9 of this letter).



August 7, 2013

The Hon. Paul Broun
Chairman, Subcommittee on Investigations and Oversight
House Committee on Science, Space, and Technology
2321 Rayburn House Office Building
Washington, DC 20515

In Re: National Mining Association Letter of Concern on EPA's Bristol Bay Watershed Assessment

To Whom It May Concern:

The National Mining Association (NMA) would like to express its continuing concern with the U.S. Environmental Protection Agency's (EPA) Bristol Bay watershed assessment. In particular, NMA is opposed to the process EPA is undertaking, as it could inappropriately preclude the fair and proper consideration of the Clean Water Act (CWA) permit application that will be submitted later this year for the Pebble Mine project.

Although EPA has stated that the assessment amounts merely to an information-gathering tool with respect to potential development in the Bristol Bay watershed, the proper, legal means to gather and assess such information is through the CWA Section 404 permitting process and National Environmental Policy Act (NEPA) environmental review. Importantly, those processes provide procedural safeguards for the regulated community that help to ensure information reviewed by the agency is complete, accurate, relevant, and scientifically sound. Additionally, those procedures not only allow for public participation, but also provide the permit applicant with the ability to address the concerns of both federal and state agencies before any final decisions are made. In short, NEPA and the CWA are designed to fairly balance relevant interests, and to provide for both environmental protection and safe, responsible development.

The watershed assessment currently being undertaken, however, fails to take into account such procedural considerations, is based on hypothetical and flawed scenarios, and does not adequately consider engineering and other scientific issues that would be closely scrutinized during the federal permitting process. Despite these defects, EPA has stated on numerous occasions that the assessment will be used to inform future permitting decisions. NMA strongly encourages EPA to abandon its current Bristol Bay activities, and instead, pursuant to its proper regulatory role in the CWA Section 404 permitting process, evaluate the project permit application when it is submitted. A copy of NMA's most recent comments supporting our position is attached. Thank you for your time and consideration.

Sincerely

A handwritten signature in cursive script that reads "Amanda E. Aspatore".

Amanda E. Aspatore
Associate General Counsel
National Mining Association

CHAMBER OF COMMERCE
OF THE
UNITED STATES OF AMERICA

WILLIAM L. KOVACS
SENIOR VICE PRESIDENT
ENVIRONMENT, TECHNOLOGY &
REGULATORY AFFAIRS

1615 H STREET, NW
WASHINGTON, DC 20062
(202) 463-5457

June 28, 2013

Office of Environmental Information (Mail Code: 282211)
Docket #EPA-HQ-ORD-2013-0189
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, AK

The U.S. Chamber of Commerce, the world's largest business federation representing the interests of more than three million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations, and dedicated to promoting, protecting, and defending America's free enterprise system, strongly request that you do not consider using or acting on your "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska."¹

The Bristol Bay Assessment is an "extra-regulatory" process that is far outside of the required permitting process and is a selective and targeted agency action created by EPA. EPA's overall budget has undergone a series of cuts over the past several years. It is not only surprising that EPA has chosen to allocate its limited funds for this "extra-regulatory" action, but puzzling that EPA has prioritized this "extra-regulatory" action when there is an existing and robust permitting process in place in which the Agency has a significant role.

What is even more troubling is that this "extra-regulatory" action could ultimately have a premature punitive impact on this potential project. Regardless of whether you support or oppose the Pebble Mine project, we all should agree that a potential project has a right to go through the permitting process. That is one of the underlying reasons for having a permitting process in place. The permitting process protects our environment and natural resources while providing regulatory certainty to the regulated community.

The Pebble Mine will be required to go through the National Environmental Policy Act (NEPA) process and also will be required to obtain various Clean Water Act (CWA) permits among other requirements. Both of these environmental laws provide extensive and exhaustive

¹ "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska," Docket No. EPA-HQ-ORD-2013-0189, 78 Fed. Reg. 25266 (April 30, 2013).

June 28, 2013
Page 2 of 3

environmental reviews to ensure that the potential project and the local environment can co-exist. If the permitting authority determines that they can co-exist then they will get a permit; if not, then they will not get a permit.

With this “extra-regulatory” action, EPA seems to make a selective determination of which projects can go through the permitting process and which projects they will not let go through the permitting process. This is an extraordinary power that EPA seems to be affording itself. EPA should not be picking winners and losers outside of the permitting process.

What is even more troubling is that EPA has failed to provide sufficient explanation of what environmental harm will be done by allowing this project to go through the permitting process. EPA has presented no logical rationale that the CWA and NEPA process would not cover and address.

EPA says that it has prepared the Bristol Bay Assessment to characterize the biological and mineral resources of Alaska’s Bristol Bay watershed (an area roughly the size of the state of Virginia) to inform future governmental decisions related to the watershed. This “extra regulatory” process is based on a hypothetical mine created by EPA. This hypothetical mine that EPA selected would not pass the current permitting process. The details of the Pebble Partnership Mine have yet to be released. EPA’s decision to choose a poor performing hypothetical mine plan to base their study on is problematic and is stacking the deck against the project before it has even been proposed. At a minimum, this exercise by EPA prejudices the fair and unbiased consideration of a mine proposal that would actually provide much needed jobs—thousands of them—for America’s economy.

In addition to setting up a biased report with a flawed hypothetical mine, EPA is now implementing a very restrictive public comment/scientific evaluation of the Bristol Bay Assessment where the period for public comment will run simultaneously with review by an independent scientific review panel appointed to evaluate the assessment.

This action will further negatively impact the study’s transparency, scientific rigor, and EPA’s own rules. Hastily running these two important reviews concurrently deprives the Peer Review Panel of critical input—scientific and otherwise—from a range of stakeholders, including important perspectives on a variety of highly technical and complicated issues covered in the Bristol Bay Assessment. The rushed comment period provided—60 days—compounds this problem, making it that much more difficult for the Peer Review Panel and the public alike to digest and comprehensively evaluate the Bristol Bay Assessment.

EPA’s actions are inconsistent with Peer Review Guidelines set forth in the EPA’s Peer Review Handbook.² Section 3.3.1 of the Handbook provides, in relevant part,

...whenever feasible and appropriate, offices should make a draft highly influential scientific assessment available to the public for comment during the peer review process, and if feasible and appropriate, sponsor a public meeting where oral presentations on scientific issues can be made to the peer

² U.S. Environmental Protection Agency Peer Review Handbook (3rd Edition 2006)
http://www.epa.gov/peerreview/pdfs/peer_review_handbook_2006.pdf

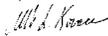
June 28, 2013
Page 3 of 3

reviewers by interested members of the public. When employing a public comment process as part of the peer review, Offices [sic] should provide the reviewers access to the public's comments that address scientific or technical issues.

The Bristol Bay Assessment includes a new mining scenario and additional information that are owed full consideration from the public, the Peer Review Panel, and ultimately EPA. As a result of the EPA not following its own procedures by holding a short public comment period and concurrent limited peer review, the Panel's evaluation will fail to consider key points that are crucial to comprehensive and equitable review of EPA's analysis.

I appreciate this opportunity to comment on the Bristol Bay Assessment and I hope that EPA will address and correct the critical flaws in the current draft.

Sincerely,



William L. Kovacs

CHAMBER OF COMMERCE
OF THE
UNITED STATES OF AMERICA

R. BRUCE JOSTEN
EXECUTIVE VICE PRESIDENT
GOVERNMENT AFFAIRS

1615 H STREET, N.W.
WASHINGTON, D.C. 20062-2000
202/463-5310

August 1, 2013

The Honorable Paul Broun
Chairman
Subcommittee on Oversight
Committee on Science, Space,
and Technology
U.S. House of Representatives
Washington, DC 20515

The Honorable Dan Maffei
Ranking Member
Subcommittee on Oversight
Committee on Science, Space,
and Technology
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Broun and Ranking Member Maffei:

The U.S. Chamber of Commerce, the world's largest business federation representing the interests of more than three million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations, and dedicated to promoting, protecting, and defending America's free enterprise system, strongly supports the Subcommittee on Oversight holding its hearing entitled "EPA's Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario." The Chamber welcomes this further inquiry into this deeply flawed document.

The Bristol Bay Assessment is an "extra-regulatory" process that is not only far outside of the boundaries of the authorized permitting process, but is an arbitrary targeted agency action created by the Environmental Protection Agency (EPA). EPA's overall budget has undergone a series of cuts over the past several years. As a result, it is not only surprising that EPA has chosen to allocate its scarce resources for this "extra-regulatory" activity, but puzzling that EPA has prioritized this review when a robust permitting process is already in place in which EPA has a significant role.

What is even more troubling is that this "extra-regulatory" action could ultimately have a premature punitive impact on this and other projects. Regardless of whether you support or oppose the Pebble Mine project, an economically viable potential project should be allowed to go through the permitting process. There is an existing permitting process that adequately protects our environment and natural resources while providing regulatory certainty to the regulated community. Inventing an additional layer of project review serves no useful purpose.

The Chamber requests that this letter and the Chamber's June 28, 2013, regulatory comments to EPA be entered into the hearing record. The Chamber appreciates this opportunity

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to comment on the Bristol Bay Watershed Assessment and hopes that the Subcommittee will address these issues.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Bruce Josten". The signature is fluid and cursive, with the first name "R." and last name "Josten" being more prominent.

R. Bruce Josten

cc: Members of the Subcommittee on Oversight

Attachment

Office of Environmental Information
(Mail Code: 28221T)
Docket #EPA-HQ-ORD-2013-0189
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Dear Acting Administrator Perciasepe,

The following organizations, representing hunters and anglers across the country, are writing to comment on the Environmental Protection Agency (EPA) revised draft of the Bristol Bay Watershed Assessment. This watershed assessment accurately demonstrates what the members of our organizations already know – allowing large scale mining in the Bristol Bay region will greatly and irreparably damage one of the world's best hunting and fishing destinations. We urge the EPA to move forward -- with the documented science in hand-- to protect this area under section 404(c) of the Clean Water Act.

We believe the EPA relied on sound science to create this assessment, and carefully considered the input from the peer review of the previous draft. The assessment shows that this is one of the world's best remaining salmon fisheries, which at an average run of 37.5 million fish, constitutes 46% of the world's sockeye salmon. In addition to the importance of the sockeye salmon, the updated assessment better details the impacts to Chinook salmon, rainbow trout, and char, all of which are prized sport fish that result in more than 29,000 fishing trips per year. The area is not only known for its fishery, and also supports high densities of water fowl, ptarmigan, brown bear, moose, and caribou which attract hunters from around the world.

Sportfishing, hunting, and eco-tourism alone generate more than \$160 million in local economic activity, creating nearly 2500 local, sustainable jobs. This economic driver depends on the unparalleled habitat of the Bristol Bay ecosystem, which is jeopardized by large scale mining development. Even without any failures, leaching of copper, stream acidification, and dredge and fill activities would impact dozens of miles of streams. Copper leaching alone could directly impact up to 35 miles of river beyond the mine site, and indirectly impact 51 stream miles. All of this assumes a best case scenario where the mine tailings, which must be treated in perpetuity, are successfully

contained. The waste stream from this mine will inevitably damage the salmon and the ecosystem for which they are a keystone species.

The watershed assessment clearly demonstrates the significant value Bristol Bay provides to hunters and anglers across the country, and suggests it should be protected so that it may be enjoyed by future generations of sportsmen. We urge the EPA to move forward with a 404(c) determination under the Clean Water Act, allowing the agency to institute restrictions on mining activities that would threaten this incredible ecosystem.

Sincerely,

American Fly Fishing Trade Association
American Rivers
American Sportfishing Association
Bass Anglers Sportsmen Society
Berkeley Institute
Campfire Club of America
Dallas Safari Club
Delta Waterfowl
Ducks Unlimited
Orion, The Hunter's Institute
Pope & Young Club
Quality Deer Management Association
Theodore Roosevelt Conservation Partnership
Trout Unlimited
Wild Sheep Foundation
Wildlife Forever
Wildlife Management Institute

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August 6, 2013

Gina McCarthy, Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Cc: President Barack Obama
Sally Jewell, Secretary, Department of Interior
Cameron F. Kerry, Acting Secretary, Department of Commerce
Nancy Sutley, Chair, Council on Environmental Quality
Dr. Kathryn Sullivan, Acting Administrator, National Oceanic and Atmospheric Administration
Neil Kornze, Principal Deputy Director, Bureau of Land Management
Jonathan Jarvis, Director, National Park Service
Daniel Ashe, Director, U.S. Fish and Wildlife Service
Jo-Ellen Darcy, Assistant Secretary of the Army for Civil Works
Lisa Murkowski, U.S. Senator from Alaska
Mark Begich, U.S. Senator from Alaska

Dear Administrator McCarthy,

We, the undersigned hunting and angling organizations and businesses representing millions of sportsmen, outdoor recreation groups and related businesses, thank you and the EPA for taking the first step in protecting Bristol Bay from the dangers of the proposed Pebble Mine, by conducting a scientific assessment of the region's watershed. We look forward to working with the EPA and other decision makers during this public process to determine the fate of Bristol Bay, Alaska.

Our 962 sporting conservation groups, businesses and trade associations are grateful to your predecessor for personally visiting the Bristol Bay region in 2010 and for your agency's many subsequent visits leading up to and during the watershed assessment. EPA's effort to meet with the region's local residents is greatly appreciated; as the world's greatest wild sockeye salmon fishery is facing unprecedented threats from proposed development of a massive mining district. We write today to ask you to use all the tools at your disposal to protect a sport fishing and hunting destination that is unrivaled in America and perhaps the world, for this and future generations of sportsmen and women.

The proposed Pebble Mine in Bristol Bay poses numerous significant and potentially long-lasting threats to one of the world's foremost sport fishing and hunting regions. Specifically, fish habitat (including spawning and breeding grounds), wildlife habitat and recreational areas are all threatened by several hard rock mining proposals - most notably, the Pebble Mine. The potential impact from this type of activity could be severe. It is estimated that the Pebble Mine would produce between 2.5 and 10 billion tons of waste containing elements, such as copper and other heavy metals, that would threaten several fishery areas including spawning and breeding grounds for world-renowned populations of salmon.

If this project moves forward, these toxins would have to be contained and potentially treated in perpetuity - in an area of high seismic activity, which increases the risks tremendously. Because the

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

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Pebble property straddles the Kvichak and Nushagak river drainages – two of the most productive salmon systems on the planet - any release of this waste into the surface or groundwater has the potential to severely harm Bristol Bay's salmon and the livelihoods of the sport fishing and hunting business owners, all of whom depend on them for their economic support.

Sport fishing in Bristol Bay generates \$60 million annually; anglers looking for "once in a lifetime" experiences on rivers such as the Nushagak, Mulchatna, Koktuli and Kvichak support more than 800 full- and part-time jobs. Mining activity and increased development associated with mining will detrimentally impact these areas by direct impacts to fish and habitat. Development will also negatively impact opportunities for sport fishing and hunting operations in the area by diminishing the quality of the experience. Despite the remote nature of the region and the costs associated with traveling to it, on a yearly basis up to 65,000 visitors come to Bristol Bay for recreational opportunities to fish, hunt, and view wildlife.

Secretary Salazar and the Obama administration recognized that oil and gas development in this area is simply not worth the risk, the same is true for mining operations in the headwaters of Bristol Bay. The fish and wildlife values in the region, its size and setting, and the national significance of its resources are, in the words of Secretary Salazar and President Obama, "a national treasure that we must protect." The risk to this national treasure is too great and the resource too unique and irreplaceable to allow the Pebble Project to continue forward.

While we thank you for planning an assessment of the Bristol Bay watershed to better understand how future large-scale development projects may affect Bristol Bay, it's not enough. The EPA has the authority under the Clean Water Act to invoke Section 404(c), which would give Bristol Bay the protection it needs from mining and other large-scale developments.

The undersigned organizations and businesses urge EPA to proactively fulfill its mission to protect the environment and human health in Bristol Bay, AK by using its authority under Clean Water Act Section 404(c) to withdraw waters and wetlands in the headwaters of the Bristol Bay watershed from future specification as disposal sites for dredge and fill activity associated with mining operations. The EPA has an opportunity now to guarantee a future for Bristol Bay that will generate economic opportunities while also conserving sporting traditions for generations to come.

We look forward to working with the EPA and all federal agencies with an interest and role in the future of Bristol Bay's tremendously productive lands and waters.

Sincerely,

National Organizations (21)

American Fly Fishing Trade Association
Benjamin Bulis
General Manager
Bozeman, MT

American Sportfishing Association
Gordon Robertson
Vice President
Alexandria, VA

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| | |
|---|--|
| Backcountry Hunters and Anglers Jim Akenson Executive Director Joseph, OR | Izaak Walton League of America Roger Sears Executive Board Chair Poolesville, MD |
| Bear Trust International A.C. Smid Board Chairman, CEO, and Treasurer Missoula, MT | National Wildlife Federation Jim Adams Regional Executive Director – Pacific Region Anchorage, AK |
| Bull Moose Sportsmen’s Alliance Tim Mauck Co-Director Denver, CO | North American Fishing Club Steve Pennaz Executive Director Minnetonka, MN |
| Campfire Club of America Leonard J. Vallender Conservation Chair Chappaqua, NY | North American Hunting Club Bill Miller Executive Director Minnetonka, MN |
| Conservation Force John J. Jackson III Chairman and President Metairie, LA | Quality Deer Management Association Kip Adams Director of Education and Outreach Bogart, GA |
| Dallas Safari Club Ben Carter Executive Director Dallas, TX | Pope and Young Club Roger Atwood President Chatfield, MN |
| Delta Waterfowl Foundation John L. Devney Senior Vice President Bismarck, ND | Recycled Fish Teeg Stouffer Executive Director Nebraska City, NE |
| Federation of Fly Fishers Philip Greenlee President / Chairman of the Board Livingston, MT | Theodore Roosevelt Conservation Partnership Tom Franklin Director of Policy and Government Relations Washington, DC |
| International Assoc. of Fly Fishing Veterinarians Dr. Donald Sawyer President Tucson, AZ | Trout Unlimited Chris Wood President / Chief Executive Officer Arlington, VA |

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

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Wildlife Forever
Douglas Grann
President / Chief Executive Officer
Minneapolis, MN

Alaska (137)

3 Rivers Fly & Tackle
Steve Runyan
Manager
Wasilla, AK

Airventures Alaska, Inc.
Casey Long
Owner
Wasilla, AK

Alagnak Lodge
Michael Santelli
Guide
King Salmon, AK

Alaska Alpine Adventures
Dan Oberlatz
Owner/Operator
Anchorage, AK

Alaska Backcountry Hunters & Anglers
Mark Richards
Co-Chair
Eastern Interior (Bush), AK

Alaska Bear Guides
Scott Newman
President
Petersburg, AK

Alaska Drift Away Fishing, LLC
Nick Ohlrich
Owner/Operator
Soldotna, AK

Alaska Fly Anglers, Inc.
John Hohl
Owner
Soldotna, AK

Alaska Fly Fish
Jason Williams
Owner
Anchorage, AK

Alaska Fly Fishing Goods
Brad Elfers
Owner
Juneau, AK

Alaska Glacier Guides, Inc.
Alisha Rosenbruch-Decker
President
Gustavus, AK

Alaska King Salmon Adventures
Scott Weedman
Owner
Dillingham, AK

Alaska on the Fly Guides and Outfitter
Orlando Gonzales
Owner
Eagle River, AK

Alaska Rainbow Adventures
Paul Hansen
Owner
Wasilla, AK

Alaska Rainbow Lodge
Ron and Sharon Hayes
Owners/Operators
King Salmon, AK

Alaska River Adventures
George Heim
President
Cooper Landing, AK

Alaska Salmon Camp, Inc.
Kent Anderson
President
Dillingham, AK

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The Alaska Sportsman's Lodge
 Todd Calitri
 General Manager
 Igiugig, AK

Alaska Sportsman's Bear Trail Lodge
 Nanci Morris-Lyon
 Managing Partner
 King Salmon, AK

Alaska Trophy Fishing Safaris
 John & Melissa Carlin
 Owners / Operators
 Homer, AK

Alaska West
 Andrew Bennett
 President
 Quinhagak, AK

Alaska Wilderness Trips, Inc.
 Clark Whitney, Sr.
 Owner
 Soldotna, AK

Alaska's Angling Addiction
 Lee Kuepper & Paul Tornow
 Co-Owners / Operators
 Anchorage, AK

Alaska's Boardwalk Lodge
 Brad Steuart
 Owner
 Thorne Bay, AK

Alaska's Enchanted Lake Lodge
 Daren Erickson
 Owner
 Anchorage, AK

Alaska's Fishing Unlimited
 Martin Kviteng
 President
 Port Alsworth, AK

Alaska's Legend Lodge
 Jack Johnson
 Owner / Operator
 Iliamna, AK

Alaska's Wild River Lodge
 Seth Kroenke
 Owner / Operator
 Port Alsworth, AK

Alaskan Experience Guide Service
 Jon Kluck
 Owner / Guide
 King Salmon, AK

Alaskan Leader Tours
 Kimberly Riedel
 President
 Kodiak, AK

Alaskan Wilderness Outfitting Company
 Tom & Katie Prijatel
 Owners
 Cordova, AK

Angler's Alibi Alaska
 John Perry
 Owner
 King Salmon, AK

Aniak Three Rivers Lodge
 Mike & Jane Robinson
 Owners
 Aniak, AK

Arctic North Guides, LLC
 Phil Byrd
 Owner
 King Salmon, AK

Arctic Rivers Guide & Booking Service
 Jake Jacobson
 Owner / Master Guide
 Kodiak and Kotzebue, AK

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Arctic Wild, LLC
 Bill Mohrwinkel
 Owner
 Fairbanks, AK

The Bait Shack
 Dustin D. Slinker
 Owner
 Anchorage, AK

Baranof Wilderness Lodge
 Mike Trotter
 Owner / Operator
 Sitka, AK

Bear Paw Outdoors
 Derek Ratliff
 Owner / Guide
 Kenai, AK

Bearclaw Group, LLC dba Alaska's Bearclaw Lodge
 Rob and Lisa Fuentes
 Owners
 Aleknagik, AK

Beyond Boundaries Expeditions
 Mike Trotter
 Owner / Operator
 Sitka, AK

Blue Fly Bed & Breakfast and Guide Service
 Patricia Edel
 Owner/Operator
 King Salmon, AK

Blue Mountain Lodge
 Tracy & Linda Vrem
 Owners/Operators
 Becharof Lake, AK

Blueberry Island Lodge
 George Riddle
 Owner / Operator
 Igiugig, AK

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 George V. Hartley
 President
 King Salmon, AK

Brightwater Alaska, Inc.
 Chuck Ash
 President
 Anchorage, AK

Bristol Bay Adventures
 Michael Addiego
 Owner
 Dillingham, AK

Bristol Bay Lodge
 Steve Laurent
 General Manager
 Dillingham, AK

Bristol Bay Mission Lodge
 Sarah Fullhart
 General Manager
 Aleknagik, AK

Bristol Bay Retreat
 Phil Byrd
 Owner
 King Salmon, AK

Bristol Bay Sportfishing
 Jerry Jacques
 Owner / Operator
 Iliamna, AK

Cape Ommaney Lodge
 James Boyce
 Owner / Master Guide
 Port Alexander, AK

Captain Pete's Alaskan Experience
 Capt. Pete Wedin
 Owner / Operator
 Homer, AK

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| | |
|---|---|
| Chelatna Lake Lodge, Inc. Duke Bertke President Anchorage | Egdorf's Western Alaska Sportfishing Dave & Kim Egdorf Owners Upper Nushagak River, AK |
| Cinder River Lodge Lance & Nikki Kronberger Owners Eagle River, AK | EPIC Angling & Adventure, LLC Rus Schwausch Owner King Salmon, AK |
| Chinook Tours Felix Schneider Owner Anchorage, AK | EZ Limit Guide Service Greg Brush Owner / Operator Soldotna, AK |
| Classic Casting Adventures Tad Kisaka Owner / Guide Sitka, AK | Fish Alaska Magazine Marcus Weiner Publisher Anchorage, AK |
| Copper River Lodge Pat Vermillion Owner Iliamna, AK | Fish Ranger!, Inc. Phil Goldstine Owner / Operator Eagle River, AK |
| Crystal Creek Lodge Dan Michels Owner King Salmon, AK | Fish Tales Guide Thomas Stanton Owner / Guide Kenai, AK |
| Denali Fly Fishing Guides, LLC Rick McMahan Owner Cantwell, AK | Fishermen's Inn Kevin Mulligan Owner Port Alexander, AK |
| Deshka Wilderness Lodge Michael Yencha Owner / Guide Willow, AK | Fishing Bear Lodge Justin Johns Owner Dillingham, AK |
| Dierick's Tsiu River Lodge Greg Dierick Owner Yakutat, AK | Freelance Outdoor Adventures Lance & Nikki Kronberger Owners Eagle River, AK |

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Frontier River Guides
Marty Decker
Owner
Anchorage, AK

Frosty View Lodge
Richard A. Guthrie
Owner / Master Guide
Anchorage, Alaska

Glacier Guides, Inc.
Jimmie C. Rosenbruch
Owner / Master Guide
Gustavus, AK

Goodnews River Lodge, LLC
Mike Gorton
Owner
Goodnews Bay, AK

Great Alaska Adventure Vacations
Kent John
President
Sterling, AK

Grizzly Skins of Alaska, Inc.
Rochelle Harrison
Co-Owner
King Salmon, AK

Hitaluga Guide Service, LLC
Cynthia Oliver
Co-Owner
Anchorage, AK

Hodge's Outfitters
James Hodge
Owner and Master Guide/Outfitter
Anchorage, AK

Icy Bay Lodge
Nick Coe
Vice President/Manager
Yakutat, AK

Igiugig Lodge, LLC
Brad Waitman
Owner / Operator
Igiugig, AK

Jake's Nushagak Salmon Camp
Eli Huffman
Owner / Manager
Dillingham, AK

K-Kustom Rods
Ken Killian
Owner
Anchorage, AK

Katmai Air, LLC
Raymond F. & Mariann Peterson
Owners
Kulik Lodge/Katmai Park, AK

Katmai Guide Service
Joe Klutsch
Owner / Master Guide
King Salmon, AK

Katmailand, Inc.
Raymond F. Peterson
President
Kulik Lodge/Katmai Park, AK

Keen Eye Anglers
Kyle Kolodziejski
Owner / Guide
Moose Pass, AK

Kenai Area Fisherman's Coalition
Dwight Kramer
Chairman
Kenai, AK

Kenai River Trout Anglers
J.J. Brown
Owner / Guide
Cooper Landing, AK

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KingSalmonGround, LLC
 Jason Lazore
 Owner
 King Salmon, AK

Kodiak Custom Fishing Tackle
 Tony Davis
 President
 Soldotna, AK

Kodiak Sportsman's Lodge
 Gary Sampson
 Owner
 Old Harbor, AK

Kodiak Treks
 Harry and Brigid Dodge
 Owner-Operators
 Kodiak, Alaska

Kvichak Anglers
 Jared Paul Nelson
 Owner
 Igiugig, AK

Kvichak Lodge
 Mike McDowell
 Owner
 Igiugig, AK

Lonesome Dove Outfitters, Inc.
 Dennis M. Zadra
 President
 Cordova, AK

Moosehorn Lodge
 Erich Napflin
 Owner / Operator
 Wasilla, AK

Mossy's Fly Shop
 Mike Brown
 Owner
 Anchorage, AK

Mountain View Sports Center
 John Staser
 President
 Anchorage, AK

Muskeg Excursions
 Johnnie Laird
 Owner/Guide
 Ketchikan, AK

Mystic Waters Fly Fishing
 Fred Telleen
 Owner
 Cooper Landing, AK

Naha Bay Outdoor Adventures
 Mark and Miriam Edwards
 Owners
 Ketchikan, AK

Naknek River Camp
 Jim Johnson
 Owner
 King Salmon, AK

No See Um Lodge, Inc.
 John Holman
 President
 King Salmon, AK

Nushagak Outfitters / Nushagak River Lodge
 Randy Triplett
 Owner
 Nushagak River, AK

Ocean Point Alaska Adventures
 Keegan McCarthy
 Owner/Operator
 Douglas, AK

Ouzel Expeditions, Inc.
 Sharon Allred
 Co-Owner
 Girdwood, AK

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Painter Creek Lodge
Jon Kent
President
Anchorage, AK

Pioneer Outfitters
Amber-Lee Dibble
Manager/Guide
Chisana, AK

Price's Guide Service
Matt Price
Owner/Operator
King Salmon, AK

Pristine Ventures, Inc.
Larry Bartlett
Owner
Fairbanks, AK

Quartz Creek Lodge
Dave & Pam Pingree
Owners/Operators
Kodiak, AK

Rapids Camp Lodge
Amy Herrig
Owner / Operator
King Salmon, AK

Rainbow Bend Lodges
Tom & Tammy Baumgartner
Owners
King Salmon, AK

Rainbow River Lodge
Chad Hewitt
Managing Partner
Iliamna, AK

Reel Wilderness Adventures, Inc.
David Taylor
President
Dillingham, AK

River King Outfitters
Jon Boyd
Owner
Nushagak River, AK

River Wrangellers
Jennifer & Michael Harpe
Owners
Copper Center, AK

Royal Coachman Lodge
Pat Vermillion
President
Dillingham, AK

Royal Wolf Lodge
Chris & Linda Branham
Owners / Operators
Anchorage, AK

Saltery Lodge
Joe Paul
Manager/Captain
Naha Bay, AK

Sasquatch Alaska Adventure Company, LLC
Zack Tappan
Owner
Homer, AK

Sea Hawk Air
Rolan Ruoss
Owner
Kodiak, AK

Silver Salmon Creek Lodge
David Coray
President
Silver Salmon Creek, AK

Southeast Alaska Guiding
Hans Baertle
Owner / Operator
Douglas, AK

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Stony River Lodge
Curly Warren
Owner / Master Guide
Stony River, AK

TakeDown Sportfishing
Cody Dutcher
Owner / Operator
Soldotna, AK

Talaheim Lodge
Mark Miller
Owner
Anchorage, AK

Tikchik Narrows Lodge
Bud Hodson
Owner
Wasilla, AK

Togiak River Outfitters, LLC
Larry Lund
Owner
Togiak, AK

Tok River Outfitters, LLC
Chris Erickson
Owner / Operator
Hoonah, AK

Tordrillo Mountain Lodge
Mike Overcast
Owner / Lead Guide
Skwentna, AK

Upstream Marketing
J.J. Pilgreen
Owner
Palmer, AK

Westwind Guide Service/AK Big Game Hunting
Anthony B. Lee
Owner
Wasilla, AK

Wilderness Place Lodge
Jason Rockvam
Owner
Anchorage, AK

Women's Fly Fishing
Cecelia "Pudge" Kleinkauf
Owner
Anchorage, AK

World Wide Angler Outfitters
Keith Graham
Owner
Anchorage, AK

Arizona (9)

Arizona Council (Trout Unlimited)
Bob Youtz
Council Chair
Payson, AZ

Arizona Flycasters Club
Gary Stinson
Conservation Chair
Phoenix, AZ

Arizona Sportsmen for Wildlife
Brian Pinney
AZSFW - WCC Foundation Chair
Phoenix, AZ

Arizona Wildlife Federation
Tom Mackin
President
Flagstaff, AZ

Eastern Rocky Mtn Council (Fed. of Fly Fishers)
Richard J. Brown
Vice President – Conservation
Flagstaff, AZ

Gila Trout Chapter (Trout Unlimited)
Bob Youtz
President
Payson, AZ

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Old Pueblo Chapter (Trout Unlimited)
Steve Reiter
President
Tucson, AZ

White Mountain Lakes Foundation
John Rohmer
President
Phoenix, AZ

Zane Grey Chapter (Trout Unlimited)
Richard Gockel
President
Mesa, AZ

Arkansas (9)

Arkansas Drift
Chris Morris
Owner / Guide
Little Rock, AR

Arkansas Fly Fishers (Federation of Fly Fishers)
Chris Morris
Web Master / Casting Instructor
Little Rock, AR

Hogs on the Fly
Larry Babin
Owner
Mountain Home, AR

McLellan's Fly Shop
Michael McLellan
Owner
Fayetteville, AR

North Arkansas Fly Fishers (Federation of Fly Fishers)
Mike Tipton
President
Gassville, AR

Southern Council (Federation of Fly Fishers)
Paul Goodwin
Vice President – Conservation
Mountain Home, AR

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

White River Chapter (Trout Unlimited)
Mark Romero
Conservation Committee
Lakeview, AR

White River Inn
Moose Watson
Owner
Cotter, AR

Women's Fly Fishing of Japan
Misako Ishimura
Conservation Committee
Lakeview, AR

California (55)

Abel Automatics, Inc.
Jeff Patterson
Director of Sales
Camarillo, CA

Against the Flow Adventures
John Squires & Joe Hauner
Owners
San Ramon, CA

Bob Marriott's Flyfishing Store
Stacia Siroonian
Vice President
Fullerton, CA

Buff, Inc.
Tara Hansen
Sales & Marketing
Santa Rosa, CA

California Council (Trout Unlimited)
Drew Irby
Council Chair
Santa Rosa, CA

California Division (Izaak Walton League of America)
Peter Hillebrecht
President
Orange, CA

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California Fly Shop
Xavier Carbonnet
President
San Carlos, CA

California School of Flyfishing
Ralph & Lisa Cutter
Owners
Nevada City, CA

Central Coast Fly Fishing
Geoff Malloway
Owner
Carmel, CA

Don Coffey Company
Mike Perusse
Sales
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Mitchell Harris
National Sales Manager
Berkeley, CA

Fishermen's Spot
Steve Ellis
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Van Nuys, CA

Fly Fishers of Davis
Lowell Ashbaugh
Conservation Chair
Davis, CA

The Fly Fishing Guide Directory
Tim Harden
Owner
Campbell, CA

The Fly Shop, Inc.
Pat Pendergast
Director of International Travel
Redding, CA

Flycasters of San Jose, Inc.
Chuck Hammerstad
Conservation Co-Chair
San Jose, CA

Galvan Fly Reels, Inc.
Bonifacio Galvan
President
Sonora, CA

Golden West Women Flyfishers
Cindy Charles
Conservation Chair
San Francisco, CA

Hatch Outdoors, Inc.
John Torok
President / CEO
Vista, CA

Hobie Cat Company
Jim Czarnowski
Director of Engineering
Oceanside, CA

JD Richey Sportfishing
JD Richey
Owner
Sacramento, CA

Jeff Bright Steelhead Flyfishing Expeditions
Jeff Bright
Owner
San Francisco, CA

Marmot Mountain, LLC
Mark Martin
President
Santa Rosa, CA

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Matt Heron Fly Fishing
 Matt Heron
 Owner / Operator
 Olympic Valley, CA

Mount Tamalpais Fly Fishers
 Kim Colby
 Vice President
 Marin County, CA

Nevada City Anglers
 Tony Dumont
 Owner
 Nevada City, CA

Northern California Council (Fed. of Fly Fishers)
 Anne-Marie Bakker
 President
 Sonoma, CA

NuCast
 Lindsay Brehm
 President
 Rancho Santa Fe, CA

Okuma Fishing Tackle
 Douglas Lasko
 President
 Ontario, CA

Outdoor Pro Shop, Inc.
 Ken Elie
 President
 Cotati, CA

Patagonia, Inc.
 Casey Sheahan
 President / CEO
 Ventura, CA

Peninsula Fly Fishers
 Mike Pineli
 Bulletin Editor
 Pacifica, CA

Pit River Company
 Brian McDonald & Joseph Nowak
 Managing Members
 Petaluma, CA

Poly Fly Fishers Chapter (Trout Unlimited)
 Adam Butler
 President
 San Luis Obispo, CA

Randy Williams Fishing Guide Service
 Randy Williams
 Owner / Guide
 Pollock Pines, CA

Redwood Empire Chapter (Trout Unlimited)
 Rick Jorgensen
 Vice President
 Santa Rosa, CA

Riverbend Adventures Guide Service
 Bob Norman
 Owner / Guide
 Lewiston, CA

Sac-Sierra Chapter (Trout Unlimited)
 Kevin Mather
 President
 Sacramento, CA

Santa Barbara Flyfishers
 Lew Riffle
 President
 Santa Barbara, CA

Santa Cruz Fly Fishermen
 Sam Bishop
 President
 Santa Cruz, CA

Santa Lucia Fly Fishers
 Mike Kohle
 Conservation Chair
 San Luis Obispo, CA

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Shasta Trout
 Craig Nielsen
 Owner / Guide
 Mount Shasta, CA

Sierra Pacific Fly Fishers (Federation of Fly Fishers)
 William P. O'Kelly
 President
 Van Nuys, CA

South Coast Chapter (Trout Unlimited)
 Dan Young
 President
 Orange County, CA

Southwest Council (Federation of Fly Fishers)
 Tim Bartley
 Conservation Chair
 Malibu, CA

Steve Huber Guide Service
 Steve Huber
 Owner / Guide
 Douglas City, CA

T.N.G. Motorsports Guide Service
 Gerald Lampkin
 Owner/Operator
 Meadow Vista, CA

Tenkara USA
 Daniel Galhardo
 Owner/Founder
 San Francisco, CA

The Trout Spot
 Richard Desrosiers
 Owner
 Santa Clara, CA

The Trout Underground
 Tom Chandler
 Publisher
 Mount Shasta, CA

Truckee River Chapter (Trout Unlimited)
 Stefan McLeod
 President
 Truckee, CA

Tundra River Adventures
 Frank Coppel
 Owner
 Woodland, CA

Whitney Gould Spey
 Whitney Gould
 Owner / Guide / Instructor
 Newcastle, CA

Wilderness Fly Fishers
 Clay Dodder
 Conservation Committee
 Santa Monica, CA

Colorado (61)

Alpine Anglers Chapter (Trout Unlimited)
 Lynn Myers
 President
 Estes Park, CO

Angler's Covey
 David Leinweber
 President and CEO
 Colorado Springs, CO

Anglers Accessories
 Sam Sherman
 Manager
 Centennial, CO

Anglers All
 Chris Keeley
 Owner
 Littleton, CO

The Angling Book Store
 Ben Furimski
 Owner
 Crested Butte, CO

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| | |
|---|--|
| Angling Trade Magazine Kirk Deeter Editor-In-Chief Pine, CO | Colorado Backcountry Hunters & Anglers John Gale Co-Chair Boulder, CO |
| Blue Quill Angler Pat Dorsey Co-Owner Evergreen, CO | Colorado River Headwaters Chapter (TU) Kirk Klancke President Fraser, CO |
| Boulder Boat Works, Inc. Andrew Toohey President Boulder, CO | Colorado Trout Unlimited Sinjin Eberle President Denver, CO |
| Boulder Flycasters Chapter (Trout Unlimited) Mark Riley President Boulder, CO | Colorado Wildlife Federation Suzanne O'Neill Executive Director Denver, CO |
| Cherry Creek Anglers Chapter (Trout Unlimited) Pat Prichard President Elizabeth, CO | Comb Enterprises, LLC Frank Smethurst Chief Angler Telluride, CO |
| Cheyenne Mountain Chapter (Trout Unlimited) Erik J. Heikkinen President Colorado Springs, CO | Compleat Thought, LLC Kyle Perkins Owner/Strategist Denver, CO |
| CJR Flyfishing Clint J. Rossell Owner / Operator Idaho Springs, CO | Conejos River Anglers Rob Scott Guide Antonito, CO |
| Collegiate Peaks Anglers Chapter (Trout Unlimited) Steve Craig President Salida, CO | Cross Current Travel Group Taylor Edrington Director / Principal Colorado Springs, CO |
| The Colorado Angler Andrew Petersen Owner Silverthorne, CO | Cutthroat Chapter (Trout Unlimited) Sharon Lance President Littleton, CO |

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| | |
|---|--|
| Denver Chapter (Trout Unlimited) Cory Stansbury President Denver, CO | Flies & Lies Danny Brennan Owner Deckers, CO |
| Denver Fly Shop Eric Anderson Owner Denver, CO | Flow Tek, Inc. (Monic Fly Lines) Robert Goodale President Boulder, CO |
| Dvorak Raft, Kayak, and Fishing Expeditions Bill Dvorak President Nathrop, CO | Fly Fishing Outfitters John Packer Owner Avon, CO |
| Eagle Valley Chapter (Trout Unlimited) Alex Schaefer President Vail, CO | Front Range Anglers Bill Leuchten President Boulder, CO |
| Emerald Water Anglers Colorado Steven Brown & Ryan Davis Owners Glenwood Springs, CO | Gore Range Anglers Chapter (Trout Unlimited) Sarah Barclay President Breckenridge, CO |
| Evergreen Chapter (Trout Unlimited) Mike McGinnis President Evergreen, CO | Grand Valley Anglers Chapter (Trout Unlimited) David Trimm President Grand Junction, CO |
| Ferdinand Hayden Chapter (Trout Unlimited) Dan Bullock President Carbondale, CO | Gunnison Angling Society Chapter (Trout Unlimited) Mark Day President Gunnison, CO |
| Fishpond, Inc. John Land le Coq Co-Founder Dillon, CO | The Greenbacks Nick Hoover President Denver, CO |
| Five Rivers Chapter (Trout Unlimited) Chuck Wanner President Durango, CO | The Hatch Fly Shop Dan Hyding Owner Pine, CO |

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High Country Fishing Charters
 Scott Taylor
 Owner
 Pagosa Springs, CO

Kingfisher Drifters
 Brian Shipley
 Owner
 Fort Collins, CO

MidCurrent LLC
 Marshall Cutchin
 Publisher
 Fort Collins, CO

Next Ascent Outdoor and Sport
 Eric Graham
 President
 Littleton, CO

Nomad Fly Fishing
 Kevin Best
 Owner
 Littleton, CO

Professor Bodkin Fly Fishing
 Dana Echols
 Owner
 Windsor, CO

Rancho del Rio
 Jeff Gibson
 Owner
 Bond, CO

Rip-N-Lips Fly Fishing
 Shannon Branham
 Owner / Guide
 Clifton, CO

Rocky Mountain Flycasters Chapter (TU)
 Dick Jefferies
 President
 Fort Collins, CO

Royal Gorge Anglers
 Taylor Edrington
 Owner / Operator
 Canon City, CO

San Miguel Mountain and River Products, Inc.
 Scott Harkins
 President
 Steamboat Springs, CO

Schliske Bamboo Fly Rods
 Matt Schliske
 Owner / Maker
 Fort Collins, CO

Scott Fly Rod Company
 Jim Bartschi
 President
 Montrose, CO

South Platte Outfitters
 Danny Brennan
 Owner
 Deckers, CO

Southern Colorado Greenback Chapter (TU)
 Kelvin Melton
 President
 Pueblo, CO

Sporting Culture Advisors
 Bret Gardner
 Owner
 Golden, CO

Steel City Anglers
 Ben Wurster
 Owner
 Pueblo, CO

Trout's Fly Fishing
 Tucker Ladd
 Owner
 Denver, CO

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Umpqua Feather Merchants

Brent Bauer
Operations Manager
Louisville, CO

West Denver Chapter (Trout Unlimited)

John Weimer
President
Denver, CO

Wild on the Fly

Steve Jensen
Partner
Boulder, CO

Connecticut (15)

Candlewood Valley Chapter (Trout Unlimited)

James Beldon
President
Newtown, CT

Compleat Angler

Scott Bennett
Owner
Darien, CT

Connecticut Council (Trout Unlimited)

Jim Glowienka
Council Chair
Norwalk, CT

Farmington Valley Chapter (Trout Unlimited)

William Case
President
Unionville, CT

Fly Fishing Connecticut, LLC

Jeff Yates
Owner/Operator
Wilton, CT

Hammonasset Chapter (Trout Unlimited)

Darby Hittle
President
Clinton, CT

Mianus Chapter (Trout Unlimited)

Jeff Yates
President
Wilton, CT

Naugatuck-Pomperaug Chapter (Trout Unlimited)

Glenn Lafreniere
President
Oakville, CT

Cove Outfitters, Inc.

Brian Owens
Manager
Old Saybrook, CT

NW Connecticut Chapter (Trout Unlimited)

James Fedorich
President
Torrington, CT

Nutmeg Chapter (Trout Unlimited)

Ron Merly
President
Bridgeport, CT

Nutmeg Guide Service

Jeff Church
Owner
Southbury, CT

REC Components

Alan Gnann
President
Stafford Springs, CT

Sturm, Ruger & Company, Inc.

Mike Fifer
President / CEO
Southport, CT

Thames Valley Chapter (Trout Unlimited)

Hendrik Verkade IV
President
Oakdale, CT

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Delaware (2)

A Marblehead Flyfisher
Terry Peach
Owner
Wilmington, DE

White Clay Outfitters
Kenneth Prager
Vice President
Newark, DE

District of Columbia (1)

National Capital Chapter (Trout Unlimited)
Andrew J. Spence
President
Washington, DC

Florida (25)

Absolute Florida Flats Fishing
Captain Rich Knox
Owner / Operator
New Port Richey, FL

Angler's Passport
Mary E. Smiley
Owner
Sarasota, FL

Argonaut Publishing Company
John Kumiski
Owner
Chuluota, FL

AVID Tackle
Tim Johnson
Partner / Co-Founder
Palm Beach Gardens, FL

The Blue Voodoo
Nickolas Bouth
Managing Partner
Clearwater, FL

Captain Bruce Chard Fishing Charters, Inc.
Capt. Bruce Chard
President
Big Pine Key, FL

Chaser Key West Fishing
Capt. Mike Wilbur
Owner
Key West, FL

Copout Offshore Fishing Charters, LLC
Capt. Jeff Brown
President
Oviedo, FL

Costa del Mar
Al Perkinson
Vice President Marketing & Conservation
Daytona Beach, FL

Florida Wildlife Federation
Preston Robertson
Vice President
Tallahassee, FL

Fly Fishing in Salt Waters
Gary Jennings
Publisher
Winter Park, FL

The Gypsy Guide Service
Capt. Pete Greenan
Owner / Guide
Sarasota, FL

Mangrove Coast Fly Fishers
Evan Jones
President
Sarasota, FL

Marlin
Natasha Lloyd
Publisher
Winter Park, FL

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Nautilus Reels
Kristen Mustad
President
Miami, FL

Norm Zeigler's Fly Shop
Norm Zeigler
Owner
Sanibel Island, FL

Salt Water Sportsman
Dave Morel
Publisher
Winter Park, FL

Sanibel Island Fly Fishers
Norm Zeigler
Board of Directors
Sanibel Island, FL

The Sarasota Fly Fishing School
Capt. Pete Greenan
Owner
Sarasota, FL

Sport Fishing
Drew Morel
Publisher
Winter Park, FL

Spotted Tail Charter Service
Captain John Kumiski
Owner / Guide
Chuluota, FL

Suncoast Fly Fishers
Tom Gadacz
President
Saint Petersburg, FL

Tarpon Coast Fly Fishers (Fed. of Fly Fishers)
Roger Maler
President
Hernando Beach, FL

Tibor Reel Corporation
Marianne Papa
Vice President
Delray Beach, FL

True Flies, LLC
Captain Cole Fairbanks
Vice President
Boca Grande, FL

Georgia (5)

Broadway Tackle
Larry Lesser
Owner
Augusta, GA

Fishing Waders Pro
Sarah Stewart
Owner / Operator
Mansfield, GA

Georgia Council (Trout Unlimited)
M.A. Martin, Jr.
Council Chair
Cumming, GA

Gray's Sporting Journal
Mike Floyd
Director of Sales
Augusta, GA

Tybee Island Charters
Captain Elizabeth Johnson
Owner / Operator
Tybee Island, GA

Hawaii (2)

Hawaii on the Fly
Captain Mike Hennessey
Owner / Guide
Kailua, HI

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Waikaha'olu Chapter (Trout Unlimited)

C. Wayne Hodges
 President
 Honolulu, HI

Idaho (32)

Ballistic Spey Lines

Lee Davison
 President
 Idaho Falls, ID

Buck Knives

C.J. Buck
 President
 Post Falls, ID

Carriboo Conservancy, Inc.

Bud Smalley
 President
 Pocatello, ID

Down River Design Company

David Page
 President
 Irwin, ID

First Lite

Ryan Callaghan
 Marketing Media Sales
 Ketchum, ID

Fluid Peak Films

Lauren Schall & David Page
 Owners
 Swan Valley, ID

Hell's Canyon Sport Fishing

Jason Schultz
 Owner
 Lewiston, ID

Hemingway Chapter (Trout Unlimited)

Ed Northen
 President
 Hailey, ID

Idaho Council (Trout Unlimited)

Chris Jones
 Council Chair
 Boise, ID

Idaho Panhandle Chapter

Donald Childress
 President
 Sandpoint, ID

Jimmy's All Seasons Angler

Jimmy Gabettas
 Owner
 Idaho Falls, ID

Kast Gear

Colby Hackbarth
 Chief Executive Officer
 Idaho Falls, ID

Loon Outdoors

Alan Peterson
 President
 Boise, ID

Magic Valley Fly Fishers Chapter (Trout Unlimited)

Dennis Brauer
 President
 Twin Falls, ID

Morning Star Lanyards

Lynda MacButch
 Owner
 Pocatello, ID

Panhandle Outfitters, Inc.

Tom Loder
 President
 Avery, ID

Peet Shoe Dryer, Inc.

Blair Peet
 President
 St. Maries, ID

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Pro Guide Direct, Inc.
Fletcher White
Chief Executive Officer
Victor, ID

Reed Gillespie / Central Idaho Chapter (TU)
Leslie Freeman
Treasurer
McCall, ID

RIO Products International
Simon Gawesworth
Marketing Manager
Idaho Falls, ID

Ron Spomer Outdoors, Inc.
Ron Spomer
President
Boise, ID

Sandpoint Outfitters
Calvin Fuller
Owner
Sandpoint, ID

Smith Optics
Ned Post
President
Ketchum, ID

Snake River Cutthroats Chapter (Trout Unlimited)
David Pace
President
Idaho Falls, ID

Snake River Outfitters
Lee Davison
President
Idaho Falls, ID

South East Idaho Fly Fishers Chapter (TU)
Darrell Brown
President
Pocatello, ID

StreamTech, LLC
Link Jackson
Owner
Boise, ID

SunCloud
Peter Crow
General Manager
Ketchum, ID

Ted Trueblood Chapter (Trout Unlimited)
Chris Jones
President
Boise, ID

Teton Valley Chapter (Trout Unlimited)
Boots Allen
President
Victor, ID

The Waterworks-Lamson
Ryan Harrison
President
Ketchum, ID

Worldcast Anglers
Mike Dawkins
Chief Operating Officer
Victor, ID

Illinois (7)

Chicago Fly Fishing Outfitters
Andy Kurkulis
Owner
Chicago, IL

Dan's Tackle Service
Dan Pieczonka
Owner
Chicago, IL

Elliott Donnelley Chapter (Trout Unlimited)
Grant Brown
President
Chicago, IL

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Gary Borger Chapter (Trout Unlimited)
Darwin Adams
President
Grayslake, IL

Illinois Council (Trout Unlimited)
Edward J. Michael
Council Chair
Highland Park, IL

Lee Wulff Chapter (Trout Unlimited)
Dennis Higham
President
Elgin, IL

Oak Brook Chapter (Trout Unlimited)
Greg Prosen
President
Oak Brook, IL

Indiana (3)

Buck's Pro Mount Taxidermy
Todd Buchanan
Owner
Fairland, IN

FlyMasters of Indianapolis
Jon Widboom
Owner
Indianapolis, IN

Stonefly Press
David Gray
Chief Operating Officer
Bloomington, IN

Iowa (4)

Clear Creek
Kyle Steinfeldt
Product/Sales Manager
Denver, IA

ColdWater Guide Service
Rod Woten
Owner / Guide
Stuart, IA

Iowa Council (Trout Unlimited)
Brett Lorenzen
Council Chair
Des Moines, IA

Iowa Wildlife Federation
Joe Wilkinson
President
Solon, IA

Kansas (3)

Heart of America Flyfishers (Fed. of Fly Fishers)
Kevin Carril
Conservation Chair
Overland Park, KS

Kansas Farmland Outfitters
Steve Hall
Owner / Operator
Potwin, KS

Kansas Wildlife Federation
Steven Sorensen
Vice President – Conservation
Wichita, KS

Kentucky (2)

Bluegrass Chapter (Trout Unlimited)
Gary S. Rose
President
Lexington, KY

Kentucky Council (Trout Unlimited)
Lee Squires
Council Chair
Louisville, KY

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Louisiana (3)

Coldwater Committee (Fed. of Fly Fishers)
Robert Tabbert
Chairman
Lafayette, LA

Great Day, Inc.
Paul Meeks
President
Tallulah, LA

Louisiana Wildlife Federation
Keith R. Saucier
First Vice President
Gonzales, LA

Maine (10)

Coastal Fly Angler, Inc.
Capt. Eric Wallace
President
Freeport, ME

Eldredge Brothers Fly Shop
Jim Bernstein
Shop Manager
Cape Neddick, ME

George's River Chapter (Trout Unlimited)
Roy Hitchings
President
Camden, ME

Kennebec Valley Chapter (Trout Unlimited)
Sean McCormick
President
Whitefield, ME

L.L. Bean, Inc.
Mac McKeever
Senior Public Relations Representative
Freeport, ME

Maine Council (Trout Unlimited)
William Oleszczuk
Council Chair
New Gloucester, ME

Maine Sport Outfitters
Paul McGurren
Fly Shop Manager
Rockport, ME

Merrymeeting Bay Chapter (Trout Unlimited)
Orman Hines
President
Sebasco Estates, ME

Mollycokett Chapter (Trout Unlimited)
Richard Walthers
President
Otisfield, ME

Sebago Chapter (Trout Unlimited)
John Ferry
President
Portland, ME

Maryland (4)

Lateral Line, Inc.
Brandon White
Founder
Easton, MD

Mayfly Enterprises, Ltd.
Jim Greene
President / CEO
Chevy Chase, MD

Mid-Atlantic Council (Federation of Fly Fishers)
James Porter
President
Columbia, MD

Potomac Valley Fly Fishers
John Brognard, Sr.
President
Middletown, MD

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Massachusetts (9)

Central Mass Chapter (Trout Unlimited)
Phillip Horowitz
President
Framingham, MA

Cheeky Fly Fishing, LLC
Scott Caras
Managing Member
Boston, MA

Greater Boston Chapter (Trout Unlimited)
David Glater
President
Boston, MA

Massachusetts/Rhode Island Council (TU)
Paul W. Knauth
Chairman
Hinsdale, MA

Mud Dog Saltwater Flies
Mike Rice
Owner
Marshfield, MA

Nor'East Chapter (Trout Unlimited)
Kevin Correa
President
Georgetown, MA

North Eastern Council (Federation of Fly Fishers)
Dr. Leslie Wrixon
President
Wellesley, MA

Shadowcaster Charters
Capt. James C. Goodhart
Owner
Newburyport, MA

Vedavoo
Scott Hunter
Founder/CEO
Lancaster, MA

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

Michigan (34)

Alaska Adventure Safaris, LLC
Michael Zweng
President
Marine City, MI

Bay de Noc Lure Company
David Nyberg
Partner
Gladstone, MI

Blood Run Tackle Company
Gregg Mariuz
Chief Executive Officer
Hamilton, MI

Caddis Shack Fly Fishing
Christopher Gestwicki
Owner
Escanaba, MI

Dr. Tim's Premium Pet Food
Tim Hunt, DVM (licensed in MI and AK)
Founder and Owner
Marquette, MI

Dwight Lydell Chapter (Izaak Walton League of America)
Robert Stegmier
Conservation Chair
Rockford, MI

Feenstra Guide Service
Kevin Feenstra
Owner / Guide
Newaygo, MI

Fine Angler Art
Becca Schlaff
Owner
East Lansing, MI

Fly Fishing Creations
George Killat
Owner
Midland, MI

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Fred Waara Chapter (Trout Unlimited)
 Jim Cantrill
 President
 Marquette, MI

Gates Au Sable Lodge and Fly Shop
 Josh Greenberg
 Owner
 Grayling, MI

Great Lakes Council (Federation of Fly Fishers)
 James Schramm
 President
 Pentwater, MI

Great Lakes Fishing and Sporting Alliance
 Don Wright
 Founding Member
 Petoskey, MI

Great Lakes Fly Fishing Company
 Glen R. Blackwood
 Owner
 Rockford, MI

Greenhighlander Flyfishing
 Bret Reiter
 Owner
 Linden, MI

Headwaters Chapter (Trout Unlimited)
 John Walters
 President
 Vanderbilt, MI

Leon P. Martuch Chapter (Trout Unlimited)
 Harley O. Holsinger
 President
 Midland, MI

Manistee River Salmon Guide Service
 Captain Ben Wolfe
 Owner / Operator
 Manistee, MI

Michigan Council (Trout Unlimited)
 David Smith
 Council Chair
 Zeeland, MI

Michigan United Conservation Clubs
 Erin McDonough
 Executive Director
 Lansing, MI

Midwest Custom Fly Rods
 Steven W. Clark
 Owner
 Royal Oak, MI

Miller – Van Winkle Chapter (Trout Unlimited)
 Gregory Walz
 President
 Petoskey, MI

Moore Outfitters and Angling Destinations
 Patrick Moore
 Owner
 Thompsonville, MI

Old Au Sable Fly Shop
 Andy Partlo
 Owner
 Grayling, MI

OutsideHub.com
 Steve Dooley
 President
 Southfield, MI

Rivers North Guide Service
 Capt. Brad Petzke
 Owner
 Marquette, MI

Schrems West Michigan Chapter (Trout Unlimited)
 Marc Montpetit
 President
 Grand Rapids, MI

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Switchback Gear Exchange & Outfitter
 Nick Simon
 Fly Fishing Director
 Marquette, MI

Traverse City Bass Guide Service
 Captain Ben Wolfe
 Owner / Operator
 Traverse City, MI

True North Trout
 Brian Kozminski
 Editor
 Traverse City, MI

USAontheFly.com
 Ken Van Every
 Owner
 Holt, MI

Vanguard Chapter (Trout Unlimited)
 Tom Quail
 President
 Rochester, MI

William B. Mershon Chapter (Trout Unlimited)
 Paul Morand
 President
 Essexville, MI

Wolfe Outfitters at Crystal Mountain Resort
 Captain Ben Wolfe
 Owner / Operator
 Thompsonville, MI

Minnesota (31)

Action Fly Company
 Adam Jackson
 Owner
 Laporte, MN

Austin Chapter (Izaak Walton League of America)
 Mark Owens
 President
 Austin, MN

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

Bob Mitchell's Fly Shop
 Michael Alwin
 Owner
 Lake Elmo, MN

Clam Corporation
 Roger Scherping
 President
 Medina, MN

Donahe Split Cane Rods
 Larry Donahe
 Owner / Rod Maker
 Victoria, MN

FishTraxx Guide Service
 Ryan Traxler
 Owner
 Breezy Point, MN

The Fly Angler
 Scott Struif
 Manager
 Blaine, MN

Front 20 Outfitters, LLC
 Doug Harthan
 Owner / Guide
 Menahga, MN

Gitche Gumee Chapter (Trout Unlimited)
 Ken Benoit
 President
 Hermantown, MN

Great Lakes Fly Shop
 John Fehnel
 Owner
 Duluth, MN

Headwaters Chapter (Trout Unlimited)
 Bob Wagner
 President
 Bemidji, MN

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Hiawatha Chapter (Trout Unlimited)
 Scott Steffens
 President
 Oronoco, MN

HotSpotOutdoors.com
 Rick Paquin
 Owner
 Rochester, MN

Ice Team
 Roger Scherping
 President
 Medina, MN

J.W. McCabe Chapter (Izaak Walton League of America)
 Brent Gurtek
 President
 Duluth, MN

Mid-Minnesota Chapter (Trout Unlimited)
 Ken Nodo
 President
 Rice, MN

Minnesota Backcountry Hunters & Anglers
 David Lien
 Co-Chair
 Grand Rapids, MN

Minnesota Council (Trout Unlimited)
 J.P. Little
 Council Chair
 Chaska, MN

Minnesota Division (Izaak Walton League of America)
 Curt Leitz
 President
 Saint Paul, MN

Rapala
 Gregg Wollner
 Executive Vice President
 Minnetonka, MN

Rodmaster
 Ken Wolfbauer
 President
 Forest Lake, MN

Roughfisher Fly Fishing
 Jean-Paul Lipton
 President
 Detroit Lakes, MN

Sporting Life Adventure Travel
 Paul Hansen
 Vice President – International Operations
 Saint Michael, MN

Thunder Creek Outfitters
 Mike & Jane Robinson
 Owners
 Nevis, MN

Twin Cities Chapter (Trout Unlimited)
 Michelle Sparrow
 President
 Victoria, MN

W. Breckenridge Chapter (Izaak Walton League of America)
 Steven Schaust
 President
 Brooklyn Park, MN

Waybinahbe Chapter (Trout Unlimited)
 Rod Prusi
 President
 Cohasset, MN

White Fox Fur & Feather Company
 Jay DeLeon
 Owner
 Pemberton, MN

Whitefish Studio
 Bob & Lisa White
 Owners
 Marine on St. Croix, MN

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Wildwood Float Trips

Kip Vieth
Owner
Monticello, MN

Win-Cres Chapter (Trout Unlimited)

Joseph Lepley
President
Winona, MN

Missouri (7)

Branson Chapter (Trout Unlimited)

Phil Lilley
President
Branson, MO

Driftwood Outdoors

Brandon Butler
President
Fayette, MO

FEATHER-CRAFT Fly Fishing

Bob Story
President
SaintLouis, MO

Lilley's Landing Resort and Marina

Jerry P. Lilley
Owner
Branson, MO

Mid-Missouri Chapter (Trout Unlimited)

Michael Riley
President
Columbia, MO

Ozark Fly Fishers, Inc.

Wallis Warren
Conservation Director
Saint Louis, MO

Southwest Missouri Fly Fishers

Paul Goodwin
President
Springfield, MO

Mississippi (1)

Fish Portraits, LLC

Curt Redden
Founder
Hattiesburg, MS

Montana (61)

Adipose Boatworks

Mike Ward
President
Helena, MT

Big Sky Anglers

Joe Moore
Owner / Outfitter / Guide
West Yellowstone, MT

Big Sky Inflatables, LLC

Richard Stuber
Owner
Stevensville, MT

Bighorn Flies

Eric BeeBe
Owner
Billings, MT

Bighorn River Fly Fisher

Eric Anderson
Owner
Fort Smith, MT

Bitter Root Chapter (Trout Unlimited)

Doug Nation
President
Hamilton, MT

Blue Ribbon Flies

Craig Mathews
President
West Yellowstone, MT

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Blue Ribbon Nets
Mike Westfall
President
Bozeman, MT

Brant Oswald Fly Fishing Services
Brant Oswald
Owner
Livingston, MT

Canvasfish.com
Derek DeYoung
Owner
Livingston, MT

Cascade Outfitter
Mark Daly
Owner
Cascade, MT

Castafly Travel, LLC
Robert Boyce
Owner
Bozeman, MT

Castaway Films
Grant Wiswell
Owner
Missoula, MT

Catch Fly Fishing, LLC
Eric BeeBe
Managing Member
Billings, MT

Chuck Stranahan's Fly Shop
Chuck Stranahan
Owner
Hamilton, MT

Confluence Films
Jim Klug
Producer
Bozeman, MT

DR. SLICK Co.
Steve Fournier
Owner
Belgrade, MT

Doublehaul Travel
Brian Hodges
Owner
Bozeman, MT

Fish Photo
Brian Varner
Owner / Guide
Butte, MT

Fishing with Larry
Guy Schoenborn
Vice President
Columbus, MT

FishTales Outfitting
Michael Slack
Owner / Outfitter
Sheridan, MT

Flathead Wildlife, Inc.
Chuck Hunt
President
Kalispell, MT

Fly Fishing Portraits
Tom Olivo
Founding Partner
Bozeman, MT

Fly on the Wall Travels, LLC
Tyson O'Connell
President
Missoula, MT

Four Rivers Fishing Company
Greg Smith
President
Twin Bridges, MT

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Gallatin River Lodge
Keith Comiso
General Manager
Bozeman, MT

Glacier Raft Company / Glacier Anglers
Darwon Stoneman
Owner
West Glacier, MT

Greater Yellowstone Flyfishers, Inc.
Chad Olsen
President
Bozeman, MT

Grizzly Hackle Fly Shop
Steve Jensen
Partner
Missoula, MT

Hellgate Hunters and Anglers
Land Tawney
President
Missoula, MT

The Kingfisher Fly Shop
Jim Cox & Matt Potter
Partners
Missoula, MT

Kootenai River Outfitters
Robert Winstrom
Owner
Troy, MT

Lakestream Outfitters
Justin Lawrence
Outfitting Manager
Whitefish, MT

Madison-Gallatin Chapter (Trout Unlimited)
Travis Morris
President
Bozeman, MT

Merco Products
Lyle R. Graff
President
Nye, MT

The Missoulian Angler Fly Shop
Russell Parks
Owner
Missoula, MT

Missouri River Flyfishers
Sam Wike
President
Great Falls, MT

Montana Backcountry Hunters & Anglers
Greg Munther
Chairman
Missoula, MT

Montana Fly Fishing Connection, LLC
Joe Sowerby
Owner / Outfitter
Missoula, MT

Montana Flyfishing Expeditions, LLC
Robert Boyce
Owner
Bozeman, MT

Montana Trout Unlimited
Bruce Farling
Executive Director
Missoula, MT

The Montana Way Outfitters
John Way
Owner
Ennis, MT

Mountain Air Marketing & Consulting
Cory Luoma
Owner
Whitefish, MT

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Mystery Ranch Backpacks
Mark Seacat
Marketing Director
Bozeman, MT

On Your Own Adventures, LLC
Randy Newberg
Managing Member
Bozeman, MT

R.L. Winston Rod Company
Leslie Clark
Marketing
Twin Bridges, MT

The Rivers Edge Fishing Company
Steve Summerhill
President
Bozeman, MT

Riverside Anglers, Inc.
Alice Owsley
President and Outfitter
West Yellowstone, MT

Ro Drift Boats
Robert Eddins
President
Bozeman, MT

Simms Fishing Products
K.C. Walsh
Owner / President
Bozeman, MT

Spring Creek Enterprises
E. Donnall Thomas
Owner / Writer / Photographer / Guide
Lewistown, MT

Steelhead Committee (Fed. of Fly Fishers)
Will Atlas
Co-Chair
Livingston, MT

The StoneFly Fly Shop
Chris Bradley
Owner
Butte, MT

Stonefly Inn & Outfitters
Dan Leavens
Owner
Twin Bridges, MT

Sunrise Fly Shop
Ryan Barba & Eric Thorson
Owners
Melrose, MT

Sweetgrass Rods
Dave Delisi
Business Manager
Twin Bridges, MT

Sweetwater Travel
Pat Vermillion
Owner
Livingston, MT

The Tackle Shop
John Way
Owner
Ennis, MT

Triple-M-Outfitters
Mark Faroni
Owner / Outfitter
Dixon, MT

The Trout Shop
Jerry Lappier
President
Craig, MT

Yellow Dog Flyfishing Adventures
Jim Klug and Ian Sinclair Davis
Partners
Bozeman, MT

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Yellowstone Angler
James Anderson
Co-Owner / Manager
Livingston, MT

Nebraska (2)

HuntingLife.com
Kevin Paulson
Founder / CEO
Lincoln, NE

Nebraska Chapter (Trout Unlimited)
David Jacobs
President
Bellevue, NE

Nevada (7)

CalVada Flyfishing
Doug Ouellette
Owner
Reno, NV

Glacier Outdoor, Inc.
Paulo Della Bordella
Sales Manager
Reno, NV

Hendrix Outdoors
Mont G. Adams
Partner
Fallon, NV

Nevada Backcountry Hunters & Anglers
Kyle Davis
Board Chairman
Reno, NV

Sagebrush Chapter (Trout Unlimited)
Mike Caltagirone
President
Reno, NV

Southern Nevada Chapter (Trout Unlimited)
Lannie Barber
President
Las Vegas, NV

Webley & Scott, USA
Derick Cole
President
Reno, NV

New Hampshire (10)

ASA / Eastern Fishing & Outdoor Exposition
Jonathan Sauers
Show Director
Portsmouth, NH

Fly Fish America magazine
Crispin Battles
Editor & Art Director
North Conway, NH

Great Bay Chapter (Trout Unlimited)
Mitch Kalter
President
Dover, NH

Greater Upper Valley Chapter (Trout Unlimited)
Seth Dunn
President
Lebanon, NH

Minox USA, Inc.
Matt Suuck
Sport Optics Manager
Claremont, NH

New Hampshire Council (Trout Unlimited)
Burr Tupper
Council Chair
New Boston, NH

North Country Angler
Bill and Janet Thompson
Owners
North Conway, NH

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

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On Target magazine
Crispin Battles
Editor & Art Director
North Conway, NH

Saco River Valley Chapter (Trout Unlimited)
Bill Thompson
President
North Conway, NH

Thompson / Center
Craig Cushman
Director of Marketing
Rochester, NH

New Jersey (15)

American Fly Fishing Schools
Michael Corblies
International Director
Island Heights, NJ

Central New Jersey Chapter (Trout Unlimited)
Bart Lombardo
President
Clarksburg, NJ

East Jersey Chapter (Trout Unlimited)
Raymond Cappock
President
New Milford, NJ

Ernest Schwiebert Chapter (Trout Unlimited)
Patricia Key
Treasurer
Newton, NJ

FlyfishMagazine.com
Lee Murdock
Publisher
Medford, NJ

Fred S. Burroughs North Jersey Chapter (TU)
Abraham Jacinto
President
Newton, NJ

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

Hacklebarney Chapter (Trout Unlimited)
Michael Sankowich
President
Denville, NJ

Jersey Shore Chapter (Trout Unlimited)
Kevin Lovely
Treasurer
Beachwood, NJ

Ken Lockwood Chapter (Trout Unlimited)
Richard Balak
President
Neshanic Station, NJ

New Jersey Council (Trout Unlimited)
Richard Thomas
Council Chair
Bedminster, NJ

Rahway River Chapter (Trout Unlimited)
Greg Sabol
President
Bloomfield, NJ

Ray Neirle South Jersey Chapter (Trout Unlimited)
Bob Powell
President
Clementon, NJ

Ridge & Valley Chapter (Trout Unlimited)
Michael Bowman
President
Washington, NJ

Shannon's Fly & Tackle
Jim Holland
Owner
Califon, NJ

Tight Lines Fly Fishing
Andrew Moy
Owner
Parsippany, NJ

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New Mexico (40)

ARCOM Outfitting & Guide
Art Martinez
Owner / Guide
Farmington, NM

Artistic Creation Taxidermy Studios
Bart Waldron
Owner
Aztec, NM

Bob Gerding's Outdoor Adventures
Bob Gerding
Owner
Albuquerque, NM

Bosque Chapter (Trout Unlimited)
Dave Probst
President
Albuquerque, NM

Charlie's Sporting Goods
Chuck Domenici
Partner
Albuquerque, NM

Dave's Wildlife Studio
David Thornburg
Owner
Albuquerque, NM

Dona Ana County Associated Sportsmen
John N. Cornell
President
Las Cruces, NM

Enchanted Circle Chapter (Trout Unlimited)
Nick Streit
President
Taos, NM

Final Approach Chapter (Delta Waterfowl)
Luke Pelt
President
Clovis, NM

Fire Power Gun and Pawn
Larry Wimbrow
Owner
Ruidoso, NM

Float 'N Fish
Ray and Wanda Johnston
Owners
Navajo Dam, NM

Gila / Rio Grande Chapter (Trout Unlimited)
Jeffrey B. Arterburn
President
Las Cruces, NM

Gila Resources Information Project
Allyson Siwik
Executive Director
Silver City, NM

High-Lonesome Books
M.H. Salmon
Owner
Silver City, NM

High Desert Angler
Jarrett Sasser
President
Santa Fe, NM

Land of Enchantment Guides
Noah Parker
Owner
Velarde, NM

Los Pinos Fly and Tackle Shop
Mark and Cindy Sawyer
Owners
Albuquerque, NM

Mesilla Valley Longbeards Chapter (NWTF)
Jim Bates
President
Las Cruces, NM

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| | |
|---|--|
| New Mexico Backcountry Hunters & Anglers Oscar Simpson Chairman Albuquerque, NM | Rio Grande Return Alan Hamilton, PhD President Santa Fe, NM |
| New Mexico Council of Trout Unlimited Arnold Atkins Chairman Santa Fe, NM | Soaring Eagle Lodge Larry Johnson Owner Navajo Dam, NM |
| NMSU Student Chapter (American Fisheries Society) Seth Hall President Las Cruces, NM | Southwest Consolidated Sportsmen Sanford Schemnitz President Las Cruces, NM |
| New Mexico Wildlife Federation Jeremy Vesbach Executive Director Albuquerque, NM | SweetRock RodSmiths Bruce Smith Master RodSmith Edgewood, NM |
| New Mexico Trout Pat Mileschosky President Albuquerque, NM | Takem Custom Calls Brian Hagerty Owner Albuquerque, NM |
| Pescador Solitario, LLC Mark Cowan & Raquel Moncado Owners Taos, NM | Talstar Lodge Alaska Mike Gill Co-Owner Albuquerque, NM |
| Qualifly Products Joseph Banik Owner Albuquerque, NM | Taos Fly Shop Nick Streit Owner Taos, NM |
| Rainbow Lodge & Resolution Guide Service Chris & Karin Guikema Owners Navajo Dam, NM | Truchas Chapter (Trout Unlimited) Toner Mitchell President Santa Fe, NM |
| The Reel Life Toner Mitchell Operations Manager Santa Fe, NM | Tularosa Archery Pro Shop James Lucero Owner Tularosa, NM |

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United Bowhunters of New Mexico
 Jesse W. Deubel
 President
 Albuquerque, NM

Wild Turkey Sportsmen's Association
 C.J. Goin
 President
 Las Cruces, NM

Zia Sporting Goods
 Blake Stewart
 Owner
 Farmington, NM

New York (20)

Art Flick Chapter (Trout Unlimited)
 George Costa
 President
 Medford, NY

Catskill Mountains Chapter (Trout Unlimited)
 Ron Urban
 President
 Kingston, NY

Chenango Valley Chapter (Trout Unlimited)
 Sam Scafidi
 President
 McDonough, NY

Columbia Greene Chapter (Trout Unlimited)
 Vincent DuBois
 President
 Tivoli, NY

Cortland Line Sales, LLC
 Brian P. Ward
 Chief Executive Officer
 Cortland, NY

Hungry Trout Fly Shop
 Evan Bottcher
 Owner / Manager / Guide
 Wilmington, NY

JP Ross Fly Rods
 Jordan Ross
 Owner
 Whitesboro, NY

Mohawk Valley Chapter (Trout Unlimited)
 Ken Ziobro
 President
 Whitesboro, NY

Neversink River Guide Service
 Art Salomon
 Owner
 Forestburgh, NY

New York Council (Trout Unlimited)
 Diane Maciejewski
 Council Chair
 Elma, NY

North Flats Guiding, LLC
 David Blinken
 Owner
 New York, NY

O.A. Mustad & Son (USA), Inc.
 Jeff Pierce
 Sales Manager – North America
 Auburn, NY

Royal Wulff Products
 Douglas Cummings
 President
 Livingston Manor, NY

Rugged Intellectual, Inc.
 Matt Smythe
 President
 Canandaigua, NY

S.W.A.T. Fishing Guide Service
 Eric Geary
 Owner / Guide
 Pulaski, NY

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Theodore Gordon Flyfishers
Mark Romero
Conservation Committee
Roscoe, NY

Tri-Lakes Chapter (Trout Unlimited)
Steve Wilcox
President
Saranac Lake, NY

Urban Angler, LLC
Jonathan Fisher
Managing Member
New York, NY

Western New York Chapter (Trout Unlimited)
Gary Coons
President
North Tonawanda, NY

Wild Trout Flyrodders, Inc.
Glenn Erikson
President
Long Flat, NY

North Carolina (18)

Blue Ridge Chapter (Trout Unlimited)
Michael Davis
President
Winston Salem, NC

Cataloochee Chapter (Trout Unlimited)
Joe Panella
President
Waynesville, NC

Chattahoochie Nantahala Chapter (TU)
Harold Hogan
President
Hayesville, NC

The Green Drake
Stewart Gordon
Owner
Winston Salem, NC

Hunter Banks Company
Frank Smith
Owner
Asheville, NC

Jake Jordan's Fishing Adventures
Capt. Jake Jordan
Owner
Havelock, NC

Land O'Sky Chapter (Trout Unlimited)
Larry Puckett
President
Asheville, NC

Nantahala River Lodge
Annette Youmans
Owner
Topton, NC

Nat Greene Fly Fishers Chapter (Trout Unlimited)
Charles Tuttle
President
Greensboro, NC

North Carolina Camouflage Coalition
Dick Hamilton
Coordinator
Raleigh, NC

North Carolina Council (Trout Unlimited)
Dale Klug
Council Chair
Arden, NC

North Carolina Wildlife Federation
Tim Gestwicki
Executive Director
Charlotte, NC

Pisgah Chapter (Trout Unlimited)
Mark Byington
President
Hendersonville, NC

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

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Rocky River Chapter (Trout Unlimited)
 Bill Thomas
 President
 Charlotte, NC

Sportsman's Toy Store
 Earl Dail
 President
 New Bern, NC

Table Rock Chapter (Trout Unlimited)
 Kim Scronce
 President
 Morganton, NC

Triangle Fly Fishers Chapter (Trout Unlimited)
 Terry Sues
 President
 Raleigh, NC

Wing & Fly Company
 Brandon L. Price
 Owner / Guide
 Greensboro, NC

North Dakota (1)

Jason Mitchell Outdoors
 Jason Mitchell
 Owner / Guide
 Devils Lake, ND

Ohio (8)

Anglers Choice Flies
 Mike Schmidt
 Owner
 Dublin, OH

Flybum Media Productions
 Patrick Robinson
 Owner/Operator
 Middlefield, OH

Havalon Knives
 Patrick Carrothers
 President & CEO
 Cincinnati, OH

Mohican Fly Fishers of Ohio
 Nick Contini
 Board of Directors
 Mansfield, OH

Ohio Council (Trout Unlimited)
 Tom Allen
 National Leadership Council Representative
 Lewis Center, OH

Ohio Division (Izaak Walton League of America)
 Raymond Zehler
 Executive Director
 Hamilton, OH

Senyo's Steelhead Alley Outfitters
 Greg Senyo
 Owner/Operator
 Holland, OH

SmithFly Designs
 Ethan Smith
 Principal
 Troy, OH

Oklahoma (4)

Eighty Niner Chapter (Trout Unlimited)
 Greg Mann
 President
 Midwest City, OK

Indian Nations Council (Trout Unlimited)
 Scott Hood
 National Leadership Council Representative
 Broken Arrow, OK

Oklahoma Chapter (Trout Unlimited)
 Scott Hood
 President
 Broken Arrow, OK

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Tulsa Fly Fishers (Federation of Fly Fishers)
 Scott Hood
 President
 Broken Arrow, OK

Oregon (51)

The Ashland Fly Shop
 Will Johnson
 Owner
 Ashland, OR

Backcountry Fly Shop
 Jerry and Cathi Von
 Owners
 Corvallis, OR

Bauer Premium Fly Reels, Inc.
 Jon & Barbara Bauer
 Owners
 Ashland, OR

Berkley Conservation Institute / Pure Fishing
 Jim Martin
 Conservation Director
 Mulino, OR

Beulah Fly Rods
 James Shaughnessy
 Owner
 Medford, OR

Brian Silvey's Flyfishing Guide Service
 Brian Silvey
 Owner / Guide
 Maupin, OR

Cascadia Fly Shop
 Wes Campbell
 Owner
 Corvallis, OR

Cascadia Vehicle Tents
 Robert Culpepper
 Managing Operator
 Bend, OR

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Catch Magazine
 Brian O'Keefe
 Owner
 Powell Butte, OR

Clacka Craft
 Bruce Belles
 President
 Clackamas, OR

Daxfly Fishing
 Dax Messett
 Owner / Guide
 Grants Pass, OR

Deep Canyon Outfitters
 Damien Nurre
 Owner
 Bend, OR

Deschutes Angler Fly Shop
 Amy Hazel
 Owner / Guide
 Maupin, OR

Deschutes Chapter (Trout Unlimited)
 Ted Brownrigg
 President
 Bend, OR

Deschutes River Camp
 Matt Paluch
 Owner
 Madras, OR

Deschutes River Fishing Company
 Warren D. Snyder
 Owner
 Camp Sherman, OR

ExpeditionMatch.com
 Adam Hughes
 Owner
 Bend, OR

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ffp Compound Rods
Phil Hager
Owner
Gresham, OR

Fish Head Expeditions, LLC
Jerry Swanson
Owner
Portland, OR

Fish On! Fly & Tackle, LLC
Michael Unruh
President
Milwaukie, OR

Fly & Field Outfitters
Scott Cook
Owner
Bend, OR

The FlyBook
Craig Langer
Owner
Hillsboro, OR

Flyfishing & Tying Journal
Frank Amato
Publisher
Portland, OR

FLYTREKS
Doug Brady
Owner
Bend, OR

Flywater Travel
Ken Morrish
Co-Owner
Ashland, OR

Frank Amato Publications, Inc.
Frank Amato
Publisher
Portland, OR

Homewaters Fly Fishing
James O. Brown
Owner
Eugene, OR

Jim Teeny, Inc.
Jim Teeny
President
Gresham, OR

Koffler Boats, Inc.
Bruce & Elaine Koffler
Owners
Eugene, OR

Lake in the Dunes
Russell Scott
Owner
Summer Lake, OR

Little Creek Outfitters
Marty & Mia Sheppard
Owners
Brightwood, OR

Mainstream Outdoors
Bruce Berry
Owner
Oregon City, OR

McKenzie-Upper Willamette Chapter (TU)
Karl Mueller
President
Eugene, OR

Morrison's Rogue River Lodge
Zac Kauffman
Outdoor Operations Manager
Merlin, OR

Northwest Angling Experience
Chris Vertopolous
Owner / Operator
Tillamook, OR

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Northwest Connection
Nolan Davis
Owner / Guide
Philomath, OR

Northwest Sportfishing Industry Assoc.
Liz Hamilton
Executive Director
Oregon City, OR

Oregon Council (Trout Unlimited)
Tom Wolf
Chairman
Hillsboro, OR

Oregon Pack Works
Karl J. Findling
President
Bend, OR

River City Fly Shop
Don Nelson
Owner
Beaverton, OR

Rod and Reel Adventures
Dale Williams
Owner
Eugene, OR

Rogue Flyfishers (Federation of Fly Fishers)
John G. Ward
Conservation Chair
Medford, OR

Royal Treatment Fly Fishing
Joel La Follette
Owner
West Linn, OR

Salmon & Steelhead Journal
Pat Høglund
Publisher
Portland, OR

Salmon Trout Steelheader
Frank Amato
Publisher
Portland, OR

Spirit River, Inc.
Bill Black
President
Roseburg, OR

STEAMBOATERS
Leonard A. Volland
President
Roseburg, OR

Stream to Sea Travel
Judith O'Keefe
Owner / Operator
Powell Butte, OR

Traveling Angler
Pat Høglund
Publisher
Portland, OR

Tualatin Valley Chapter (Trout Unlimited)
Mike Gentry
President
Portland, OR

Wild Rivers Coast Chapter (Trout Unlimited)
Carl Page
President
Brookings, OR

Pennsylvania (18)

2Bonthewater Guide Service
Vincent Dick, Jr.
Owner / Guide
Oley, PA

Arrowhead Chapter (Trout Unlimited)
Gerald Potocnak
President
Sarver, PA

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Brodhead Chapter (Trout Unlimited)
Tom Battista
President
Bartonsville, PA

Caldwell Creek Chapter (Trout Unlimited)
Tom Savko
President
Columbus, PA

Chestnut Ridge Chapter (Trout Unlimited)
Scott Hoffman
Treasurer
Uniontown, PA

Donegal Chapter (Trout Unlimited)
Wayne Boggs
President
Ephrata, PA

The Fly Fishing Show
Chuck Furimsky
Director / Owner
Rockwood, PA

Fly Fishing Top-2-Bottom TV
Charlie Charlesworth
Host/Producer
Clarks Summit, PA

Frontiers Travel
Stew Armstrong
Senior Program Manager, Freshwater
Wexford, PA

Hardy North America
James Murphy
President
Lancaster, PA

Laurel Highlands Guide Services
Jim DiBiase
Owner / Guide
Melcroft, PA

Lloyd Wilson Chapter (Trout Unlimited)
Bill Bailey
President
Lock Haven, PA

No Brainer Expeditions
Glenn Burgess
Owner / Head Guide
Boiling Springs, PA

Northwest PA Chapter (Trout Unlimited)
R. Lee Bloom, D.O.
President
Fairview, PA

Pennsylvania Council (Trout Unlimited)
Ken Undercoffer
Council Chair
Bellefonte, PA

Pennsylvania Federation of Sportsmen's Clubs
Ted Onufrak
President
Harrisburg, PA

Tri-County Trout Club
Stephen Hegedus
President
Lower Burrell, PA

Valley Forge Chapter (Trout Unlimited)
Pete Goodman
President
Malvern, PA

South Carolina (6)

Chattooga River Chapter (Trout Unlimited)
Brian Petersen
President
Liberty, SC

The Fiberglass Manifesto
Cameron Mortenson
Sole Proprietor
Gilbert, SC

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Free Fly Apparel
Tanner Sutton
Owner
Charleston, SC

Mountain Bridge Chapter (Trout Unlimited)
James Hopkins
President
Taylors, SC

Saluda River Chapter (Trout Unlimited)
Shawn Kenney
President
Columbia, SC

South Carolina Council (Trout Unlimited)
Meta Armstrong
Council Chair
Greenville, SC

South Dakota (6)

Cold Snap Outdoors
Dan Houg
Founder & CEO
Sioux Falls, SD

Custom Accessories
Royce Merritt
Owner
Harrisburg, SD

Dakota Angler & Outfitter
Hans Stephenson
Owner
Rapid City, SD

Dakota Chapter (Trout Unlimited)
Royce Merritt
President
Harrisburg, SD

South Dakota Wildlife Federation
Chris Hesla
Executive Director
Pierre, SD

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

The School of Fly Fishing
Katie Cole
Education Director
Lead, SD

Tennessee (4)

Little River Chapter (Trout Unlimited)
Rufus King
President
Friendsville, TN

Smoky Mountain Troutfitters
Sean M. McKay
Owner / Head Guide
Knoxville, TN

Strike King Lure Company
Allan W. Ranson
Chief Operating Officer
Collierville, TN

Tennessee Council (Trout Unlimited)
Rufus King
Council Chair
Friendsville, TN

Texas (20)

A Fishing Fantasy Guide Service & Outfitters
Captain Mike O'Dell
Co-Owner
Aransas Pass, TX

Allen Fly Fishing
Justin Geisel & Evan Burck
Owner & On Staff Pro
Southlake, TX

Class Five, LLC
Banning Collins
Owner
Austin, TX

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Coastal Experience / Skiff Gear
 Scott Sommerlatte
 Owner / Operator
 Lake Jackson, TX

Departure Publishing
 Tosh Brown
 Owner
 Austin, TX

Diablo Paddlesports
 Thomas Flemons
 Managing Partner
 Austin, TX

The Emu Outfitting Company
 Jim Kern
 President
 Arlington, TX

The Fly Photo
 Matt Jones
 Owner
 Dallas, TX

Gunn & Hook
 Jay Decker
 CEO / President
 Fort Worth, TX

Howler Brothers
 Chase Heard
 Founder
 Austin, TX

Lower Mountain Fork River Foundation
 Patrick Waters & Roger Turner
 Directors
 Dallas, TX

Marine Service Company
 Capt. Scott Meyer
 Owner
 Lindale, TX

Mountain Hideaway
 Kyle E. Jones
 President
 Lubbock, TX

ReserveFishing.com
 Craig Pettigrew
 Founder & Chief Executive Officer
 Oak Point, TX

Tailwaters Fly Fishing Company
 David Leake & Brent Boone
 Owners
 Dallas, TX

Temple Fork Outfitters
 Rick Pope
 President
 Dallas, TX

Tosh Brown Photography
 Tosh Brown
 Owner
 Austin, TX

Twintail Clothing
 Matt Jones
 Owner
 Dallas, TX

Wide Open Spaces
 Scott Calvin
 Director of Business Development
 Austin, TX

YETI Coolers
 Rick Wittenbraker
 Vice President, Marketing
 Austin, TX

Utah (9)

Fishwest, Inc.
 Dustin Carlson
 President
 Sandy, UT

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Goat Head Gear, LLC
 Matthew Brown
 Owner
 Farmington, UT

Outlaw Adventures
 Dudley Campbell
 Owner
 Salt Lake City, UT

Ruta Locura, LLC
 Josh Leavitt
 Owner
 Ogden, UT

Titanium Goat
 DJ Leavitt
 Owner
 Ogden, UT

Trout Bum 2
 David Glater
 Owner / General Manager
 Park City, UT

Utah Council (Trout Unlimited)
 Robert Dibblee
 Council Chair
 Park City, UT

Western Rivers Flyfisher
 Ken Davis
 Manager
 Salt Lake City, UT

William Joseph
 Paul Swint
 Sales Manager
 West Jordan, UT

Vermont (6)

Central Vermont Chapter (Trout Unlimited)
 Paul Zuchowski
 President
 Richmond, VT

Green Mountain Anglers VT
 Shane Lawton
 Founder / President
 Colchester, VT

MadDog Chapter (Trout Unlimited)
 Clark Amadon
 President
 Moretown, VT

The Orvis Company
 Perk Perkins
 Chief Executive Officer
 Sunderland, VT

Southwestern Vermont Chapter (Trout Unlimited)
 Christine Penn
 President
 Manchester Center, VT

Vermont Council (Trout Unlimited)
 Paul Zuchowski
 Council Secretary
 Williston, VT

Virginia (7)

Dead Drift Flies
 Joshua D. Williams
 Owner
 Roanoke, VA

Dusty Wissmath Fly Fishing
 Dusty Wissmath
 Owner
 Bluemont, VA

Fly Rod Chronicles
 Curtis Fleming
 Host
 Winchester, VA

Hanover Fly Fishers, Ltd. LLC
 Harry W. Robertson, III
 Owner
 Hanover, VA

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Mossy Creek Fly Fishing
 Brian & Colby Trow
 Owners
 Harrisonburg, VA

Murray's Fly Shop
 Jeffrey Murray
 Owner / Guide
 Edinburg, VA

Virginia Fishing Adventures / Virginia Outside
 Tee Clarkson
 Owner
 Richmond, VA

Washington (60)

Angler's Obsession
 Aaron O'Leary
 Owner / Head Guide
 Ellensburg, WA

Backcast Outfitters, LLC
 Eric F. Rice
 President
 Woodland, WA

Bellevue-Issaquah Chapter (Trout Unlimited)
 Richard E. Farmer
 President
 Issaquah, WA

Brazda's Fly Fishing
 Jeff Brazda
 Owner / Head Guide
 Ellensburg, WA

CF Burkheimer Fly Rod Company
 Carl (Kerry) F. Burkheimer
 Owner
 Washougal, WA

Coastal Conservation Association Pacific NW
 Gary Loomis
 WA Chairman
 Vancouver, WA

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Deneki Outdoors
 Andrew Bennett
 President
 Seattle, WA

Duwamish-Green Chapter (Trout Unlimited)
 John Muramatsu
 President
 Seattle, WA

Emerald Water Anglers
 Dave McCoy
 Owner / Head Guide
 Seattle, WA

Emerging Rivers Guide Services
 Derek Young
 Owner / Head Guide
 Snoqualmie, WA

ExOfficio
 Steve Bendzak
 General Manager
 Seattle, WA

Far Bank Enterprises
 Travis Campbell
 President / CEO
 Bainbridge Island, WA

Filson
 Amy Terai
 Marketing Manager
 Seattle, WA

Fish First
 Gary Loomis
 President
 Woodland, WA

The Flyfish Journal
 Jeff Galbraith
 Publisher
 Bellingham, WA

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G. Loomis
Jim Lebson
Executive Director
Woodland, WA

Griff's Fly Fishing Adventures
Rod Griffin
Owner / Head Guide
Twisp, WA

Icicle Valley Chapter (Trout Unlimited)
Dave Moazed
President
Leavenworth, WA

Imaginary Trout Productions, LLC
Alan Green
Managing Member
Spokane, WA

Inland Empire Fly Fishing Club
Jason Mulligan
President
Spokane, WA

Klickitat Chapter (Trout Unlimited)
Tom Fritsch
President
Goldendale, WA

Little Stone Fly Fisher
Bob Triggs
Owner/Guide
Port Townsend, PA

Mack's Lure, Inc.
Bob Schmidt
President
Wenatchee, WA

Media Index Publishing Group
Brian Lull
Sales Director
Seattle, WA

MidStream
Seth Norman
Owner
Bellingham, WA

Mike Z's Guide Service
Mike Zavadlov
Owner / Guide
Forks, WA

Nate Treat Fishing
Nate Treat
Owner / Guide
Lynnwood, WA

North Fork Composites
Gary Loomis
Owner
Woodland, WA

North Kitsap – Bainbridge Island Chapter (TU)
Chris Taylor
President
Bainbridge Island, WA

Northshore Chapter (Trout Unlimited)
Chris Tompkins
President
Port Angeles, WA

Northwest Women Fly Fishers
Cynthia Hickey
Conservation Committee
Seattle, WA

Olympia Chapter (Trout Unlimited)
Bob Leingang
President
Olympia, WA

Pacific Fly Fishers
Michael Bennett
Owner
Mill Creek

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| | |
|--|--|
| Pautzke Bait Company, Inc. Casey Kelley President Ellensburg, WA | Rogue Outdoor Marketing Tyler Palmerton President Vancouver, WA |
| Peninsula Outfitters Captain Bill Drewry Owner Poulsbo, WA | Rvrfshr Products, LLC Todd Ripley Owner Seattle, WA |
| Primal Angler, LLC Ryan Davey CEO / Founder Seattle, WA | Sage Manufacturing Eric Gewiss Marketing Manager Bainbridge Island, WA |
| Puget Sound Fly Fishers Carl Zarelli Conservation Officer Tacoma, WA | Seattle Chapter (Izaak Walton League of America) Bruce McGlenn Vice President Seattle, WA |
| R & K Guide Service Rob Sweem Owner Rochester, WA | Sky Valley Chapter (Trout Unlimited) Max Jones President Monroe, WA |
| Rajeff Sports, LLC Tim Rajeff President Vancouver, WA | Spokane Falls Chapter (Trout Unlimited) Bill Abrahamse President Spokane, WA |
| Recycled Waders, LLC Patrick Jenkins Owner Seattle, WA | Spokane Fly Fishers Mike Berube President Spokane, WA |
| Red's Fly Shop, LLC Joe Rotter Partner Ellensburg, WA | SteelheadBeads.com Aldo G. Costa CEO Auburn, WA |
| Redington Tackle and Apparel Jen Gish Marketing Manager Bainbridge Island, WA | Steelhead & Salmon Conservation Society James Wilcox Secretary and Treasurer Olympia, WA |

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SunDog, LLC
 Dominick Vilella
 Owner
 Issaquah, WA

Swanny's Fishing
 Bill Swann
 CEO
 Yelm, WA

Tacoma Chapter (Trout Unlimited)
 Rosendo Guerrero
 President
 Lakewood, WA

Targus Fly & Feather, Inc.
 Wayne Richey
 President / CEO
 Woodland, WA

Washington Backcountry Hunters & Anglers
 Joe Mirasole
 Co-Chair
 Spokane, WA

Washington Council (Federation of Fly Fishers)
 Carl Johnson
 President
 Monroe, WA

Washington Council (Trout Unlimited)
 Bill Abrahamse
 Council Chair
 Issaquah, WA

Wild River Press
 Thomas Pero
 Publisher
 Mill Creek, WA

Wild Steelhead Coalition
 Rich Simms
 President
 Kirkland, WA

XRodz Fishing Redefined
 Jim Mercier
 Chief Executive Officer
 Seattle, WA

Yakima Chapter (Trout Unlimited)
 Jeff Barbee
 President
 Yakima, WA

West Virginia (6)

Blennerhassett Chapter (Trout Unlimited)
 Mike Merrifield
 President
 Davisville, WV

Jerry's Flies
 Gerald Davis
 Owner
 Bridgeport, WV

Mountaineer Chapter (Trout Unlimited)
 Randy Kesling
 President
 Bridgeport, WV

Revelation Mountain Outfitters
 Tony Dingess
 Owner / Outfitter
 Pecks Mill, WV

Upper Ohio Northern Panhandle Chapter (TU)
 Joseph Henthorn
 President
 Dillonvale, WV

West Virginia Council (Trout Unlimited)
 Philip Smith
 Council Chair
 Spencer, WV

Page 52 of 57

Wisconsin (20)

Aldo Leopold Chapter (Trout Unlimited)
 Michael Barniskis
 President
 Beaver Dam, WI

Badger Fly Fishers
 Bob Harrison
 Treasurer
 Madison, WI

Central Wisconsin Chapter (Trout Unlimited)
 Linn Beck
 President
 Winneconne, WI

Central Wisconsin Waterfowlers (Delta Waterfowl)
 Tim Zoromski
 Chairman
 Amherst, WI

Coulee Region Chapter (Trout Unlimited)
 Eric Rauch
 President
 La Crosse, WI

The Driftless Angler
 Mat Wagner
 Owner
 Viroqua, WI

Fly by Night Guide Service
 Damian Wilmot
 Owner / Guide
 Superior, WI

Fontana Sports Specialties
 Craig Amacker
 Fly Fishing Manager
 Madison, WI

Gary Engberg Outdoors
 Gary Engberg
 Chief Executive Officer
 Mazomanie, WI

Green Bay Chapter (Trout Unlimited)
 Paul Kruse
 President
 Green Bay, WI

Harry & Laura Nohr Chapter (Trout Unlimited)
 Brian Larson
 President
 Cassville, WI

Jacquish Hollow Angler
 Dave Barron
 Owner / Guide
 Richland Center, WI

Kiap-Tu-Wish Chapter (Trout Unlimited)
 Kyle Amundson
 President
 River Falls, WI

Northland Sales & Marketing
 Dave Gellatly
 Owner
 Ashland, WI

S.A. Bahn Rod Company
 Scott Bahn
 Rod Maker
 Neenah, WI

Southeastern Wisconsin Chapter (Trout Unlimited)
 Mike Kuhr
 President
 Milwaukee, WI

St. Croix Rods
 Paul Schluter
 President
 Park Falls, WI

Stream Dreams Outfitter
 John Nebel
 Owner / Guide
 Menasha, WI

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Tight Lines Fly Fishing Company
 Timothy C. Landwehr
 Owner
 De Pere, WI

Wisconsin Council (Trout Unlimited)
 Kim McCarthy
 Council Chair
 Green Bay, WI

Wyoming (11)

Blue Quill Fly Company
 Bob Krumm
 Owner
 Sheridan, WY

Cliff Outdoors
 Matt Cassel
 Owner
 Casper, WY

Fish the Fly Guide Service & Travel
 Jason Balogh
 Owner
 Jackson, WY

Flaming Gorge / Lower Green Chapter (TU)
 Calvin Hazlewood
 President
 Green River, WY

High Country Flies
 Howard Cole
 Manager
 Jackson, WY

Jackson Cardinal, Inc.
 Kirk Stone
 President
 Jackson, WY

North Fork Anglers
 Tim Wade
 Owner
 Cody, WY

Platte River Fly Shop
 Ryan Anderson
 Owner
 Casper, WY

Teton Flies
 Bryan Goe
 Director of Operations
 Jackson, WY

Upper Bear River Chapter (Trout Unlimited)
 Mark Tesoro
 President
 Evanston, WY

Wyoming Council (Trout Unlimited)
 Dave Sweet
 Chairman
 Cody, WY

Wyoming Fly Fishing Guide Service
 Ryan Anderson
 Owner
 Casper, WY

Yellowstone Fly Rods
 Bryan Goe
 Director of Operations
 Jackson, WY

International (55 from 23 Countries)

Argentina (1)

Southern Cross Land
 Stephen Vletas
 Founder & CEO
 Mendoza City, Mendoza

Australia (1)

Ken Orr's Tasmanian Trout Expeditions
 Ken Orr
 Owner / Operator / Guide
 Tasmania

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Bahamas (2)

Abaco Lodge
Oliver White
Managing Partner
Abaco Island

Bair's Lodge
Oliver White
Managing Partner
South Andros Island

Belize (2)

El Pescador Lodge
Alissa Flota
President / CEO
San Pedro Town

Turneffe Flats Resort
Craig Hayes
President
Turneffe Atoll

Canada (10)

Blue Collar Adventures
D.I. (Ian) Hay
Owner
Lytton, British Columbia

Calgary Women Fly Fishers Club
Mary E. Zolmer
President
Calgary, Alberta

Fish On Charter
Capt. Dave Fodor
Owner
Mississauga, Ontario

Fly Fusion Magazine
Chris Bird
Group Publisher
Calgary, Alberta

Islander Reels
Barry Foster
Manager
Saanichton, British Columbia

Quebec Sporting, Inc.
Ann Smith
Owner
Gaspé, Quebec

Shallow Water Drift Company
Gene Aquilini
Owner
Calgary, Alberta

Skeena Wilderness Fishing Charters, Ltd.
Stan Doll
Owner
Terrace, British Columbia

Torrent
Bruno Isabelle
Operations Director
Sherbrooke, Quebec

Wilson's Fly Fishing
Jim Wilson
Owner
Toronto, Ontario

Chile (1)

Fly Fishing the Run
Cristian Rodriguez Oro
Owner
Santiago

Costa Rica (1)

Brodin Landing Nets
Chris Brodin
Owner
Coronado

Page 55 of 57

Finland (1)

Vision Group, Ltd.
Tuomas Rytkonen
Product Manager
Hyvinkaa

France (2)

Phoenix Lines, Ltd.
Mike and Jean Brookes
Director & Company Secretary
France

Planet Fly Fishing
Olivier Lauzanne
Owner
Boulogne, Billancourt

Holland (1)

Mustad International Group BV
Ole Mustad
Owner and Director
Kempen

Honduras (1)

Fly Fish Guanaja
Steven Brown & Scott Duncan
Owners
Guanaja

Iceland (1)

Fly Fishing in Iceland
Gudmundur Atli Asgeirsson
Owner / Guide
Hafnarfjordur

Japan (1)

Kabuto Rods
Yasuyuki Kabuto
Owner
Sapporo, Hokkaido

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

Kenya (1)

Johnflies Fly Factory, Ltd.
John Sheunda Wanyonyi
President
Nairobi

Namibia (1)

Proguiding
John Wambach
Owner
Okahandja

New Zealand (1)

Wild Angler
Casey Cravens
Owner
Dunedin

Nicaragua (1)

Fly Fishing Little Corn
Brandon Fawcett
Owner / Operator
Little Corn Island

Republic of Panama (1)

Come Fish Panama
Capt. Kerry Leggett
Owner
Boca Chica

Singapore (1)

Spinmade Oy
Samuli Orko
Co-Founder / Vice President – Asia Pacific
Singapore

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Spain (1)

Flymage Magazine
Jose H. Weigand
Editor
Madrid

Switzerland (1)

Alaska Info
Thomas Eckert
Owner
Zurich

United Kingdom (20)

Aardvark McLeod International Fly Fishing Specialists
Peter McLeod
Managing Director
Tidworth, Hampshire

Albury Game Angling
Peter Cockwill
Owner
Albury, Surrey

Cox & Rawle
John Waltham
Operations Manager
Wincanton, Somerset

Dragon Tackle International, Ltd.
Terry Clease
Managing Director
Llangan, Vale of Glamorgan

European Fishing Tackle Trade Association
Jean-Claude Bel
Chief Executive Officer
London, England

Famous Fishing
William Daniel
Managing Director
Salisbury, Wiltshire

Fish and Fly, Ltd.
Paul Sharman
Editor
Worth, West Sussex

FishingMatters Ltd.
Mark Hamnett
Managing Director
Wincanton, Somerset

Fly Fisher Group, Ltd.
Henry Mountain
Director
Lechlade, Gloucestershire

Fulling Mill Limited
John Wolstenholme
Director of Sales & Marketing
Salfords, Surrey

The Game Angling Consultancy
Capt. Tony Spacey
Managing Director
Derby, Derbyshire

Gamefish
Nick Armstead
Managing Director
Edinburgh, Scotland

Halstead and Bolton International Sporting Agents
Jim Curry
Partner
Ilkley, West Yorkshire

Hardy & Grey's Limited
Richard Sanderson
Former Managing Director
Alnwick, Northumberland

Midlands Fly Fishing School & Guide Service
Steve Yeomans
Owner
Forsbrook, Staffordshire

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (August 2013)

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Partridge of Redditch
Paula Haskins
Business Manager
Wincanton, Somerset

Richard Wheatley Limited
Mark Woof
Managing Director
Malvern, Worcestershire

Roxton's Worldwide
Charlie White
Director of Fishing
Hungerford, Berkshire

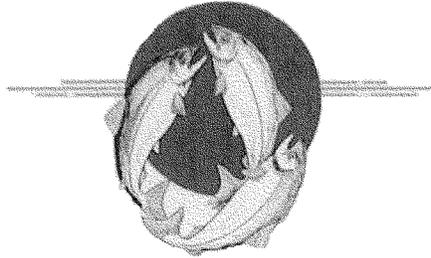
That Fly
David King
Owner
Wokingham, Berkshire

Turrall Flies
Simon Jefferies
Sales Director
Winkleigh, Devon

West Yorkshire Fly Fishing Services
Gary Hyde
Owner and Guide
West Yorkshire

Venezuela (1)

Sight Cast
Chris Yrazabel
President
Los Roques



**Comments of the United Tribes of Bristol
Bay on the Hearing before the U.S. House
of Representatives Committee on Science,
Space, and Technology – Subcommittee
on Oversight:**

**EPA'S BRISTOL BAY WATERSHED ASSESSMENT - A
FACTUAL REVIEW OF A HYPOTHETICAL MINE**

AUGUST 1, 2013

I. Introduction

The United Tribes of Bristol Bay (UTBB) is a consortium organized by federally recognized tribes in Alaska's Bristol Bay region. UTBB is submitting this comment on behalf of its member tribal governments¹ in response to the August 1 hearing before the U.S. House of Representatives Committee on Science, Space, and Technology – Subcommittee on Oversight entitled *EPA's Bristol Bay Watershed Assessment—A Factual Review of a Hypothetical Mine*. UTBB's membership consists of tribes from across the Bristol Bay region; from Nondalton, the village closest to the Pebble deposit, to New Stuyahok, the first village down the Nushagak River from the proposed mine site. This comment is designed to emphasize the importance of EPA's Bristol Bay Watershed Assessment (BBWA) and its analysis of the potential impacts to the salmon-based subsistence culture existing in Bristol Bay and the threat that large scale mining poses to that culture.

In August 2010, six Bristol Bay tribes—all of which are UTBB members—sent a petition to EPA requesting that the agency take action to curtail or prevent potential mining projects that would negatively impact the Nushagak and Kvichak rivers. In answering that petition, EPA engaged in the process of developing a comprehensive science-based watershed assessment addressing the potential mining related impacts to Bristol Bay's waters, salmon, wildlife, and most importantly, its Native people. In developing the second revised draft of the BBWA, EPA incorporated the comments and suggestions of the tribes and expanded the scope of the BBWA to include potential mining-related impacts on such things as: non-salmonid fish species, waterfowl and shore birds, terrestrial mammals, and edible plants. The BBWA also includes

¹ Currently, UTBB's member tribes are: 1) Nondalton Tribal Council; 2) New Stuyahok Traditional Council; 3) Levelock Village Council; 4) Curyung Tribal Council; 5) Ekuk Village Council; 6) Ekwok Village Council; 7) Manokotak Village Council; 8) New Koliganek Village Council; and 9) Traditional Council of Togiak. However, part of UTBB's mission is engaging and encouraging other federally recognized tribes in the region to join the consortium as member tribes.

expanded analysis on the salmon-based subsistence culture practiced by the Yup'ik Eskimos and Dena'ina Indians of Bristol Bay. This spring, UTBB passed a resolution thanking EPA for working together with its tribal partners to incorporate this important information into the BBWA. UTBB wholeheartedly agrees with the BBWA's ultimate conclusion that any harmful environmental impacts on Bristol Bay's salmon populations will translate into harmful cultural impacts to Bristol Bay's tribal communities.²

II. The BBWA conclusively demonstrates that the development of the Pebble mine and associated mineral deposits will threaten the existence of the salmon-based subsistence culture practiced by the Yup'ik Eskimos and Dena'ina Indians of Bristol Bay.

One of the more important additions made to the 2013 BBWA is the synthesis of the environmental impact analysis with the established cultural and traditional knowledge of Bristol Bay's tribal communities. The BBWA's appendix contains a report (hereinafter the "Report") from Doctors Boraas and Knott, leading anthropologists in Bristol Bay's Native cultures, detailing many of the traditional hunting, fishing, and religious practices of the region's tribal communities. Most importantly, the Report describes with precision the threats posed to these traditional practices by changes in the surrounding environment—particularly changes resulting from mineral development. Because a full reiteration of the Report's contents is unnecessary, UTBB will only highlight the Report's key findings and discuss how those findings are incorporated into those chapters concerning mineral development.

A. The Report effectively details the unique nature of the salmon-based subsistence culture practiced by the Yup'ik Eskimos and Dena'ina Indians of Bristol Bay.

² ALAN S. BORAAS & KATHERINE H. KNOTT, *Traditional Ecological Knowledge and Characterization of the Indigenous Cultures of the Nushagak and Kvichak Watersheds, Alaska, AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA*, Vol. 2, Appendix D 165 (2013).

The Yup'ik Eskimos and Dena'ina Indians of Bristol Bay represent two of the last remaining "salmon cultures" in the world.³ This salmon culture has gone unbroken for at least 4,000 years.⁴ This unbroken link is reflected today in the fact that Bristol Bay salmon consist of nearly 82% of the subsistence diet in the region.⁵ One of the strongest portions of the Report is the section detailing the subsistence way of life practiced by Bristol Bay's Yup'ik and Dena'ina residents.

A prime example of the Report's thoroughness is its section discussing subsistence and employment. Neither state nor federal labor statistics identify subsistence practices as "employment," thus traditional employment reports show a high level of unemployed residents in the region.⁶ However, as the authors correctly point out, the subsistence way of life is already year-round, full time work.⁷ Those individuals practicing the subsistence way of life devote innumerable hours per year preparing nets, boats, smokehouses, and other equipment just in *preparation* for the summer salmon runs.⁸ The interviews of residents show that subsistence is viewed as a full time job, while wage employment is viewed more as a method to facilitate subsistence practices.⁹ This view of subsistence as full time employment also translates into prevailing views of material wealth. When asked by the authors how they define "wealth" or "riches," fifty out of fifty-three local respondents defined it in terms of a full freezer or a good stockpile of subsistence foods.¹⁰ Bristol Bay's Yup'ik and Dena'ina residents consider themselves the richest people in the world.¹¹

³ *Id.* at 164.

⁴ *Id.* at 173.

⁵ *Id.* at 240.

⁶ *Id.* at 247-48.

⁷ Boraas and Knott, *supra* n. 2, at 248.

⁸ *Id.* at 250.

⁹ *Id.*

¹⁰ *Id.* at 278.

¹¹ *Id.* at 279.

Beyond just subsistence harvests, salmon also serve an important cultural role. A major theme of the Report is that the Yup'ik and Dena'ina are “salmon people.” As one respondent put it, “[s]almon more or less defines this area. . . . It is who we are; *it defines us.*”¹² This identification as “salmon people” permeates into nearly all aspects of the Yup'ik and Dena'ina culture. It is incorporated into their language, visual art, songs, and dance.¹³ This salmon-centric universe is also incorporated into Christian religious teachings. The Russian Orthodox Church—the predominate religion in the region—integrates several salmon-based ceremonies into church doctrine and instruction.¹⁴ Annual salmon-based Orthodox practices include the “First Salmon Ceremony” (blessing and thanking the first-caught salmon of the season) and the “Blessing of the Waters Ceremony” (a winter event in which the river itself is blessed and its water declared holy).¹⁵ These examples are only a small sampling of the salmon-centric culture that exists in Bristol Bay, but they demonstrate the unique value that the five species of Pacific salmon have to the region's Native people. Salmon are more than just a food source. They are the foundation of an entire culture which has existed with little interruption for nearly 4,000 years. If the local interviews demonstrate anything, it is that this salmon-based culture is one that the Native people of Bristol Bay desire to keep.

B. The BBWA's chapters on mining impacts effectively demonstrate how the above-described salmon culture will be threatened by large-scale hard rock mining in Bristol Bay.

Of the BBWA's fifteen chapters, four directly address the potential mining impacts to Bristol Bay's salmon-based subsistence culture. As with the previous discussion of the Report, it is beyond the scope of this comment to reiterate or summarize the findings in all the chapters, but

¹² *Id.* at 163 (emphasis added).

¹³ *Id.* at 219.

¹⁴ Boraas and Knott, *supra* note 2, at 291.

¹⁵ *Id.*

there is a central theme evident throughout: the development of large-scale hard rock mineral deposits in the Nushagak and Kvichak watersheds will have a devastating impact on salmon—the foundational subsistence species in the region.

Chapter 12 details how negative impacts on salmon will in turn impact non-salmonid fish, terrestrial animals, and Alaska Natives. The information in this chapter is incredibly important because, as the authors point out, salmon are not only the primary source of the human subsistence diet—they are also food for other subsistence species.¹⁶ Beyond just humans, salmon serve as a crucial food source for terrestrial mammals, waterfowl and shore birds, freshwater non-salmonid fish, and freshwater invertebrates.¹⁷ Based on data collected from Alaska's Arctic Slope region, the authors describe impact scenarios where a foundational subsistence species is threatened or diminished. The scenarios include: 1) an increased scarcity or contamination resulting in transitions from subsistence diets toward packaged foods; 2) traditional places of cultural exchange, such as hunting grounds and fish camps, are diminished or lost; 3) religious and moral doctrines based on subsistence worldviews are questioned or lost; and 4) individuals and families begin moving from villages to urban centers in search of full-time wage employment.¹⁸

Although the above list of scenarios is based on examples from a different region in Alaska, the interviews conducted by Boraas and Knott show many of these situations are already causing concern in the region's communities while others *are already occurring* in the Nushagak and Kvichak watersheds. During the first public comment period on the BBWA, area residents described to EPA officials the environmental damage they were witnessing around the Pebble

¹⁶ Environmental Protection Agency, AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA, (2013) 481.

¹⁷ *Id.* at 171-75. Chapter 5 of the BBWA, entitled "Endpoints," is especially important in establishing the interconnectedness of salmon and with the region's other land and water wildlife species.

¹⁸ *Id.* at 486-87.

site. Witnesses described the harmful effects of spilled fuel oil, drilling mud, and other chemical products onto the tundra.¹⁹ Negative impacts caused by the exploration activity in turn effect the waters and wildlife of the surrounding area. At the public hearing in New Stuyahok, one resident described the comprehensive nature of the exploratory activity's impacts: "[t]hey have drilled 1,200 bore holes some more than a mile deep and used fragile tundra and wetlands as their waste dump; [they have] crisscrossed subsistence areas with tens of thousands of helicopter flights, and removed millions of gallons of water from streams and ponds that support spawning salmon and other freshwater fishes."²⁰

The damage caused by exploratory activity at the Pebble deposit is not just limited to the mining area. In fact, negative impacts are already being seen on migratory subsistence species relied upon by the region's Yup'ik and Dena'ina residents. For example, subsistence hunters who harvest in the upper Mulchatna River and Lake Clark areas are seeing changes in the migration of the Mulchatna caribou herd, a traditional subsistence food source.²¹ When asked why he thought the caribou no longer followed their traditional route, one elder responded:

The drill wells are making all the noise. We were over there, my wife and I were over there last spring, and when we went over there to check out the Pebble, there [we] saw three other helicopters right in the same area, and that's lots of traffic. We have not had caribou meat around here ever since. *Haven't had caribou meat caught here in probably the last six years.*²²

¹⁹ "[P]eople working on the road access to the Pebble Mine have already spilled a few hundreds of gallons of diesel. . . . Someone had parked a fuel truck on soft ground too close to an embankment. He told us that when he found the truck it had already spilled some of its load but he was able to stop it." Public Comment of Frederic Munro, subsistence fisherman, *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-5147>.

²⁰ Record of Public Comment Meeting, New Stuyahok, Alaska at 7-9, Kimberly Williams, *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4154>.

²¹ Environmental Protection Agency, AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA, (2013) 173.

²² Boraas and Knott, *supra* n. 2, at 296 (emphasis added).

Another elder stated, “[s]ince the Pebble Mine started their exploration, I speak for everyone around here that we have not had the big caribou herds that come through here anymore.”²³ Changes are not just limited to terrestrial animals. Members of UTBB’s own leadership have noticed declines in sockeye salmon in the upper-Mulchatna and Koktuli Rivers. This decline places a difficult burden on subsistence users because the spawned-out sockeye salmon in those rivers (referred to as “red fish”) play a vital role in filling out the late-season subsistence harvest.²⁴ It is no secret to those who live in the area and who have traditional knowledge of the land that mineral exploration is already having negative impacts on subsistence. As one tribal member summarized it: “I’d like to reconfirm that the animals and fish that used to be up there are already disappearing. Every bend of that river we used to come across some form of game up there. *Now there is nothing.*”²⁵

Chapter 13 discusses the cumulative impacts multiple mines would have in the region. UTBB would like to specifically draw attention to this important chapter. That is because this chapter confirms what many UTBB members already suspected—the Pebble deposit is so large, and will require so much infrastructure, that its development could serve as the impetus for a region wide mining district.²⁶ There are at least fifteen other large mining claims surrounding the Pebble deposit.²⁷ Many of these claims are too small to operate independently or provide the

²³ *Id.* at 295.

²⁴ One village elder described the versatility of red fish in the subsistence cycle: “[t]hat spring water [at Kijik]. It does not freeze. That is why you can go over there and get a sockeye salmon in March; it might have a green head, and it’s red, but it’s still a sockeye salmon. You can go over there on New Year’s Day and get a fresh sockeye salmon.” *Id.* at 199. See also *id.* at 267 (discussing the harvest of late-season sockeye salmon).

²⁵ Record of Public Comment Meeting, New Stuyahok Alaska at 27-28, Lucy A. Weedman, available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4154> (emphasis added).

²⁶ EPA, *supra* n. 16, at 499.

²⁷ *Id.* at 500.

necessary infrastructure to profitably operate.²⁸ However, these smaller claims would be able to utilize many of the amenities that a fully developed Pebble project would bring.²⁹

The possibility of a full scale mining district in the region would bring large power generation facilities, extensive road systems, and industrial facilities—features not yet seen in Bristol Bay.³⁰ With these “improvements” there will be, among other things, an increase in traffic, noise, and access to hunting and fishing areas between neighboring communities leading to increased competition.³¹ The cumulative effect of region wide mining will also exacerbate those impacts from the Pebble deposit already being felt by the villages in the Nushagak and Kvichak watersheds.³² Region-wide mineral development would further decrease traditional hunting and fishing areas while also reducing the amount of fish and game located within those areas.³³ No matter how many amenities mining brings to the region, the loss of subsistence fish and game species from cumulative mining-related stressors will be devastating to the Yup’ik and Dena’ina subsistence cultures.

III. The trust responsibility between United States and the Tribes required EPA to undertake the BBWA in order to best protect the salmon-based subsistence culture practiced by the Yup’ik Eskimos and Dena’ina Indians from the negative impacts of large-scale mining.

EPA, like all other federal agencies, owes a trust responsibility to the federally recognized tribes of Bristol Bay.³⁴ Part of that trust responsibility includes the affirmative duty to “protect the subsistence resources of Indian communities.”³⁵ In Alaska, this duty is

²⁸ *Id.*

²⁹ *Id.* at 502.

³⁰ *Id.* at 532.

³¹ EPA, *supra* n. 16, at 532.

³² *Id.* at 530. The authors estimate that at least 13 of the 14 villages in the watersheds would be affected.

³³ *Id.*

³⁴ Indian Entities Recognized and Eligible to Receive Services from the Bureau of Indian Affairs, 77 Fed. Reg. 47,868 (Aug. 10, 2012) (listing all UTBB’s member tribes as being tribes with a government-to-government relationship with the United States). See also *Nance v. EPA*, 645 F.2d 701, 711 (9th Cir. 1981).

³⁵ *People of Togiak v. United States*, 470 F. Supp. 423, 428 (D.D.C. 1979) (internal citations omitted).

particularly important given the unique history and laws surrounding Alaska Native tribes.³⁶ EPA has historically recognized the importance of the trust responsibility and was the first federal agency to develop government-to-government consultation procedures with tribes.³⁷ In accordance with its trust responsibilities, EPA developed the policy of “consult[ing] on a government-to-government basis with tribal governments when EPA actions and decisions may affect tribal interests,” while giving “special consideration to their interests whenever EPA’s actions may affect Indian country or other tribal interests.”³⁸

Large-scale hard rock mining will bring changes to Bristol Bay. What the BBWA effectively establishes is that few, if any, of those changes will benefit the subsistence culture practiced by Bristol Bay’s tribes. Residents in the region have already seen negative impacts to their subsistence resources as a result of mineral exploration.³⁹ Subsistence users in the Arctic have witnessed the same or similar events in their region.⁴⁰ If the BBWA’s data shows us anything, it is that mineral development and the subsistence way of life do not easily coexist.

IV. Conclusion

During the August 1 hearing, Committee members expressed concern that the BBWA and the 404(c) process would deny the Pebble Limited Partnership due process of law. UTBB would like to emphasize to the Committee two important facts. First, the 404(c) process is exactly that—a *process*—and one that has been employed reliably on thirteen separate occasions

³⁶ DAVID S. CASE & DAVID A. VOLUCK, *ALASKA NATIVES AND AMERICAN LAWS* 42 (3d. ed. 2012) (discussing the atypical history of the United States’ Alaska Native policy and the importance of federal statutes in developing a trust responsibility in the absence of formal treaties).

³⁷ EPA, *Policy on Consultation and Coordination with Indian Tribes*, at 2 (2012), <http://www.epa.gov/tp/pdf/cons-and-coord-with-indian-tribes-policy.pdf>.

³⁸ EPA, *Proposed Policy on Consultation and Coordination with Indian Tribes*, at 3, 6 (2010) www.epa.gov/tp/pdf/consultation-letter-policy-0610.pdf.

³⁹ Boraas and Knott, *supra* n. 2, at 296.

⁴⁰ EPA, *supra* n. 16, at 486-87.

since Congress passed the Clean Water Act.⁴¹ The 404(c) process is not illegal nor does it constitute a denial of due process to a company like the the Pebble Limited Partnership. Second, and most importantly, Bristol Bay's Yup'ik and Dena'ina residents deserve the certainty and finality the 404(c) process provides. Bristol Bay's residents have been dealing with Pebble-related issues for years. The prospect of large-scale mineral development in the region is a constant worry resulting in stress and division within our tribal communities. A Nondalton Tribal government official described the Pebble issue at a public hearing as "dividing our people for the past six or seven years. Family against family. Brother against brother."⁴² Another Nondalton resident shared his view of the situation:

What I have seen is a lot of tension, stress, and hard feelings from a region that I've always thought of as one, that has been able to house a lot of different Alaskan cultures that have such a spirit of hospitality, generosity and strength. It also hurts me to see friendships back away because of our various positions on [Pebble].⁴³

Without even having filed for a permit, the Pebble project is already causing environmental, social, and economic harm to Bristol Bay. It was for this reason the tribes petitioned EPA to step in and consider the 404(c) process. The years of community stress, fear, and confusion caused by the Pebble project must come to an end. UTBB, on behalf its member tribal-governments, implores the Committee to support EPA's efforts in fulfilling its trust responsibility to the federally recognized tribes of Bristol Bay and support the tribes' efforts in protecting their subsistence way of life.

⁴¹ See Chronology of 404(c) Actions, available at <http://water.epa.gov/lawsregs/guidance/wetlands/404c.cfm>.

⁴² Record of Public Comment Meeting, Nondalton Alaska at 3, Nancy Delkittie, available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4830>.

⁴³ Record of Public Comment Meeting, Nondalton Alaska at 13, Donne Fleagle, available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4830>.

UTBB would like to thank the Subcommittee on Oversight for holding this important hearing on Bristol Bay and the BBWA. UTBB would also like to extend an invitation to all Committee members to travel to the region's tribal communities to see firsthand the subsistence practices of the region's Yup'ik and Dena'ina residents. Hopefully, through the testimony, written comments, and their own visits to Bristol Bay the Committee's members will understand how unique the region is, not only because of its abundance of fish, wildlife, and wilderness, but also because it serves as the homeland of a truly unique culture that has survived there since time immemorial. Although some have criticized the work EPA is doing in the region, UTBB and its member-tribes welcome the BBWA and are fully supportive of EPA's actions and are eager to see the agency's publication of the final edition of the BBWA.

Again, thank you for allowing UTBB to supplement the record with these comments.



August 15, 2013

U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Re: Comments to the Subcommittee on Investigations and Oversight following the Hearing, "EPA's Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario"

Dear Chairman Broun and Members of the Subcommittee:

Bristol Bay Native Corporation (BBNC) thanks the Subcommittee on Investigations and Oversight for its August 1, 2013 hearing on the Bristol Bay Watershed Assessment and welcomes the opportunity to provide these comments to the Subcommittee for the hearing record. BBNC fully supports the testimony of expert witness Wayne Nastri.

BBNC is the Alaska Native regional corporation created by Congress pursuant to the Alaska Native Claims Settlement Act (ANCSA) to represent the economic, social, and cultural interests of the Alaska Native people from the Bristol Bay region. BBNC represents more than 9,300 Eskimo, Aleut, and Indian shareholders with present day or ancestral roots to the Bristol Bay region. BBNC supports responsible resource development, which we define as development that is fiscally, environmentally and socially sustainable and that serves the long-term interests of our people, our region, and our businesses. After careful study, BBNC made the decision in 2009 to oppose the proposed Pebble Mine because of the risks it poses to the wild salmon fisheries and other game resources that are the cultural and economic foundation of the region.

Because of the importance of Bristol Bay's ecological resources and world-class subsistence and commercial fishery, BBNC joined with nine Tribes from the Bristol Bay region, the commercial and sport fishing industries and others to petition EPA to take action under the Clean Water Act (CWA) Section 404(c) to protect the Nushagak and Kvichak watersheds from the harmful effects of large-scale mining operations. EPA responded to the petitions by conducting the Bristol Bay Watershed Assessment (BBWA). As described below, our review of the assessment is that it is, if anything, conservative in its findings about the potential impacts to Bristol Bay from large-scale mining in the region.

The information presented at the Subcommittee hearing underscored many of our concerns, and demonstrates why the EPA should promptly finalize the BBWA and use its 404(c) authority to

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establish performance standards that will ensure that any development in the region does not harm Bristol Bay's incomparable wild salmon resource, and the people and economies those salmon support. These performance standards would preclude any proposed mining plan discharges (1) into salmon habitat, (2) that is toxic to aquatic life, and (3) that would produce runoff or seepage that will require treatment in perpetuity.¹

I. THE EPA BRISTOL BAY WATERSHED ASSESSMENT IS WELL-FOUNDED IN SCIENCE, AND SUPPORTED BY RIGOROUS PUBLIC AND PEER REVIEW PROCESSES

EPA's analysis and findings are well-founded in facts and science, and based on a rigorous process for peer review and public input.²

EPA has relied on conservative assumptions and data to analyze the impacts from large scale hardrock mining on the Bristol Bay watershed and resources. For example, the BBWA assumes that *only* modern mining technologies and practices will be utilized in Bristol Bay and that these technologies and practices are in place and working properly at all times.³ The BBWA also assumes no significant human or engineering failures will occur during mine development and operation.⁴ And, perhaps most conservatively, the BBWA includes analysis of a 0.25 billion ton scenario—a mining scenario that is likely uneconomical to develop in such a remote area⁵—allowing EPA to include an extremely down-sized assessment of impacts to the Bristol Bay watershed.

¹ For a detailed explanation of these standards, see William M. Riley and Thomas G. Yocom, *Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts*, Prepared for the Bristol Bay Native Corporation and Trout Unlimited, (December 2011), available at http://www.bbnc.net/images/documents/pdf/2011Final%20Riley_Yocom_report.pdf.

² A full treatment of the information provided above, including references, is available in BBNC's comments to EPA on both drafts of the Bristol Bay Watershed Assessment. See BBNC, *Comments of Bristol Bay Native Corporation on the U.S. Environmental Protection Agency Draft Bristol Bay Watershed Assessment—Part I* (July 23, 2012), available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4382>; see also BBNC, *Comments of Bristol Bay Native Corporation on the U.S. Environmental Protection Agency Draft Bristol Bay Watershed Assessment—Part II* (July 23, 2012), available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4525>; and BBNC, *Comments of Bristol Bay Native Corporation on the Second External Review Draft of the Bristol Bay Watershed Assessment* (June 28, 2013), available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2013-0189-5438>.

³ EPA, *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*, Second External Review Draft, EPA 910-R-12-004Ba (April 2013), at ES-11 [hereafter "Revised Assessment"], available at http://www.epa.gov/ncea/pdfs/bristolbay/bristol_bay_assessment_erd2_2013_vol1.pdf.

⁴ *Id.* ("The assessment considers risks from routine operation of a mine designed using modern conventional mitigation practices and technologies and with no significant human or engineering failures.")

⁵ *Id.* at ES-9 ("Because these deposits are low grade . . . mining will be economic only if conducted over large areas.").

Despite these and other conservative assumptions, the BBWA nevertheless provides EPA with the detailed information on the Bristol Bay region, its people, and cultures necessary to inform its response to the 404(c) petitions. As BBNC explained to EPA in its comments on the BBWA, that document is scientifically sound, and its conclusions reflect a conservative view of the potential impacts on Bristol Bay salmon from the proposed Pebble Mine.

Further, EPA followed a rigorous public process in preparing its BBWA. This process included numerous public hearings in and outside of the Bristol Bay region, as well as ample opportunity for governments, industry and members of the public to provide written input to EPA on the assessment drafts. Quite notably, public input overwhelmingly supports EPA and its approach to protecting Bristol Bay. Indeed, to date nearly 900,000 public comments have been recorded on EPA's second BBWA draft, which as we understand it is among the most comments ever received by EPA for any of its public comment efforts. And, as Mr. Nastri pointed out to the Subcommittee, as it stands right now with that existing, and presumably close-to-final, docket, more than 76% of comments nationwide support EPA, with more than 97% of the commenters from Bristol Bay region supporting EPA. Our analysis also shows that more than 73% of Alaskans also support EPA, an overwhelmingly supportive number for any issue in our state.

Finally, EPA is doing a final peer review follow-up on the BBWA. In doing so it is using the same peer review panel that provided input to EPA on the first draft.

Consequently, when finalized, the BBWA will be a remarkably well-supported document.

II. ISSUES RAISED AT THE SUBCOMMITTEE HEARING SUPPORT THE APPROPRIATENESS OF AND NEED FOR PROMPT EPA ACTION

The Subcommittee hearing included a discussion of a number of issues related to the legal, scientific and policy foundation for EPA's assessment and potential 404(c) action, including the potential establishment of performance standards. We address a number of these issues below, and note that EPA is well-supported in all it has done, and is crafting a solid foundation from which to make a fully informed decision on whether and how to use its 404(c) authority to protect Bristol Bay.

1. EPA has the Authority to Conduct the BBWA

At the Subcommittee hearing, one of the issues prominently discussed was whether EPA possesses the authority to conduct the BBWA. The Clean Water Act Sections 104 and 404 provide ample authority for EPA to undertake the BBWA.⁶ In preparing such an assessment, EPA is required to conduct research, gather information, taking into account all information available, and set forth findings in writing to the public. This criticism of EPA has no foundation is also apparent from the

⁶ See BBNC, *Comments of Bristol Bay Native Corporation on the U.S. Environmental Protection Agency Draft Bristol Bay Watershed Assessment—Part II*, at 2-4 (July 23, 2012), available at <http://www.regulations.gov/#!documentDetail:D=EPA-HQ-ORD-2012-0276-4525> (detailed discussion of EPA's authority and requirements for developing a watershed assessment).

testimony of majority witness Mr. Lowell Rothschild, who agreed that EPA unequivocally has the legal authority under Section 104 of the Clean Water Act to conduct the BBWA.

In fact, the BBWA evidences an extremely cautious response by EPA to the 404(c) petitions coming from the Bristol Bay region, as it was our view that ample information existed at the time we petitioned EPA for it to make a well-founded 404(c) decision, even before the BBWA.

2. Delay in 404(c) Action Causes Social, Cultural and Environmental Harms

The people of Bristol Bay have been dealing with the threat posed by the Pebble Mine for nearly a decade, including the uncertainty it engenders for nearly all aspects of life in Bristol Bay – social, cultural, subsistence, economic and environmental. Any further delay in EPA action will cause significant and continued social and cultural disruption in the region, as well as environmental harms.

That such harms exist is supported by, among other evidence, Senator Lisa Murkowski, who recently wrote that Pebble Limited Partnership (PLP) has promised “imminent” action on the mine for “nearly a decade” but “after years of waiting, it is anxiety, frustration, and confusion that have become the norm” in many Alaska communities.⁷ It is precisely because of these years of anxiety and confusion – created entirely by PLP – that BBNC, nine federally recognized tribes, the commercial and sport fishing industries of Bristol Bay, and numerous conservation groups petitioned EPA to initiate action under Section 404(c).

The on-going harms to the people and environment of Bristol Bay can be broken into categories of social and cultural harms, economic and environmental harms. Some of these harms were discussed at the Subcommittee hearing, with the Chairman requesting additional information on them. The following provides further detail on each type of present and on-going harm, as documented to EPA throughout its BBWA public process.

a. Social and Cultural Harms

Throughout EPA’s six public hearings in the Bristol Bay region and two public comment periods totaling four months, a large portion of the comments from the Bristol Bay region expressed social and cultural concerns. These comments reflect the current and on-going cultural pressures resulting from exploration of the Pebble ore deposit, the ever-persistent uncertainty engendered by PLP and government inaction regarding the mine, as well as the direct threats of the proposed mine. Comments also discussed concerns over the increased presence of outside visitors, untrustworthy promises of money and jobs, fears of exploitation, and community tensions and fighting. Some examples of this include:

- “[W]e have a right to be afraid of what is happening, because we live in this land We have been in this battle long enough. We want to see something start happening that can

⁷ Letter from Senator Lisa Murkowski to John Shively, PLP CEP, Mark Cutafini, Anglo American CEO, and Ron Thiessen, NDM CEO (July 1, 2013), *available at* http://www.pebblewatch.com/images/stories/pdfs/LAM_Letter.pdf.

assure Alaska native people in this area that our waters, our way of life will continue to be protected.”⁸

- “As I stand here in front of you today, my mind isn’t really here. It’s at home with my children that I’ve left for the fourth time this month on Pebble-related causes. It’s on my subsistence net I was supposed to mend. It’s on getting fish ready, the birch trees we were supposed to cut, it’s on my cabin and boat rentals, it’s on my clients I get in seven days for the sport fishing opener. It’s on my school board meeting I’ll be missing. It’s on canning jars, bug spray for the baby, and another toy I’d better get for the quilt trip present. Standing here in front of you today, talking about a mining giant threatening my entire way of life wasn’t what I ever could have planned for . . .”⁹
- “Every year my freezer is full of meat, fish and berries from Bristol Bay. I look at this proposed mine as an attempt to take that from me, my children and future grandchildren. I believe with all of my heart that if this mine goes through, this will be the end of our lives as we know it. We will be forced to look to other sources for survival and will be forced to give up a part of our lives that is not just about food, but about a culture and a way of life.”¹⁰
- “Nondalton has already been heavily impacted by the mining exploration in the area. In the last six years, there has been a steady increase in visitors to the village, including scientists, researchers, reporters, mining companies, anti and pro Pebble people. . . . There is an increased level of stress . . . The survival of our culture directly depends on the health of our land, the fish and the wildlife.”¹¹
- “[Y]ou have a lot of people concerned about the future and who knows what the future is.”¹²
- Our food are in jeopardy, our future is in jeopardy. What my mind and heart can fathom is the future of my people We are of the fish people. We are the salmon people.”¹³

⁸ U.S. EPA Draft Bristol Bay Watershed Assessment Record of Public Comment Meeting – New Stuyahok, Alaska, at 15 (June 7, 2012) [hereafter “New Stuyahok Hearing Transcript”], *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4154>.

⁹ EPA Bristol Bay Watershed Assessment Public Hearing – Seattle, Washington at 24-25 (May 31, 2012) [hereafter “Seattle Hearing Transcript”], *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-1270>.

¹⁰ Public Comment Letter from Sherina R. Ishnook, Assistant Controller, BBNC (June 5, 2012), *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-0580>.

¹¹ U.S. EPA Draft Bristol Bay Watershed Assessment Record of Public Comment Meeting – Nondalton Alaska at 1 (June 7, 2012) [hereafter “Nondalton Hearing Transcript”], *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4830>.

¹² New Stuyahok Transcript, at 13.

- “And the thought of my children not being able to pass our way of life to their children makes my heart hurt. I come to you today for my children and my grandchildren’s way of life to continue to be passed on to the future generations. Please protect our water.”¹⁴
- “Please help us, it would be the biggest mine in the world. It hurts me deeply, I have actually cried that our home might be destroyed and I want to save our fish and wildlife. I want my grandchildren to be able to fish like I did. I want to be using my fish camp and living off the fish and subsistence every traditional way. I’ve lived this way my whole life and I’m 77 years old. I don’t like people being against each other over this mine.”¹⁵

b. Economic Harms

EPA has also heard repeated comments concerning the hardship already being suffered by Bristol Bay fishermen, residents, and communities due to the uncertainty surrounding the proposed Pebble Mine. Many commenters urged EPA to act promptly to ensure that Bristol Bay fishermen and residents can move forward with their economic pursuits without the looming threat of large-scale destructive mining operations. EPA’s delay has a very real negative economic impact on the region. Some examples of this include:

- “On the average, we do 160 million pounds of fish a year. If you do that [mine], you might as well shut down our plant in Naknek. I’ve talked to our buyers and if the mine goes through and pollutes the water in front of Levelock, and that water goes down to the Kvichak and taints the fish, our market are done.”¹⁶
- “As the prospect of a mine becomes more real, major uncertainty will be created throughout the fishery, from production through consumption.”¹⁷
- “[T]he perception that these salmon are tainted food sources is all that it will take to drive prices down to a point where the industry will not survive. 15,000 jobs and hundreds of millions of dollars annually are at stake. My job is at stake. A way of life is at stake. The

¹³ U.S. EPA -- Region 10 Bristol Bay Watershed Assessment Public Hearing – Dillingham, Alaska, at 8-9 (June 5, 2012) [hereafter “Dillingham Hearing Transcript”], *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-1290>.

¹⁴ Dillingham Hearing Transcript, at 86.

¹⁵ Nondalton Hearing Transcript, at 7.

¹⁶ Levelock Hearing Transcript, at 13-14.

¹⁷ Statement of Robert Waldrop, Executive Director, Bristol Bay Regional Seafood Development Association (July 11, 2012) *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4525>.

largest reason the community is here is at stake. The quality of the water is at stake. It is not worth the risk.”¹⁸

- “As a grocery retailer with 80 stores in the northeast and mid-Atlantic regions of the United States, we spend our days sourcing high quality, safe food for consumers The placement of a large-scale mineral extraction mine within the Bristol Bay endangers the home of one of the largest wild salmon populations in the world. Any failure, no matter how minute, has the potential to destroy the ecology, economy, and culture of the area as well as the wealth of seafood.”¹⁹
- “[N]o amount of money can replace the many different kinds of fish we enjoy or the experience of a first job in the commercial fishing industry.”²⁰
- “As a member of a local fishing crew I fear for my fishing livelihood”²¹
- “The subject of Pebble is raised by concerned anglers in every conversation I have about the Bristol Bay fishery [D]evelopment of Pebble will put the sport fishing industry of the Bristol Bay region into a recession of long-term duration. It is unlikely my business nor more sport fishing businesses would survive. Development of Pebble would be the destruction of our Bristol Bay ‘brand’ of clean water and sustainable wild salmon.”²²

c. Environmental Harms

Allowing PLP to continue its exploratory drilling activities – including depositing drilling muds on tundra, failing to adequately cap drill sites, drilling more than a thousand deep bore holes, dewatering sensitive streams and ponds, and conducting helicopter fly-overs – has already raised concerns about environmental harms and harms to wildlife and fisheries resources. These on-going environmental harm concerns were explained at length to EPA during its 2012 public hearings throughout the Bristol Bay region. In fact, numerous individuals testifying in the Bristol Bay region complained of on-going environmental harms to water quality and quantity, waste disposal

¹⁸ U.S. EPA Draft Bristol Bay Watershed Assessment Record of Public Comment Meeting – Naknek, Alaska, at 11-12 (June 5, 2012) [hereafter “Naknek Hearing Transcript”], *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4153>.

¹⁹ Public Comment Letter from Carl Salamone, Vice President, Seafood Wegmans Food Markets, Inc. (July 23, 2012), *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-4141>.

²⁰ Public Comment Letter from Helen Gregorio, Togiak Resident (June 4, 2012), *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-0594>.

²¹ Public Comment Letter from Robert Massengale, Fisherman and Dillingham Resident (June 24, 2012), *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-1244>.

²² Public Comment Letter from Mark Rutherford, Owner, Wild River Guides Co. (May 31, 2012), *available at* <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-1353>.

concerns, and negative impacts to fish and wildlife from exploration activities.²³ Some examples of this include:

- “What I didn’t see in the [BBWA] was anything addressing the ongoing damage from the exploration . . . it’s ongoing, it’s happening now, it is doing damage.”²⁴
- “. . . [The] reason why the tribal fishermen are asking for your help and action now. I’m talking about impacts [to the] region that are going on right now on a massive scale with no end in sight. Effects of fuel spills, water generation, connection of generation, degradation of significant and going on unchecked.”²⁵
- “Exploratory mining is already ongoing. In just two years ago gallons of fuel were spilled in the river as a direct result of development actions.”²⁶
- “Whether it is temporary water use permits, dumping directly of drilling material into the groundwater, artesian slime running down the hill. We flew across a well that has been running for three years, since it was photographed by National Geographic in September of 2009. It is still running today and the slick is still going down the hill. It is within a mile of their biggest camp. They fly across it hundreds and hundreds of times and do nothing. And the state does nothing.”²⁷
- “For the last 24 years, the mining companies have been exploring for copper and gold on the state lands in the headwaters of BB, hoping to develop the largest mine of its type in North America. They have drilled 1200 bore holes some more than a mile deep and used fragile tundra and wetlands as their waste dump; criss-crossed subsistence areas with tens of thousands of helicopter flights and removed millions of gallons of water from streams and ponds that support spawning salmon and other freshwater fishes.”²⁸
- “Since I have lived here, 32 plus years, travelling up and down the river, I have noticed that ever since the mine started doing exploration up in the Koktuli, the fish and game have been depleting more and more every year. So there has been some point of effect from exploration.”²⁹
- “Our Mulchatna caribou herd has moved away from the Pebble exploration because of the noise factor. It was already stated during the report that the cause of the herd moving away was because of the noise. They moved up to join the Kuskokwim caribou herd. About 25%

²³ See, e.g., Dillingham Hearing Transcript, at 39, 57, 59, 66, 79; see also Naknek Hearing Transcript at 10, 17-18; and New Stuyahok Hearing Transcript at 7-10, 18-19, 27-29.

²⁴ Dillingham Hearing Transcript, at 39.

²⁵ Id. at 56-58.

²⁶ Id. at 65-66.

²⁷ Naknek Hearing Transcript, at 17.

²⁸ New Stuyahok Hearing Transcript, at 7-9.

²⁹ New Stuyahok Hearing Transcript, at 18.

of the caribous that used to live around the Mulchatna moved up to major upper Nushagak River.”³⁰

3. EPA’s Mine Scenarios are Well-Founded

During the hearing much of the discussion focused on whether EPA properly conducted its BBWA utilizing hypothetical mining scenarios. As noted in the hearing testimony, EPA appropriately relied on PLP’s own project data and plans to form its assumptions and set out the baseline data when developing the BBWA. BBNC agrees with the statement from majority witness Dr. Michael Kavanaugh that all parties would be in a better position if PLP had been timelier with its mining plan. However, given PLP’s failure over the past seven years to move forward into formal Clean Water Act permitting, EPA properly utilized mining plans based on other permitting and investor related data to assess differing mining scenarios – 20 year/0.25 billion tons; 25 year/2.0 billion tons; and 78 year/6.5 billion tons. EPA was correct to utilize these scenarios to determine whether unacceptable impacts would result from large-scale mining.

Large-scale mining projects can be appropriately analyzed so long as the potential impacts of discharges of mine wastes to waters and impacts on fish habitats are site-specific. Indeed, as noted by EPA, “[e]ven an environmental assessment of a proposed plan by a mining company would be an assessment of a scenario that undoubtedly would differ from the ultimate development.”³¹ Although EPA does not need to wait to see the details of any one specific permit application to determine whether unacceptable impacts will occur,³² the hypothetical scenarios utilized by EPA are modeled on preliminary plans for the Pebble Project as described by Northern Dynasty Minerals in its 2006 Alaska Department of Natural Resources Water Rights application and its 2011 Wardrop Report (Ghaffari et al.).³³ These materials provide detailed information, maps, and descriptions on which to assess a fact-based hypothetical mining scenario; indeed the mining company itself characterized its plans as set out in the Wardrop Report as “economically viable, technologically achievable and permissible.”³⁴

Moreover, with its use of a detailed cumulative analysis, EPA took the appropriate steps to fully assess proposed mining activities. A non-cumulative, phased review of the project would be unlawful under all applicable permitting regulations and would have prevented EPA’s BBWA from

³⁰ New Stuyahok Hearing Transcript, at 23.

³¹ Revised Assessment, at ES-27.

³² See 40 C.F.R. § 231.1.

³³ See Revised Assessment, at ES-10.

³⁴ Northern Dynasty Minerals, Inc., *Pebble Project – Preliminary Assessment Technical Report*, page 4

(February 17, 2011), available at http://www.northerndynastyminerals.com/i/pdf/ndm/Pebble_Project_Preliminary%20Assessment%20Technical%20Report_February%2017%202011.pdf.

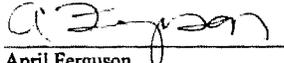
fully assessing all of the impacts associated of the proposed project.³⁵ This is an important point to keep in mind if, going forward, PLP asserts that it will develop a mine that is not within the realm of its own previous plans.

III. Conclusion

The Bristol Bay watershed is home to the largest wild salmon run in the world, supporting thousands of subsistence users, vibrant communities, and commercial fishing jobs. BBNC invited EPA to Bristol Bay, urging EPA to exercise its authority under 404(c) to protect Bristol Bay's world-class fisheries from the harmful effects of the proposed Pebble mine. BBNC continues to urge EPA to act expeditiously, finalize the BBWA, and invoke its authority under 404(c) to propose performance standards that would apply to any efforts to mine the Pebble deposit and thus provide certainty and to protect the waters and fishery resources of Bristol Bay.

Finally, BBNC would like to thank Chairman Broun for his stated commitment to protect Bristol Bay with his declaration that he has "serious questions about how a mine can co-exist with fish in Bristol Bay" and that, "if the Pebble Mine will harm the fisheries and environment . . . it should not be allowed."

Sincerely,



April Ferguson
SR VP General Counsel

cc via Email:

Dan Pearson, *Minority Staff Director*, dan.pearson@mail.house.gov
Doug Pasternak, *Minority Counsel*, doug.pasternak@mail.house.gov

³⁵ See e.g., *Ohio Valley Environmental Coalition v. Bulen*, 315 F Supp. 2d 821, 828-31 (S.D. W.Va. 2004) (granting plaintiff's preliminary injunction because mining company's plan was an illegally segmented part of a larger project not yet permitted by the Army Corps under the Clean Water Act).



1899 L Street, N. W, Twelfth Floor
Washington, DC
31st July 2013

The Honorable Mr. Paul Broun
Chairman
Subcommittee on Oversight
Committee on Science, Space, and Technology
U. S. House of Representatives
Washington, DC 20515

Dear Chairman Broun,

I want to thank you for holding a hearing in your Oversight Subcommittee on 1st August on the EPA's Bristol Bay Watershed Assessment. There are a number of troubling issues that I expect the witnesses will raise in their testimony. I would like to call to your attention one issue that may not be raised or at least not in the detail that it deserves. This is the reliance of the Assessment for several key points on the expert analyses of Dr. Ann Maest and Stratus Consulting. Dr. Maest and Stratus Consulting's Executive Vice President, Douglas Beltman, have given sworn affidavits to a federal court, in which they admit that they provided fraudulent technical reports in the case brought in Ecuador against Chevron. I have attached CEI's comment to the EPA on the Bristol Bay Watershed Assessment, which gives links to the two affidavits and other relevant documents.

The fact that Dr. Maest and Stratus Consulting provided false expert assessments to a paying client naturally leads to the suspicion that this may not be the only instance in which they have done so. I would like to suggest that it would

be appropriate for your subcommittee to investigate Stratus Consulting's contracts with the EPA and other federal agencies with an eye to exposing similar fraudulent conduct.

An investigation may find other instances of misconduct, but even if it does not, I would further suggest that the evidence in the sworn affidavits of Dr. Maest and Mr. Beltman provides sufficient reason to ban Stratus Consulting and Dr. Maest from future consulting contracts with the federal government. A rider in the Interior, EPA, and Related Agencies appropriations bill may be the appropriate way to accomplish such a ban.

Thank you for your attention to CEI's concerns. We will be happy to provide further information on this issue that you may desire.

Yours sincerely,

/copy of signed original/

Myron Ebell
Director, Center for Energy & Environment

From: Anthony Ward
Sent: Friday, June 28, 2013 4:36 PM
To: 'Docket_ORD@epa.gov'
Subject: EPA-HQ-ORD-2013-0189-0002

Comments submitted on behalf of the Competitive Enterprise Institute by Myron Ebell, Director, Center for Energy and Environment, and Director of its Resourceful Earth Project, Competitive Enterprise Institute, 1899 L. Street, N. W., Twelfth Floor, Washington, DC, 20036. Telephone: (202) 331-1010. E-mail: mebell@cei.org.

The Competitive Enterprise Institute (CEI) has a number of criticisms of the EPA's Bristol Bay Watershed Assessment. In general, we think it is a shoddy and inadequate assessment that was thrown together for blatantly political purposes. However, most of our criticisms substantially duplicate those made in other comments already submitted. We will therefore confine our comments to one issue--the reliance of the Assessment for several key points on technical assessments and analyses conducted by Stratus Consulting and one of its scientists, Dr. Ann Maest.

When CEI first objected to the fact that the EPA had invited Dr. Maest and other Stratus Consulting scientists from speaking at and participating in a Hardrock Mining Conference in Denver, the CEO and President of Stratus Consulting, Joshua Lipton, Ph.D., wrote a letter to Administrator Lisa P. Jackson. A copy of this letter, dated 3rd April 2013, may be found at <http://www.scribd.com/doc/138877069/Stratus-Letter-to-EPA-on-CEI-and-Ann-Maest>.

Dr. Lipton in his letter attacks the credibility of CEI and defends the integrity of Dr. Maest and Stratus Consulting. Our objections were based on the fact that Chevron had filed a RICO suit in federal court that named Stratus Consulting as one of the defendants. Dr. Lipton wrote to Administrator Jackson:

"Chevron's claims against Stratus Consulting are false and represent a gross misuse of the federal courts. Stratus Consulting never engaged in the misconduct alleged

by Chevron, and Chevron knows as much. That Chevron has knowingly filed a series of false charges against Stratus Consulting is reprehensible."

We now know as a result of affidavits sworn and signed by Dr. Ann Maest and the Executive Vice President of Stratus Consulting, Douglas Beltman, that these and other claims in Dr. Lipton's letter are false. A copy of Maest's affidavit may be found at <http://www.scribd.com/doc/135573650/Declaration-of-Ann-Maest-of-Stratus-Consulting>. A copy of Beltman's affidavit may be found at <http://www.scribd.com/doc/135570356/Beltman-Witness-Statement>.

Under penalty of perjury, both Maest and Beltman admit that their work for the plaintiffs' attorneys in a case filed in the courts of Ecuador was fraudulent. Both Maest and Beltman conclude their sworn affidavits: "I disavow any and all findings and conclusions in all of my reports and testimony on the Ecuador Project."

We think that the detailed admissions in Maest's and Beltman's statements call into question the integrity of Stratus Consulting across the board. We therefore request that the sections of the Assessment that rely on references to studies prepared by Stratus Consulting be removed.

Further, we request that the EPA refer all EPA contracts and consulting arrangements with Stratus Consulting to the EPA Inspector General for investigation of fraud or other misconduct. A ban on all future contracts with Stratus Consulting and referrals to the Department of Justice may be in order as a result of these investigations.

A JOINT LETTER

From Six Federally-recognized Tribes
in the Kvichak and Nushagak River Drainages of Southwest Alaska:
Nondalton Tribal Council, Koliganik Village Council, New Stuyahok Traditional Council,
Ekwook Village Council, Curyung Tribal Council, Levelock Village Council

May 2, 2010 (mailed May 21, 2010)

Lisa P. Jackson, Administrator
U.S. Environmental Protection Agency, Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dennis J. McLerran, Regional Administrator
U.S. Environmental Protection Agency, Region 10
Regional Administrator's Office, RA-140
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Re: Tribes request that EPA initiate a public process under Section 404(c) of the Clean Water Act, to protect waters, wetlands, fish, wildlife, fisheries, subsistence and public uses in the Kvichak and Nushagak drainages and Bristol Bay of Southwest Alaska from metallic sulfide mining, including a potential Pebble mine.

Dear Ms. Jackson and Mr. McLerran:

Our federally recognized tribes, from the Kvichak and Nushagak river drainages of southwest Alaska, have government-to-government relations with the United States, and are represented by the undersigned tribal councils. We are writing with assistance of counsel.

Section 404(c) of the Clean Water Act authorizes EPA to prohibit or restrict the discharge of dredge or fill material, including mine wastes, at defined sites in waters of the United States, including wetlands, whenever EPA determines, after notice and opportunity for hearing, that the use of such sites for disposal would have an "unacceptable adverse effect" on fisheries, wildlife, municipal water supplies or recreational areas. EPA may do so *prior* to applications for permits to discharge such material. 40 CFR 231.1(a). "Unacceptable adverse effect" is defined as:

impact on an aquatic or wetland ecosystem which is *likely* to result in significant degradation of municipal water supplies (including surface or ground water) or significant loss of or damage to fisheries, shellfishing, or **wildlife** habitat or recreation areas. In evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines (40 CFR Part 230).¹

¹ 40 CFR 231.2(e) (*italics added*). The purposes of the 404(b)(1) Guidelines are "to restore and *maintain* the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material," and to implement Congressional policies

We request that EPA initiate a 404(c) public process to identify wetlands and waters in the *Kvichak and Nushagak river drainages* of southwest Alaska, where discharges associated with potential *large scale metallic sulfide mining*, could be prohibited or restricted due to such effects. This initial scope would include the Pebble deposit (which straddles a divide between these drainages) and other metallic sulfide deposits in the area of that deposit. (We understand that Kemuk Mountain may be the site of another metallic sulfide deposit.) During such a public process, some members of the public may urge a broader or narrower scope. The “scope” of a 404(c) process is one of many issues that should be resolved through a public process. The deposits in the area of the Pebble claims, which precipitate this situation, should be included.

We are addressing this to both of you because: (1) 40 CFR 231.3(a) provides that a regional administrator makes the decision of whether to initiate a 404(c) public process; (2) in this instance, initiating a 404(c) process effectuates three of EPA’s national priorities,² and three of EPA’s regional priorities;³ (3) initiating a 404(c) process promotes EPA’s goal that decisions be based on science, law, transparency, and stronger EPA oversight;⁴ and (4) doing so is consistent with EPA’s national priorities of increased oversight of mineral processing⁵ and

expressed in the Clean Water Act. The Guidelines establish a rebuttable presumption against allowing any discharge unless it can be demonstrated that the discharge will not have an unacceptable adverse impact “*either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.*” The Guidelines declare:

From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in *wetlands*, is considered to be among the most *severe* environmental impacts covered by these Guidelines. The *guiding principle* should be that degradation or destruction of special sites [such as wetlands] may represent an irreversible loss of valuable aquatic resources.

40 CFR 230.1 (italics added). The Guidelines address direct, cumulative and secondary effects. 40 CFR 230.11. Secondary effects are those associated with a discharge, but do not result from actual placement of the material, and must be considered prior to agency action under §404. 40 CFR 230.11(h)(1). In this case, a 404(c) process should address potential secondary effects on commercial, subsistence, and recreational fishing and hunting, and public use of parks and preserves. See 40 CFR Part 230, subpart F. All are at issue as discussed herein and in attached letter from counsel, and in the briefing paper attached to enclosed letter to State Rep. Edgmon.

² These include: (1) protecting America’s waters; (2) expanding the public conversation on environmentalism and working for environmental justice; and (3) forging strong partnerships between EPA, tribes and states. See EPA’s seven national priorities at <http://blog.epa.gov/administrator/2010/01/12/seven-priorities-for-epas-future/#more-636>.

³ These include: (1) working with Tribal Governments to protect and restore the natural resources on which tribal communities rely for their physical, cultural and economic well-being; (2) protecting and restoring watersheds; and (3) promoting sustainable practices and strategic partnerships, including with tribal governments. See EPA’s six regional priorities at <http://yosemite.epa.gov/R10/EXTAFF.NSF/Reports/2007-2011+Region+10+Strategy> (last visited Feb. 12, 2010), and EPA’s Region 10 Strategy for Enhancing Tribal Environments at <http://yosemite.epa.gov/r10/EXTAFF.NSF/Reports/07-11+Tribal> (last visited Feb 12, 2010).

⁴ *Id.* Pebble mine also raises issues that may require the assistance of EPA staff in other offices.

⁵ EPA’s national priorities for enforcement and compliance for FY 2008 – 2010 and FY 2011 – 2013 (proposed) are at <http://www.epa.gov/occaerth/data/planning/priorities/index.html#new>.

increased attention to Environmental Justice. Furthermore, EPA's on-going 404(c) process with respect to the Spruce No. 1 mine in West Virginia indicates that EPA prefers to be proactive, *i.e.*, "to address environmental concerns effectively *prior* to permit issuance."⁶

We make this request for the following reasons.

1. **The cultural, ecological and economic importance of the Kvichak and Nushagak river drainages, and the magnitude of a potential Pebble mine, indicate that the scope of a 404(c) public process should be broad at the outset.**

Pursuant to 40 CFR 231.3(a), a Regional Administrator's *initial* decision of whether to commence a 404(c) process turns on whether there is "*reason to believe*" that "an 'unacceptable adverse effect' *could* result." (Italics added). This initial decision is based upon "evaluating the information available."⁷

The Kvichak River drainage historically produces more sockeye salmon than any other drainage in the world. Sockeye salmon drive the commercial salmon fisheries of Bristol Bay, which are the state's most valuable salmon fisheries. Within the Bristol Bay drainages, the Nushagak River drainage, also produces vast numbers of sockeye, and produces the largest runs of other species, including chinook, coho, chum and pink salmon. Both drainages are critical to the wild commercial salmon fisheries, subsistence fisheries, internationally famous sport fisheries, and abundant wildlife. The fish serve many onshore, near-shore and offshore uses and ecological functions, including in the North Pacific. The drainages provide water supplies to numerous villages and communities, many of which are substantially populated by Alaska Native people.⁸

The Pebble Limited Partnership (PLP), which seeks to develop the Pebble mining claims, divides them into "Pebble West" and "Pebble East." The former may be susceptible to an open pit mine. The latter (a more recent discovery) may be susceptible to an underground mine.⁹ In

⁶ See EPA, Spruce No. 1 Mine 404(c) Questions & Answers for Web Posting, Oct. 16, 2009 (italics added), http://www.epa.gov/owow/wetlands/pdf/spruce_1_Oct_16_2009_q_and_a.pdf (visited Jan. 26, 2010). EPA took this position when it invoked the 404(c) public process after years of working with the applicant and other agencies. Spruce No. 1 is the largest proposed mountaintop removal operation in Appalachia, would clear 2200 acres, and fill seven miles of streams. By contrast, just the open pit portion of a Pebble mine (per applications filed in 2006 and subsequently suspended) would be about two square miles (over 46,000 acres).

⁷ Because EPA staff has access to EPA's materials, our counsel have prepared an Appendix which lists other potentially relevant documents, from other agencies, the mining claimants, academic or professional publications, professional papers, and presidential documents applicable to environmental issues, tribal relations, and environmental justice. We assume that none would be overlooked and simply call these documents to your attention.

⁸ Nondalton is closer to a potential Pebble mine than any other community. Dillingham's Curyung Tribal Council represents the largest tribe in the Bristol Bay drainages of about 2400 members. Koliganek, New Stuyahok, Ekwok and Levelock are downstream of Pebble.

⁹ EPA routinely recognizes that mine voids, from open pit and underground mines, are sources of acid mine drainage. We call to your attention P. Younger, "*Don't forget the voids: aquatic*

2006, Northern Dynasty Mines, Inc. (NDM)¹⁰ filed, and then supplemented, nine applications with the Alaska Department of Natural Resources (ADNR), and then requested ADNR to suspend them. ADNR did so. Four applications sought to appropriate water. Five sought to construct tailings impoundment dams.¹¹ These nine applications were based *solely* on Pebble West. The surface area of the water of just two tailings impoundments, as then proposed, would have covered over ten square miles (6400 acres). “Beaches” of waste would have surrounded the impoundments created by five dams or embankments up to 740 feet high and several miles long.

The 2006 applications for Pebble West showed that NDM had considered about a dozen potential waste disposal sites. All or many appeared to involve vast wetlands under EPA’s jurisdiction. The proposed open pit would have involved about 16.5 miles of 54-inch diameter pipelines to manage discharge tailings, and over two hundred miles of 15-inch diameter pipelines to transport a slurry concentrate for dewatering and ocean shipment from Cook Inlet, and to return used slurry water to the mine facilities. After suspending the applications, PLP has concentrated on exploring Pebble East. It has resulted in more than doubling the amount of potential mine waste, to about ten billion tons of waste. Hence, the questions of where, how and whether the vast volume of waste can be safely and permanently handled are major unresolved issues that involve a vast amount of discharge under Section 404 into a vast amount of wetlands.

Because a Pebble mine, associated facilities, and similar metallic sulfide mines could also have various direct, cumulative, secondary adverse effects in combination with other impacts over a vast area, our tribes recommend that EPA consider a wide geographic area of the Kvichak and Nushagak drainages for purposes of § 404(c), at least initially for a public process. Our reasons include: (1) the importance of the Kvichak and Nushagak drainages for fish, wildlife, and commercial, subsistence and recreational use of fish and wildlife; and the abundance of waters and wetlands that support fish, wildlife and public uses; (2) the location of the Pebble deposit at a divide between Upper Talarik Creek, which flows directly to Niamna Lake (a significant rearing lake for sockeye salmon) in the Kvichak drainage, and the North and South Forks of the Kaktuli River in the Nushagak drainage; (3) the large scale of the deposit and a Pebble mine;¹² (4) the acid generating potential of the host rock, voids, wastes, and dust; (5) the necessity of dewatering a vast area, likely to great depths; (6) the fact that no comparable mine apparently exists in terms of risk to commercial salmon fisheries, subsistence, recreation, and

pollution from abandoned mines in Europe,” submitted at the Workshop on Mine and Quarry Waste – the Burden from the Past, held by the Dir. Gen. for the Envir. and Jt. Research Cen. for EU and EC nations, at Orta, Italy, 2002. The paper indicates that voids can vastly exceed waste depositories as sources of water pollution (see Table 1 therein, and discussion); see http://viso.jrc.ec.europa.eu/pecomines_ext/events/workshop/ProceedingsOrtaWorkshop.pdf.

¹⁰ We understand that NDM is the American subsidiary of Northern Dynasty Minerals Ltd., of which an affiliate is apparently a partner in PLP. See announcement of PLP partnership at http://www.northerndynastyminerals.com/ndm/NewsReleases.asp?ReportID=336841&_Type=News-Releases&_Title=Northern-Dynasty-Anglo-American-Establish-5050-Partnership-To-Advance-Pebbl...

¹¹ The applications comprise over 2000 pages. The attached appendix lists the website posting them. A law journal article (listed in the appendix) summarizes these applications.

¹² The financial commitment necessary to develop Pebble mine is huge, for various reasons such as the cost of power, and is inconceivable as a small mine.

abundance of wetlands and water proximate to ground level; (7) the apparent existence of other metallic sulfide deposits in the Pebble area and perhaps at Kemuk Mountain; (8) the likelihood that discharge of dredge and fill material, including mine wastes from a Pebble mine or similar mines, and dewatering, will adversely affect vast amounts of wetlands and waters; (9) the facts that the behavior of metallic sulfide mines is difficult to predict; that the record of preventing water pollution from them is not good; that acid mine drainage is a major risk; and that this risk is perhaps increased by abundance of surface and groundwater;¹³ (10) the facts that Pebble implies a huge quantity of potential mine waste (perhaps ten billion tons), uncertainty over how wastes might be handled, and that pipelines could move wastes to various discharge sites; (11) the immensity of the task of containing contaminants forever, including acid drainage; (12) the magnitude of potential direct, cumulative, and secondary effects on commercial fishing,¹⁴ subsistence and recreation, including in combination with increased population, access and competition for fish and game;¹⁵ (13) the ecological functions that salmon perform throughout their life cycle in marine and fresh waters; (14) the fact that juvenile salmon have been shown to be present in many waters within the Pebble claims where salmon had been undocumented previously for purposes of the state's Anadromous Fish Act; (15) the likelihood that a transportation route to Cook Inlet could implicate significant beach spawning of sockeye salmon in the north-eastern portion of Iliamna Lake; (16) the likelihood that a Pebble mine, its transportation corridor, and nearby settlement areas could adversely affect areas previously identified as by the State as (a) "essential" moose wintering areas, or "important" spring-, summer- and fall moose habitats, (b) "essential" caribou calving grounds, and (c) "essential" brown bear concentration streams; and (17) the vast amount of compensatory mitigation likely to be required and its questionable sufficiency.¹⁶ All these reasons justify a broad initial scope for a 404(c) process.

2. The magnitude of the issues and PLP's recent decision to terminate its Technical Working Groups justify an EPA decision to commence a 404(c) process at this time.

Moreover, the process should be commenced at this time. PLP recently terminated its Technical Working Groups (TWGs), approximately ten in number. They were composed of federal and state officials who, in an advisory capacity, had sought for several years to review and comment upon PLP's baseline study plans before PLP implemented them, and to review results, in order to advise PLP as it progressed toward an environmental impact statement (EIS) under the National Environmental Policy Act (NEPA). During the life of these working groups, information suggests that PLP was not as forthcoming as agency officials had hoped.

¹³ The State of Wisconsin has imposed a moratorium on permits for metallic sulfide mining, by requiring that before permits may issue, a proponent demonstrate one such mine in North America that has operated for ten years without polluting water, and one that has closed for ten years without polluting water. Thus, water pollution at Pebble appears likely.

¹⁴ A listing under the Endangered Species Act of a stock of salmon bound for the Kvichak or Nushagak drainages could affect the commercial fisheries in Bristol Bay.

¹⁵ See accompanying letter from counsel addressing likely effects on subsistence and recreational use from a potential Pebble mine.

¹⁶ For such reasons, much of this issue is characterized as short-term private interests in mining a nonrenewable resource versus long-term public/quasi-public interests in commercial, subsistence and recreational uses of fish, wildlife, waters and other renewable resources on public lands.

PLP's decision to end the TWGs strongly suggests that federal, state and tribal entities may be more likely to face greater informational deficits as they head into an EIS process, than might have been otherwise. Commencing a 404(c) process may help to remedy some of these information deficits before PLP finalizes its design, submits applications, and triggers an EIS.

Because of the magnitude of the issues, all parties (*e.g.*, PLP, federal, state, local and tribal entities, and the public) will benefit from EPA initiating a 404(c) process *before*, and not *after*, PLP submits its anticipated permit applications for a proposed Pebble mine, and *before* an EIS process commences.¹⁷ Moreover, because the potential to invoke a 404(c) process exists, postponing an initial decision to do so until applications are filed serves no affected party.¹⁸

3. EPA should commence a 404(c) public process in part because infirmities in the State's 2005 Bristol Bay Area Plan render waiting for the EIS process impractical.

Our request asks EPA to commence a 404(c) process before an EIS process has begun or run its course. Ordinarily, the analysis of alternatives required by NEPA should provide the information for the evaluation of alternatives under the 404(b)(1) Guidelines. 40 CFR 230.10(a)(4). However, in this instance, infirmities in the State's 2005 Bristol Bay Area Plan (2005 BBAP) render waiting for the NEPA/EIS process impractical.

We are enclosing copies of two other letters, which address the methods that ADNR employed in preparing its 2005 BBAP.¹⁹ It classifies state land, including at Pebble, its access corridor, and nearby settlement lands, into land classification categories and establishes guidelines and statements of intent. The methods used by the 2005 BBAP to do so include:

1. using primarily *marine* criteria, such as whether land is a walrus haulout, to determine whether *inland uplands*, such as those at Pebble, qualify for classification as fish and wildlife habitat (*see* 2005 BBAP, p. 2-9; a link to the 2005 BBAP is in the Appendix);
2. *omission of salmon in non-navigable waters* from the process of designating and classifying land as habitat (*see* 2005 BBAP, pp. 3-323 – 3-330);
3. *omission of moose and caribou* from that process (*see* 2005 BBAP, p. 2-9);
4. lack of a *land use classification category for subsistence hunting and fishing*, while ADNR has a public recreation land category that includes *sport hunting and fishing* (*see* ADNR's land planning regulations at 11 AAC 55.050 – .230 and 2005 BBAP); and then

¹⁷ PLP recently postponed its applications from 2010 until 2011, and may delay further.

¹⁸ Furthermore, a 404(c) process appears to be less costly than an EIS. Facing issues proactively could reduce all costs of agencies, PLP and the public prior to and during an EIS.

¹⁹ One letter, from our counsel to Col. Koenig, of the U. S. Army Corps of Engineers, Alaska District, and Mr. John Pavitt of EPA's Alaska Operations Office, seeks discussions of whether the tribes may be cooperating agencies on any EIS prepared for a proposed Pebble mine. The other, from our six tribes and the Alaska Independent Fishermen's Marketing Association (AIFMA), urges State Rep. Edgmon, while the Alaska legislature is out of session, to facilitate public discussions in the region of whether the legislature should consider legislation to establish a state fish and game refuge or critical habitat area that would include most state land in the Kvichak and Nushagak drainages, including land at the Pebble site.

5. defining recreation as *excluding* sport hunting and fishing for purposes of preparing the 2005 BBAP (see 2005 BBAP, p. A-11).²⁰

Based on these and other methods, the 2005 BBAP reclassifies land at Pebble as solely as mineral land, extinguishes habitat classifications of the prior 1984 BBAP on nearly all wetlands, including those that are hydrologically important to fish habitat (a concern in the 1984 BBAP), and almost totally omits references to wetlands in planning units for state land in the Nushagak and Kvichak drainages. As explained in the letter to the Corps of Engineers, Alaska District, and the EPA Alaska Operations Office, as long as the 2005 BBAP is in effect, every alternative in an EIS that would permit a Pebble mine will rest upon such mineral classifications and the methods ADNR used in adopting land use classifications, guidelines and statements of intent.

NEPA regulations provide that an EIS must analyze and address any applicable state land use plan.²¹ This requirement, in effect, is likely to put federal agencies in a difficult position of explaining, in public and on the record, why they would evaluate federal permit applications to develop state land, including wetlands, where the State's land classifications, guidelines and statements of intent rest upon (1) using primarily marine criteria to determine whether Pebble is habitat, (2) excluding salmon in non-navigable waters such as Upper Talarik Creek, (3) excluding moose and caribou, (4) having no land use classification category for subsistence hunting and fishing where there is one for sport hunting and fishing, and (5) then defining recreation as excluding sport hunting and fishing. Regardless of whether such methods are lawful or not (and we believe the present ones are *not*), to ignore them would be facially contrary to 40 CFR § 1506.2(d), and would beg the question of what the classifications, guidelines and statements of intent should be applicable, in the absence of the 2005 BBAP and its methods. No one can answer that question.

Because no one can do so, we doubt that federal agencies can engage in legally required, *reasoned* decision-making necessary to approve federal permits so long as the 2005 BBAP is in place.²² This leaves little room for any decision other than to commence a 404(c) *before*, and not *after*, PLP submits its permit applications, and *before* an EIS process commences. To do otherwise will compel EPA, the Corps and other agencies, in the context of NEPA and an EIS

²⁰ In *Nondalton Tribal Council, et al., v. ADNR*, 3AN-09-46 CI (3rd Jud. Dist., Ak.), these six tribes, AIFMA and Trout Unlimited, Inc. allege that ADNR's 2005 BBAP uses many unlawful methods to classify state land, and establish guidelines and management intent, including where Pebble and its facilities might be located. The litigation is undecided. See also, enclosed letter to Rep. Edgmon, and briefing paper (Pt. I) regarding 2005 BBAP. With respect to ADNR's lack of a subsistence category, ADNR claims that its habitat classifications accommodate subsistence, even though the 2005 BBAP reduces the upland acreage classified or co-classified as habitat by 90 percent, from 12 million acres to 768,000 acres, when compared to the former 1984 BBAP.

²¹ 40 CFR § 1506.2(d) provides that to integrate an EIS into state planning processes, an EIS shall discuss any inconsistency of a proposed action with any approved state land use plan; and where inconsistency exists, the EIS should describe the extent to which the federal agency would reconcile its proposed action with the plan. In other words, an EIS on any potential Pebble mine will have to consider and analyze the applicable state land use plan.

²² The 2005 BBAP appears fatal, from a legal standpoint, as a basis for an EIS that would support issuing permits for Pebble. See Briefing Paper, Pt. II, attached to letter to Rep. Edgmon.

process, either to defend the State's methods used in the 2005 BBAP (which would be untenable), or to ignore them, which would be contrary to 40 CFR § 1506.2(d).

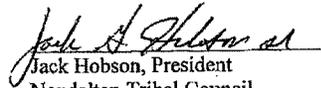
CONCLUSION

For three reasons, this situation seems straightforward. First, the importance of the Kvichak and Nushagak river drainages and the magnitude of the issues raised by a potential Pebble mine warrant an EPA decision now, to commence a 404(c) public process. Second, all of the concerns raised to date, coupled with the recent decision of the Pebble Limited Partnership to terminate its Technical Working Groups, justify commencing a 404(c) process at this time. Third, the infirmities of ADNR's 2005 Bristol Bay Area Plan provide additional reason to commence a 404(c) process at this time. These infirmities leave little room for any decision other than to do so *before*, and not *after*, PLP submits its permit applications, and *before* an EIS process commences, because during an EIS process no governmental agency could lawfully defend or ignore the 2005 Bristol Bay Area Plan.

Thank you for your attention to this matter. We look forward to hearing from you. We hope to work in a public process under Section 404(c) of the Clean Water Act with the U. S. Environmental Protection Agency.

Sincerely yours,

Date: 5/2/2010


Jack Hobson, President
Nondalton Tribal Council
P.O. Box 49
Nondalton, Alaska 99640

Enclosures (2)

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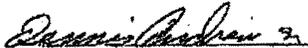
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Sincerely yours,

Date: 5/04/10


Dennis Andrew, President
New Stuyahok Traditional Council
P.O. Box 49
New Stuyahok, Alaska 99636

Enclosures (2)

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Sincerely yours,

Date: 5-10-10

for Angelina Chukwak Vice President
Sergie Chukwak, President
Levelock Village Council
P.O. Box 70
Levelock, Alaska 99625

Enclosures (2)

process, either to defend the State's methods used in the 2005 BBAP (which would be untenable), or to ignore them, which would be contrary to 40 CFR § 1506.2(d).

CONCLUSION

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Sincerely yours,

Date: 5/11/18


Jodi Akelkok, President
Ekwok Village Council
P.O. Box 70
Ekwok, Alaska 99580

Enclosures (2)

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Sincerely yours,

Date: 5/12/2010


Thomas Tilden, President
Curyung Tribal Council
P.O. Box 216
531 D Street
Dillingham, Alaska 99576

Enclosures (2)

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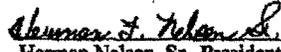
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Sincerely yours,

Date: 5-13-2010


Herman Nelson, Sr., President
Koliganek Village Council
P.O. Box 5057
Koliganek, Alaska 99576

Enclosures (2)

process, either to defend the State's methods used in the 2005 BBAP (which would be untenable), or to ignore them, which would be contrary to 40 CFR § 1506.2(d).

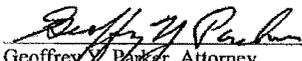
CONCLUSION

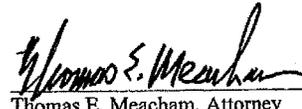
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Sincerely yours,

Dated: 5-20-10


 Geoffrey Y. Parker, Attorney
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 Co-Counsel to Signatory Tribes

Enclosures (2)

APPENDIX

An Abstracted List of Potentially Relevant Information

(This list assumes that EPA has access to its own agency documents, and therefore this list does not include such documents.)

Alaska Department of Fish and Game, *The Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* and its associated *Atlas*, available at <http://www.sf.adfg.state.ak.us/SARR/AWC/index.cfm/FA/main.overview> (last visited December 30, 2009).

The Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes ("Anadromous Waters Catalogue") and its associated *Atlas* of maps currently contain about 16,000 streams, rivers or lakes in Alaska which have been specified as being important for the spawning, rearing or migration of anadromous fish. Based upon thorough surveys of a few drainages, it is believed that this number represents less than 50% of the streams, rivers and lakes actually used by anadromous species. It is estimated that at least an additional 20,000 or more anadromous water bodies have not been identified or specified under AS 16.05.871(a), a state permitting statute.

In recent years, work for the Nature Conservancy has added about a hundred miles of previously undocumented anadromous waters in the vicinity of Pebble.

Alaska Department of Natural Resources, Alaska Department of Fish and Game, Alaska Department Environmental Conservation, *Bristol Bay Area Plan for State Lands* (1984), available at <http://www.dnr.alaska.gov/mlw/planning/areaplans/bristol/index.htm> (last visited December 30, 2009).

Area plans generally have an administrative life of about twenty years, are prepared by the Alaska Department of Natural Resources, and apply to state-owned and state-selected lands. By state statute, area plans must (1) be based on an inventory of uses and resources; (2) designate primary uses of units of state land; these designations convert to classifications of the land; and (3) adopt general and unit specific guidelines and statements of intent to guide management decisions. The Bristol Bay Area Plan of 1984, prepared and adopted by ADNR, ADF&G, and ADEC, contains a set of five habitat maps, and three maps of subsistence use areas for 31 communities and villages in the Bristol Bay drainages. The 1984 Plan remains useful because the later-prepared 2005 Bristol Bay Area Plan lacks comparable maps and comparable cartographic identification of essential and important habitats. The maps from the 1984 Plan are not posted on ADNR's web pages, but may be obtained separately either from ADNR or from counsel to the tribes. BLM's Resource Management Plan has identical or similar maps of subsistence use areas.

Alaska Department of Natural Resources, *Bristol Bay Area Plan for State Lands* (2005), available at <http://www.dnr.alaska.gov/mlw/planning/areaplans/bristol/index.htm> (last visited December 30, 2009).

See above abstract of the 1984 Bristol Bay Area Plan. The Bristol Bay Area Plan of 2005, prepared and adopted by ADNR, is currently the subject of litigation in *Nondalton Tribal Council, et al., v. State, Department of Natural Resources*, 3DI-09-046 CI, wherein these six Tribes, AIFMA Cooperative (a cooperative association of commercial fishers), and Trout Unlimited seek to have the 2005 Plan declared unlawful.

Directorate General for the Environment and the Joint Research Centre, Workshop on Mine and Quarry Waste – the Burden from the Past (http://viso.jrc.ec.europa.eu/pecominex_ext/events/workshop/ProceedingsOrtaWorkshop.pdf, last visited Jan. 25, 2010)

This is a collection of papers submitted at the conference organized by the for European Union and European Community nations, held at Orta, Italy, in 2002. Many seem useful. In particular, the paper by P. Younger, “*Don't forget the voids: aquatic pollution from abandoned mines in Europe*,” indicates that mine voids can vastly exceed mine waste depositories as sources of water pollution (see Table 1 therein, and discussion).

Duffield et al., *Economics of Wild Salmon Watersheds: Bristol Bay, Alaska 15 at* http://www.housemajority.org/coms/hfsh/trout_unlimited_report.pdf (Feb. 2007) (last visited Jan. 6, 2010).

This report provides estimates of the economic values associated with the sustainable use of wild salmon ecosystem resources, primarily fisheries and wildlife, of the major watersheds of the Bristol Bay, Alaska region. Both regional economic significance and social benefit-cost accounting frameworks are utilized. This study reviews and summarizes existing economic research on the key economic sectors (e.g., commercial fishery, subsistence fishery, recreation, and governmental expenditure and values) in this area. The study also reports recent findings based on original survey data on expenditures, net benefits, attitudes, and motivations of recreational anglers.

William J. Hauser, d/b/a “Fish Talk, Consulting,” *Potential Impacts of the Proposed Pebble Mine on Fish Habitat and Fishery Resources of Bristol Bay* (2007).

This paper appears to have useful information about salmon production proximate to the proposed road/access route to Pebble, including the hydrological characteristics of areas used by sockeye salmon for beach spawning in northwestern Iliamna Lake, which is immediately down-gradient from the proposed road/access route.

Northern Dynasty Mines, Inc. (NDM), Pebble Project: Applications for surface and ground water rights, and initial applications for certificates of approval to construct dams (2006), available at <http://www.dnr.alaska.gov/mlw/mining/largemine/pebble/waterapp.htm> (last visited December 30, 2009).

Shortly after NDM filed these applications, NDM requested DNR to suspend processing them, and DNR agreed to do so. They contain information on the Pebble West portion of the ore body, proposed routes for road access, pipelines and power, and information relevant to the types of facilities envisioned and the magnitude of the project.

Office of the President, Executive Order 12898 (Feb. 11, 1994) re: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, available at http://www.epa.gov/compliance/resources/policies/ej/exec_order_12898.pdf (last visited December 30, 2009).

Section 4-4 on subsistence consumption of fish and wildlife may bear upon EPA decision-making under Section 404(c).

Office of the President, Executive Order 13175 (Nov. 6, 2000) re: Consultation and Coordination with Indian Tribal Governments, available at <http://www.epa.gov/fedreg/eo/eo13175.htm> (last visited December 30, 2009). This executive order applies to federal-tribal relationships.

Office of the President, Memorandum for the Heads of Executive Departments and Agencies, re: Tribal Consultation (Nov. 5, 2009), available at <http://www.gpoaccess.gov/presdocs/2009/DCPD-200900887.pdf> (last visited December 30, 2009). This presidential memorandum supplements Executive Order 13175.

Parker, et al., "*Pebble Mine: Testing the Limits of Alaska's Large Mine Permitting Process*," Alaska Law Review, Vol. 25:1 (June 2008), available at www.law.duke.edu/shell/cite.pl?25+Alaska+L.+Rev.+1+pdf (last visited December 30, 2009).

This law journal article, by lawyers and biologists, examines the adequacy of the state's large mine permitting process and finds it insufficient to deal with large metallic sulfide mines such as a Pebble mine.²³ The article contains over 170 footnotes, many with links to sources. Many of the non-legal sources may be useful to the Regional Administrator of EPA in making the initial determination of whether there is "reason to believe" that metallic sulfide mining in the area of Pebble "could result" in "unacceptable adverse effect," and therefore whether to commence a 404(c) process. The citations cover: (1) academic and professional literature on impacts that dissolved copper may have on salmonids and other fish, including a discussion of additive and synergistic effects; (2) academic and professional literature on the role that genetic diversity plays in overall productivity of salmon stocks; (3) EPA documents on acid mine drainage; (4)

²³ The authors have represented or assisted clients or entities opposed to or concerned about a Pebble mine, and continue to do so.

documents from Pebble Limited Partnership or Northern Dynasty on the nature of the ore body, (5) documents from Northern Dynasty submitted as part of its 2006 applications for water rights and approval of dams, (6) a recent study by Dr. John Duffield (University of Montana) of the economic values and job production associated with wild salmon producing watersheds of the Bristol Bay drainages, and (7) other related materials. Some of the links to PLP and NDM materials are no longer active or have been replaced by more up-to-date sources on PLP's webpages (see below).

Pebble Limited Partnership, various websites at <http://www.pebblepartnership.com/>.

State of Alaska, Alaska Statutes, Title 38, Chap. 38.04 (land use planning and classification) at <http://www.legis.state.ak.us/basis/folio.asp>, and ADNRR regulations (land use planning and classification), 11 AAC 55.010 -- .280 at <http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query={JUMP:'Title11Chap55'}/doc/{@1}?firsthit>

Trasky & Associates, Analysis of the Potential Impacts of Copper Sulfide Mining on the Salmon Resources of the Nushagak and Kvichak Watersheds (2007).

This two-volume report may, or may not, be public at the present time. It was prepared for the Nature Conservancy in Alaska. Mr. Trasky is a retired Regional Supervisor of the Alaska Department of Fish and Game, Habitat Division, Region III, which includes the Bristol Bay drainages.

US Department of the Interior, Bureau of Land Management, Subsistence Use Area Maps, Proposed Resource Management Plan (RMP) for BLM lands in the Bristol Bay drainages, and Final Environmental Impact Statement on the proposed RMP (December 2007), available at http://www.blm.gov/ak/st/en/prog/planning/bay_rmp_eis_home_page/bay_feis_documents.html (last visited Jan. 7, 2010).

The final EIS on BLM's proposed Resource Management Plan contains maps of subsistence use areas of many of the villages and communities in the Bristol Bay drainages. The internet links to the maps of subsistence use areas that appear to include significant amounts of the Kvichak and Nushagak drainages are:

Aleknagik:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.39744.File.dat/Map3-51_Aleknagik.pdf (last visited Jan. 7, 2010)

Dillingham:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.16048.File.dat/Map3-52_Dillingham.pdf (last visited Jan. 7, 2010)

Ekwok:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.76842.File.dat/Map3-53_Ekwok.pdf (last visited Jan. 7, 2010)

Igiugig

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.33049.File.dat/Map3-54_Igiugig.pdf (last visited Jan. 7, 2010)

Iliamna:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.78607.File.dat/Map3-55_Iliamna.pdf (last visited Jan. 7, 2010)

Kokhanok:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.64140.File.dat/Map3-57_Kokhanok.pdf (last visited Jan. 7, 2010)

Levelock:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.58501.File.dat/Map3-59_Levelock.pdf (last visited Jan. 7, 2010)

Koliganek:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.56441.File.dat/Map3-58_Koliganek.pdf (last visited Jan. 7, 2010)

Manokotak:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.65865.File.dat/Map3-60_Manokotak.pdf (last visited Jan. 7, 2010)

Nondalton:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.36771.File.dat/Map3-62_Nondalton.pdf (last visited Jan. 7, 2010)

Pedro Bay:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.89854.File.dat/Map3-63_PedroBay.pdf (last visited Jan. 7, 2010)

Platinum:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.4004.File.dat/Map3-64_Platinum.pdf (last visited Jan. 7, 2010)

Portage Creek:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.78039.File.dat/Map3-65_PortageCreek.pdf (last visited Jan. 7, 2010)

Port Alsworth:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.10100.File.dat/Map3-66_PortAlsworth.pdf (last visited Jan. 7, 2010)

New Stuyahok:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.90357.File.dat/Map3-68_NewStuyahok.pdf (last visited Jan. 7, 2010)

Togiak:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.42891.File.dat/Map3-69_Togiak.pdf (last visited Jan. 7, 2010)

Twin Hills:

http://www.blm.gov/pgdata/etc/medialib/blm/ak/afo/bay_rmp_eis_final.Par.66104.File.dat/Map3-70_TwinHills.pdf (last visited Jan. 7, 2010)

END

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May 7, 2010

Dennis J. McLerran, Regional Administrator
 U.S. Environmental Protection Agency, Region 10
 Regional Administrator's Office, RA-140
 1200 Sixth Avenue, Suite 900
 Seattle, WA 98101

Re: Secondary effects on subsistence and recreational use from a potential Pebble mine.

Dear Mr. McLerran:

I and my co-counsel represent several federally-recognized Tribes that, in accompanying correspondence, have requested EPA to initiate a public process, under Section 404(c) of the Clean Water Act, to identify and designate waters and wetlands in the Kvichak and Nushagak river drainages of Southwest Alaska where discharge of dredge and fill material associated with metallic sulfide mining, such as a potential Pebble mine, could be prohibited or restricted.

Much of the discussion of a potential Pebble mine focuses, understandably, on risks to commercial salmon fisheries. This letter focuses on risks to subsistence and recreation (chiefly sport fishing), in order to draw a distinction.

A distinction is this. With respect to commercial fishing, significant damage or loss may depend, for the most part, on events such as acid mine drainage, seepage from or failure of tailings facilities, other pollution, genetic loss, etc.; and at least some of these events are likely to occur if for no other reason than that containment must be forever. Such events would be secondary effects to discharges of dredge and fill into waters and wetlands. With respect to subsistence and sport fishing, significant damage or loss may occur not only by such means, but also by other secondary effects such as increased competition due to increased use, population, access, crowding, etc. Sport hunting is likely to suffer similarly. Thus, while discharges under Section 404 for a Pebble mine (or similar metallic sulfide mine) inevitably will have direct and cumulative effects where the discharges occur, this letter focuses on impacts that are likely to result, *secondarily and in combination* with other impacts (of increased use, access, etc.), in significant loss or damage to subsistence and recreational use of fish and wildlife.

I. Summary of the 404(c) Regulations and the 404(b)(1) Guidelines.

The 404(c) regulations define an "unacceptable adverse effect" as

impact on an aquatic or wetland ecosystem which is likely to result in . . .
 significant loss of or damage to fisheries . . . , or wildlife habitat or recreation

areas. In evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the section 404(b)(1) guidelines (40 CFR part 230).¹

The purposes of the Guidelines are "to restore and *maintain* the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material,"² and to implement Congressional policies expressed in the Clean Water Act.³ Accordingly, the Guidelines establish a rebuttable presumption against allowing any discharge:

Fundamental to these Guidelines is the *precept* that dredged or fill material should *not be discharged* into the aquatic ecosystem, *unless* it can be demonstrated that such a discharge will not have an unacceptable adverse impact *either individually or in combination* with known and/or probable impacts of other activities affecting the ecosystems of concern.⁴

Thus, the Guidelines prohibit a discharge whenever it results, "either individually or in combination" with other known or probable impacts, in an unacceptable adverse impact. The Guidelines further declare:

From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in *wetlands*, is considered to be among the most *severe* environmental impacts covered by these Guidelines. The *guiding principle* should be that degradation or destruction of special sites [such as wetlands] may represent an irreversible loss of valuable aquatic resources.⁵

The 404(b)(1) Guidelines address direct, cumulative and secondary effects.⁶ Cumulative effects are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material.⁷ Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.⁸ Information about secondary effects must be considered prior to a final decision under Section 404.⁹ Secondary effects may present issues of greater

¹ 40 CFR 231.2(e) (italics added). The 404(b)(1) Guidelines (40 CFR Part 230) are promulgated by the EPA in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the Clean Water Act. 40 CFR 230.2.

² 40 CFR 230.1(a) (italics added).

³ 40 CFR 230.1(b).

⁴ 40 CFR 230.1(c) (italics added).

⁵ 40 CFR 230.1(d) (italics added). Wetlands are a "special aquatic site." 40 CFR Part 230, subpart E.

⁶ 40 CFR 230.11.

⁷ 40 CFR 230.11(g)(1).

⁸ 40 CFR 230.11(h)(1).

⁹ *Id.*

significance than direct effects.¹⁰ The Guidelines address effects on human uses of resources.¹¹ In practice, this includes secondary effects on such uses.¹²

II. Overview of the Economic Uses of Fish and Wildlife in the Bristol Bay Area.

The most recent study of economic values associated with salmon of the Bristol Bay drainages is: John Duffield¹³ et al., *Economics of Wild Salmon Watersheds: Bristol Bay, Alaska* (2007) (see Appendix, Tribes' letter requesting a 404(c) process).¹⁴ According to Duffield, the economy of the Bristol Bay region depends on three main types of activities – publicly funded services (government plus non-profits), activities associated with the commercial exploitation of the natural resources of the region (commercial fishing and recreation), and subsistence.¹⁵

With respect to commercial salmon fishing, Duffield estimates that commercial salmon caught in Bristol Bay in 2005 had a wholesale value of \$226 million in the regional economy.¹⁶

With respect to subsistence, Duffield estimates that subsistence harvest of fish and game, by approximately 7600 people residing in the Bristol Bay drainages, accounts for 2.4 million pounds of subsistence harvest per year for an average of 315 pounds per person annually,¹⁷ and that this results in an estimated net economic value annually of between \$78 and \$143 million.¹⁸

With respect recreation, Duffield estimates that in 2005 the fish and wildlife in these drainages accounted for nearly 51,000 recreational trips,¹⁹ which generated \$91 million in expenditures within Alaska.²⁰ With respect to sport fishing trips, Alaska residents account for

¹⁰ 40 CFR 230.41(b) (“minor loss of wetland acreage may result in major losses through secondary impacts”).

¹¹ 40 CFR Part 230, Subpart F.

¹² An example of a previous EPA action under 404(c) that addresses secondary effects on human use of resources is the Recommended Determination of [EPA Region IV] Pursuant to Section 404(c) of the Clean Water Act Concerning the Yazoo Backwater Area Pumps Project (June 23, 2008).

¹³ Dr. Duffield, PhD, is a professor of natural resource economics at the University of Montana and is a co-author of the treatise: Ward, Kevin M. and John W. Duffield, 1992, *Natural Resource Damages: Law and Economics*, New York, John Wiley & Sons.

¹⁴ Page citations herein are to the full study listed in the Appendix to the Tribes' letter to EPA re 404(c). A shorter version of the study was published in USDA Forest Service Proceedings RMRS-P-49 (2007).

¹⁵ Duffield et al., at 93.

¹⁶ Duffield et al., at 16. The “economic value” of commercial salmon fishing in Bristol Bay can be estimated by various values, such as ex-vessel value, expenditure value, wholesale value, net profit, etc., in various geographical contexts, such as a local, regional, or national economy. See Duffield generally.

¹⁷ Duffield et al., at 84 – 85.

¹⁸ Duffield et al., at 107 – 108.

¹⁹ Duffield et al., at 16, 99.

²⁰ Id.

approximately 65 percent of the trips to the area, and nonresidents 35 percent.²¹ Total angler effort is on the order of 100,000 angler days per year.²² When sport fishing was the sole or primary purpose of these trips, the sport fishing accounted for \$61 million in expenditures within Alaska,²³ of which \$48 million were expenditures by the one-third of sport fishers who are non-residents of Alaska.²⁴ With respect to sport hunting and wildlife viewing/tourism, they accounted for \$13 million and \$17 million respectively, in expenditures within Alaska.²⁵

With respect to employment, the following table from Duffield, et al. reflects the distribution of full-time-equivalent jobs.

**Total Full Time Equivalent (FTE) Employment in Alaska
Dependent on Bristol Bay Wild Salmon Ecosystems, 2005²⁶**

| Sector | Alaska Residents | | | Nonresidents | Total FTE jobs |
|----------------------------|--------------------|------------------------|-----------------|--------------|-------------------|
| | Local residents | Non-local residents | Total Alaska | | |
| Commercial fishing | 689 | 667 | 1,357 | 1,172 | 2,529 |
| Commercial processing | 465 | 449 | 914 | 796 | 1,710 |
| Sport fishing | 288 | 435 | 723 | 123 | 846 |
| Sport hunting | 60 | 105 | 165 | 2 | 167 |
| Wildlife viewing / tourism | 82 | 139 | 222 | 17 | 239 |
| Subsistence | 14 | 34 | 49 | 0 | 49 |
| Total FTE jobs | 1598 | 1829 | 3,430 | 2,110 | 5,540 |

III. Secondary Effects on Subsistence and Recreational Use of Fish and Wildlife.

A Pebble mine, and associated development and access, are likely to increase competition for subsistence and recreational use of fish and game in the Bristol Bay drainages. At various times, the Pebble Limited Partnership (PLP) has asserted that a Pebble mine will require several thousand workers to build it, and a thousand workers to operate it, though PLP's estimates of the number of workers fluctuate. This increased activity inevitably will bring additional residents to the area in other roles, also. Even if stipulations on mining-related permits, such as wetland permits under Section 404, could protect fish and wildlife habitat outside of the sites at which dredge and fill material would be discharged, significant increases in demand for fish and game resources, in access demands, and in secondary development are likely to increase competition for fish and game.

²¹ Duffield et al., at 15.

²² Duffield, et al., at 17.

²³ Duffield et al., at 15-16, 101.

²⁴ Id.

²⁵ Duffield et al., at 16.

²⁶ Duffield et al., at 17. Hunting is included because wild salmon returning from the sea perform an "ecosystem service" of nutrient recycling to support habitat functions. See id. at 24-26. In Alaska, marine nitrogen accounts for as much as 90 percent of the nitrogen in brown bears. See Robert J. Naiman et al., *Riparia: Ecology, Conservation, and Management of Streamside Communities*, 184-185 (2005).

For purposes of Section 404(c) and the 404(b)(1) Guidelines, EPA may consider the quality of subsistence and recreational use and socio-economic impacts resulting from changes in subsistence and recreational use patterns.²⁷

A. Subsistence and Environmental Justice.

In the Bristol Bay drainages, the share of the population that is Alaska Native is relatively high at 70 percent, compared to Alaska as a whole, with 16 percent.²⁸ Accordingly, subsistence is a major concern to the Tribes, and so, the Appendix to the Tribes's letter to EPA on 404(c) provides internet links to maps (used by the Bureau of Land Management) which identify subsistence use areas for the villages and communities in the area that use the Kvichak and Nushagak drainages for subsistence. The demographic aspects raise issues of environmental justice under Executive Order 12898. It requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on low-income and minority populations.

Most of the central provisions of State and federal subsistence laws were drafted nearly thirty years ago. Both provide two "tiers" of a subsistence preference (16 U.S.C. § 3114; AS 16.05.258), but they differ with respect to who can participate. Federal law limits subsistence on federal lands to *rural* Alaska residents. State law allows *all* Alaskans to qualify, preliminarily, for subsistence on non-federal lands.²⁹ Under both schemes, when the total harvest by subsistence and other users of a fish or game stock exceeds sustained yield, the Tier I preference restricts or eliminates non-subsistence users. When the subsistence harvest alone exceeds sustained yield, the Tier II preference is triggered and subsistence is restricted by statutory criteria that allocate subsistence opportunities. On federal lands, 16 U.S.C. § 3114 allocates subsistence opportunities by three criteria: (1) customary and direct dependence on the populations as the mainstay of livelihood; (2) local residency; and (3) availability of alternative resources. The State, however, must avoid local residency criteria as being unconstitutional under the Alaska Constitution. These distinctions in who can hunt and fish in particular situations have divided Alaskans and are known colloquially as the "subsistence dilemma."³⁰

²⁷ See e.g., USEPA, Recommended Determination pursuant to Section 404(c) Concerning the Yazoo Backwater Area Pumps Project, *supra* (portions address potential changes in quality of, and economic benefits derived from, fishing and hunting in the Yazoo Backwater Area).

²⁸ Duffield et al., at 11.

²⁹ *McDowell v. State*, 785 P.2d 1 (Ak. 1989) (Alaska constitution bars State from limiting subsistence to rural residents).

³⁰ A Pebble mine may increase pressure (which already exists) to revise federal subsistence law to be protect only Alaska Native people, and to apply it more broadly than only on federal land (*i. e.*, to Native corporation lands also). Congress probably could adopt a "Native only" subsistence provision under the Indian Powers clauses of the US Constitution, but the Alaska legislature cannot under the Alaska Constitution. Doing so would drive state and federal governments further apart on subsistence law, and would be very divisive among state residents. A proposed Pebble mine is likely to add to pressures to do so.

A potential Pebble mine is likely to be caught upon the horns of this dilemma, because the Bristol Bay drainages (unlike locations of other large mines in Alaska) are the source of world-class fish and game resources (e.g., salmon, trout, char, grayling, pike, lake trout, caribou, moose, and bears) that attract users locally, regionally, nationally, and internationally. No other large Alaskan mine is located in a region that does so. This distinction implies that Pebble and associated development are likely to result in increasing the numbers of new local rural residents, visitors from Alaska and perhaps elsewhere, and the amount of secondary development.³¹ Because of the land ownership pattern, new local residents are likely to settle in the vicinity of Iliamna, Newhalen and Nondalton. However, their uses of lands and resources will reach beyond, to state lands in the Kvichak and Nushagak drainages (and to private land, including Native land, with and without permission) where state subsistence law applies, and to federal land (Lake Clark and Katmai national parks and preserves, and BLM lands) where federal subsistence law applies. The Pebble Partnership may restrict fishing or hunting by employees while at the mine site, but it cannot limit development of private land, or the activities of new local residents who are either not its employees, or are visitors. Even well-intentioned restrictions on access to protect subsistence uses of resources tend to be transitory and ineffective (e.g., the Dalton Highway, formerly “the North Slope Haul Road” is now open to public use).

With respect to federal law, the *new* local residents will be *rural* residents for purposes of subsistence in federal parks and preserves and BLM lands. They will compete with both *current rural residents* engaged in subsistence and *sport hunters* who visit the area. As *total* subsistence demand increases due to new *rural* residents, Federal subsistence law, first, will restrict or eliminate sport hunting in the federal Lake Clark and Katmai Preserves (where sport hunting has been allowed). Second, when subsistence demand of all (new and current) rural residents surpasses sustained yield of a fish or game population (most likely a game population) on federal land, some rural residents will be disqualified under the criteria at 16 U.S.C. § 3114. However, the local-residency criterion will not be particularly effective, because new and current rural residents will *all* be local rural residents for purposes of federal subsistence law. The first and third criteria – *i.e.*, (1) customary and direct dependence as the mainstay of livelihood; and (3) availability of alternative resources – will disqualify some subsistence users on federal lands, not unlike the disqualification that occurs under the State’s divisive and controversial Tier II hunts. Hence, *current* rural residents would experience increased competition, diminished subsistence opportunity, and disqualification on federal lands, because of an influx of *new* rural residents.

With respect to state subsistence law, conflicts are likely to be more intense because all Alaska residents can qualify for subsistence on nonfederal lands. Some game populations, such as Mulchatna caribou and Nushagak moose, may have to be managed as Tier II state subsistence hunts, in which all sport hunters and many subsistence hunters would be excluded.

Thus, the discharge of dredge and fill material for a Pebble or similar mine is likely to result, in combination with other impacts, in a significant loss of subsistence by current subsistence users. Furthermore, because the population in the Bristol Bay drainages is substantially Native Alaskan, a Pebble mine (or similar metallic sulfide mine) is likely to have

³¹ For reasons addressed in Part B below, additional visitors may not result in less, not more recreational expenditures.

disproportionately high, adverse, *secondary* effects, in combination with other impacts, on subsistence use by Alaska Natives in the Kvichak and Nushagak drainages. This raises issues of environmental justice under Executive Order 12898. Again, the Yazoo Backwater Area Pumps Project (see fn. 12, *supra*) provides analogy. In that case, EPA concluded that the project would have disproportionate adverse effects on subsistence fishing and hunting activities of low-income and minority populations, and that a 404(c) decision to bar the project would not.³²

B. Sport Fishing.

As said above, in the Bristol Bay drainages, approximately two-thirds of the sport-fishing trips are by local residents,³³ and approximately two-thirds of the sport-fishing expenditures are by nonresidents. With respect to sport fishing expenditures, the Duffield study is consistent with others published in the 1980's. Generally speaking, the studies have found or implied that two factors drive expenditures for services of remote fishing lodges in the Bristol Bay drainages: (1) desire for large rainbow trout as a target species, ahead of king salmon, silver salmon and other species, and (2) concern about crowding.³⁴ Most of the commercial lodges and camps are located in the Kvichak and Nushagak drainages.³⁵

Duffield compared sport fishing in the Bristol Bay drainages to sport fishing on the Kenai Peninsula. Anglers fishing the road-accessible Kenai Peninsula generally were less concerned with crowding or desire to fishing remote roadless areas than were anglers in the Bristol Bay drainages,³⁶ and were more likely to pursue salmon.³⁷ According to Duffield, these findings are consistent with the general finding from Romberg (1999), that there are different market segments of Alaskan sport fishing, and that different types of waters attract different types of anglers.³⁸ Generally, in primarily road-accessible fisheries of Southcentral Alaska, Alaska residents account for about two-thirds of sport fishing effort (measured in angler-days).³⁹ In

³² USEPA, Recommended Determination pursuant to Section 404(c) Concerning the Yazoo Backwater Area Pumps Project, *supra*, at 65 – 67.

³³ Duffield, et al., at 51 (estimated 19,488 sport fishing trips by Bristol Bay area residents versus 12,966 sport fishing trips by non-residents of Alaska).

³⁴ Duffield, et al., at 46 – 48 (large rainbow trout viewed as over 26 inches in survey). See also Jon Issacs & Associates, "Commercial Recreation Service Providers Study" (1986) for Bristol Bay Coastal Resource Serv. Area (focuses on Nushagak/Mulchatna drainage); D. A. Aekley, "An Economic Evaluation of Recreational Fishing in Bristol Bay, Alaska," Masters Thesis, UAA/Juneau (1988) (focuses on Kvichak/Naknek drainages; includes Iliamna Lake area).

³⁵ The authors can provide a copy of the State's "Bristol Bay Area Plan Planning Regions, Recreation Lodges & Camps" (2005) prepared for the State's 2005 Bristol Bay Area Plan but not published in the Plan itself.

³⁶ Duffield, et al., at 43.

³⁷ Duffield, et al., at 45.

³⁸ Duffield, et al., at 43.

³⁹ ADF&G, Fishery Data Series, No. 09-47, "Estimates of Participation, Catch, and Harvest in Alaska Sport Fisheries in 2005, 37 (This Data Series defines "Southcentral Alaska" as including Kenai Peninsula, Matanuska-Susitna Valley, and Bristol Bay drainages, but the last account for a small percentage of all angling effort as this data series defines "Southcentral Alaska.")

contrast, in the Bristol Bay drainages, where residents account for two-thirds of the sport fishing trips and nonresidents account for two-thirds of the expenditures, the nonresidents who purchase multi-day "trip packages" (of lodge, guiding and air taxi services) in the Bristol Bay drainages, account for over half of the total sport fishing expenditures.⁴⁰

Duffield addresses potential development within the area that could result in road access (by ferry from Homer, Alaska) and thus would impact crowding and size and abundance of rainbow trout in the region.⁴¹ The survey indicates that 45.4% of non-residents and 30.5% of residents feel that the road access would cause them to either stop fishing in the Bristol Bay area (and fish other areas of Alaska) or stop fishing in Alaska entirely.⁴² Nearly 80 percent of non-resident lodge clients responded that they oppose developing road access in Bristol Bay area, and nearly 60 percent responded that they would not fish the Bristol Bay area if good road access were developed in the area.⁴³

For purposes of 404(c) and the 404(b)(1) Guidelines, the dredge and fill of wetlands to develop a Pebble mine and access to it, in combination with increased crowding, population and access, is likely to result in significant loss of sport fishing within the lodge, guiding and air taxi industries, as non-residents who seek trout at uncrowded, internationally famous destinations are displaced by residents who seek salmon and are more tolerant of crowding. That would simply shift expenditures of residents from road-accessible destinations in the Kenai Peninsula or Matanuska-Susitna Valley to the Kvichak and Nushagak drainages while displacing nonresidents who account for the majority of sport fishing expenditures in the Bristol Bay drainages.

IV. Existence Value.

Although the focus here is on subsistence and sport fishing, the values of renewable resource services in principle should be available in perpetuity. Hence, EPA might consider what has been said about existence value of the Bristol Bay watersheds. According to Duffield, et al., a major unknown is the total value for existence and bequest (also called passive use values).⁴⁴ Subject to qualifications, Duffield, et al., estimate that the existence value of the watersheds is in the range of \$6.0 billion to \$10.2 billion.⁴⁵

Sincerely yours,



Geoffrey Y. Parker

cc: Lisa P. Jackson, EPA, Administrator, Washington, D.C.
Phil North, EPA, Kenai, Alaska

⁴⁰ Duffield, et al., at 55 - 56; see also *id.* at 50 (re distribution of expenditures).

⁴¹ Duffield, et al., at 58.

⁴² Duffield, et. al., at 58.

⁴³ Duffield, et. al., at 61.

⁴⁴ Duffield, et. al., at 110.

⁴⁵ Duffield, et. al., at 112.

FROM :

FAX NO. :

May. 12 2010 06:48PM P1

**Alaska Independent Fishermen's
Marketing Association**
P.O. Box 80131
Seattle, WA 98160
Phone/Fax (206) 542-3930



May 13, 2010

Lisa P. Jackson, Administrator
U.S. Environmental Protection Agency, Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dennis J. McLerran, Regional Administrator
U.S. Environmental Protection Agency, Region 10
Regional Administrator's Office, RA-140
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Re: Endorsement of Tribes' request that EPA initiate a public process under Section 404(c) of the Clean Water Act, regarding discharges related to potential metallic sulfide mining in the Kvichak and Nushagak drainages of Southwest Alaska.

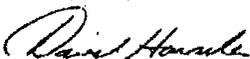
Dear Ms. Jackson and Mr. McLerran:

AIFMA Cooperative (Alaska Independent Fishermen's Marketing Association) is a member-based cooperative of commercial fishers, organized under the laws of the State of Alaska. AIFMA's members fish for salmon in Bristol Bay in Southwest Alaska. AIFMA has long opposed development of a potential Pebble Mine. If developed, it would mine a large metallic sulfide deposit located at the divide between Upper Talarik Creek in the Kvichak River drainage and the North and South Forks of the Koktuli River drainage. The Kvichak River drainage historically produces more sockeye salmon than any other river in the world, and the Nushagak River drainage produces the most salmon of the other species caught in the commercial fisheries of Bristol Bay. A Pebble Mine threatens these commercial fisheries.

AIFMA is working with several federally-recognized tribes in the Kvichak and Nushagak drainages on matters related to a potential Pebble Mine. AIFMA's board of directors received and endorsed draft correspondence by the Tribes that requests EPA to initiate a public process under Section 404(c) of the Clean Water Act, to protect waters, wetlands, fish, wildlife, and subsistence and recreational uses in the Kvichak and Nushagak drainages and the commercial fisheries in Bristol Bay from direct, cumulative and secondary effects of discharges associated with metallic sulfide mining, including a potential Pebble Mine. We understand that the Tribes' letter has now been sent to EPA.

This letter confirms AIFMA's endorsement of the Tribes' letter and request for a 404(c) public process. AIFMA will do all it can to assist such a process. Thank you.

Sincerely yours,


David Harsila
President

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February 24, 2011

Lisa Jackson, Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Cc: Ken Salazar, Secretary, Department of Interior
Gary Locke, Secretary, Department of Commerce
Nancy Sutley, Chair, Council on Environmental Quality
Dr. Jane Lubchenco, Administrator, National Oceanic and Atmospheric Administration
Bob Abbey, Director, Bureau of Land Management
John Jarvis, Director, National Park Service
Rowan Gould, Acting Director, U.S. Fish and Wildlife Service
Jo-Ellen Darcy, Assistant Secretary of the Army for Civil Works
Lisa Murkowski, U.S. Senator from Alaska
Mark Begich, U.S. Senator from Alaska

Dear Administrator Jackson,

We, the undersigned hunting and angling organizations and businesses representing millions of sportsmen, outdoor recreation groups and related businesses, thank you and the EPA for taking the first step in protecting Bristol Bay from the dangers of the proposed Pebble Mine, by starting a scientific assessment of the region's watershed. We look forward to working with the EPA and other decision makers during this public process to determine the fate of Bristol Bay, Alaska.

Our 363 sporting conservation groups, businesses and trade associations also thank you for visiting the Bristol Bay region last year. Your effort to meet with the region's local residents is greatly appreciated, as the world's greatest wild sockeye salmon fishery is facing unprecedented threats from proposed development of a massive mining district. We write today to ask you to use all the tools at your disposal to protect a sport fishing and hunting destination that is unrivaled in America and perhaps the world, for this and future generations of sportsmen and women.

The proposed Pebble Mine in Bristol Bay poses numerous significant and potentially long-lasting threats to one of the world's foremost sport fishing and hunting regions. Specifically, fish habitat (including spawning and breeding grounds), wildlife habitat and recreational areas are all threatened by several hard rock mining proposals - most notably, the Pebble Mine. The potential impact from this type of activity could be severe. It is estimated that the Pebble Mine would produce between 2.5 and 10 billion tons of waste containing elements, such as copper and other heavy metals, that would threaten several fishery areas including spawning and breeding grounds for world-renowned populations of salmon.

If this project moves forward, these toxins would have to be contained and potentially treated in perpetuity - in an area of high seismic activity, which increases the risks tremendously. Because the Pebble property straddles the Kvichak and Nushagak river drainages - two of the most productive salmon systems on the planet - any release of this waste into the surface or groundwater has the

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

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potential to severely harm Bristol Bay's salmon and the livelihoods of the sport fishing and hunting business owners, all of whom depend on them for their economic support.

Sport fishing in Bristol Bay generates \$60 million annually; anglers looking for "once in a lifetime" experiences on rivers such as the Nushagak, Mulchatna, Koktuli and Kvichak support more than 800 full- and part-time jobs. Mining activity and increased development associated with mining will detrimentally impact these areas by direct impacts to fish and habitat. Development will also negatively impact opportunities for sport fishing and hunting operations in the area by diminishing the quality of the experience. Despite the remote nature of the region and the costs associated with traveling to it, on a yearly basis up to 65,000 visitors come to Bristol Bay for recreational opportunities to fish, hunt, and view wildlife.

Secretary Salazar and the Obama administration recognized that oil and gas development in this area is simply not worth the risk, the same is true for mining operations in the headwaters of Bristol Bay. The fish and wildlife values in the region, its size and setting, and the national significance of its resources are, in the words of Secretary Salazar and President Obama, "a national treasure that we must protect." The risk to this national treasure is too great and the resource too unique and irreplaceable to allow the Pebble Project to continue forward.

While we thank you for planning an assessment of the Bristol Bay watershed to better understand how future large-scale development projects may affect Bristol Bay, it's not enough. The EPA has the authority under the Clean Water Act to invoke Section 404(c), which would give Bristol Bay the protection it needs from mining and other large-scale developments.

The undersigned organizations and businesses urge EPA to proactively fulfill its mission to protect the environment and human health in Bristol Bay, AK by using its authority under Clean Water Act Section 404(c) to withdraw waters and wetlands in the headwaters of the Bristol Bay watershed from future specification as disposal sites for dredge and fill activity associated with mining operations. The EPA has an opportunity now to guarantee a future for Bristol Bay that will generate economic opportunities while also conserving sporting traditions for generations to come.

We look forward to working with the EPA and all federal agencies with an interest and role in the future of Bristol Bay's tremendously productive lands and waters.

Sincerely,

National Organizations (15)

American Fly Fishing Trade Association
Randi Swisher
President
Westminster, CO

American Sportfishing Association
Gordon Robertson
Vice President
Alexandria, VA

Backcountry Hunters and Anglers
Jim Akenson
Executive Director
Joseph, OR

Bull Moose Sportsmen's Alliance
Tim Mauck
Co-Director
Denver, CO

Page 3 of 24

Campfire Club of America
Leonard J. Vallender
Conservation Chair
Chappaqua, NY

Dallas Safari Club
Ben Carter
Executive Director
Dallas, TX

Delta Waterfowl Foundation
John L. Devney
Senior Vice President
Bismarck, ND

Federation of Fly Fishers
Philip Greenlee
President / Chairman of the Board
Livingston, MT

Izaak Walton League of America
Roger Sears
Executive Board Chair
Poolesville, MD

National Wildlife Federation
Jim Adams
Regional Executive Director – Pacific Region
Anchorage, AK

North American Fishing Club
Steve Pennaz
Executive Director
Minnetonka, MN

North American Hunting Club
Bill Miller
Executive Director
Minnetonka, MN

Theodore Roosevelt Conservation Partnership
Tom Franklin
Director of Policy and Government Relations
Washington, DC

Trout Unlimited
Chris Wood
President / Chief Executive Officer
Arlington, VA

Wildlife Forever
Douglas Grann
President / Chief Executive Officer
Minneapolis, MN

Alaska (75)

3 Rivers Fly & Tackle
Steve Runyan
Manager
Wasilla, AK

Alagnak Lodge
Michael Santelli
Guide
King Salmon, AK

Alaska Alpine Adventures
Dan Oberlatz
Owner/Operator
Anchorage, AK

Alaska Backcountry Hunters & Anglers
Mark Richards
Co-Chair
Eastern Interior (Bush), AK

Alaska Bear Guides
Scott Newman
President
Petersburg, AK

Alaska Fly Anglers, Inc.
John Hohl
Owner
Soldotna, AK

Page 4 of 24

Alaska Fly Fish
Jason Williams
Owner
Anchorage, AK

Alaska Fly Fishing Goods
Brad Elfers
Owner
Juneau, AK
Alaska Glacier Guides, Inc,
Alisha Rosenbruch-Decker
President
Gustavus, AK

Alaska King Salmon Adventures
Scott Weedman
Owner
Dillingham, AK

Alaska Rainbow Adventures
Paul Hansen
Owner
Wasilla, AK

Alaska Rainbow Lodge
Ron and Sharon Hayes
Owners/Operators
King Salmon, AK

Alaska Salmon Camp, Inc.
Kent Anderson
President
Dillingham, AK

Alaska Sportsman's Bear Trail Lodge
Nanci Morris-Lyon
Managing Partner
King Salmon, AK

Alaska Trophy Fishing Safaris
John & Melissa Carlin
Owners / Operators
Homer, AK

Alaska West
Andrew Bennett
President
Quinhagak, AK

Alaska Wilderness Trips, Inc.
Clark Whitney, Sr.
Owner
Soldotna, AK

Alaska's Boardwalk Lodge
Brad Steuart
Owner
Thorne Bay, AK

Alaska's Wild River Lodge
Seth Kroenke
Owner / Operator
Port Alsworth, AK

Alaskan Leader Tours
Kimberly Riedel
President
Kodiak, AK

Alaskan Wilderness Outfitting Company
Tom & Katie Prijatel
Owners
Cordova, AK

Arctic Wild, LLC
Bill Mohrwinkel
Owner
Fairbanks, AK

Baranof Wilderness Lodge
Mike Trotter
Owner / Operator
Sitka, AK

Beyond Boundaries Expeditions
Mike Trotter
Owner / Operator
Sitka, AK

Page 5 of 24

Blue Fly Bed & Breakfast and Guide Service
 Patricia Edel
 Owner/Operator
 King Salmon, AK

Blue Mountain Lodge
 Tracy & Linda Vrem
 Owners/Operators
 Becharof Lake, AK

Blueberry Island Lodge
 George Riddle
 Owner / Operator
 Igiugig, AK

Branch River Air Service, Inc.
 George V. Hartley
 President
 King Salmon, AK

Brightwater Alaska, Inc.
 Chuck Ash
 President
 Anchorage, AK

Bristol Bay Adventures
 Michael Addiego
 Owner
 Dillingham, AK

Bristol Bay Lodge
 Steve Laurent
 General Manager
 Dillingham, AK

Cape Ommaney Lodge
 James Boyce
 Owner / Master Guide
 Port Alexander, AK

Chinook Tours
 Felix Schneider
 Owner
 Anchorage, AK

Classic Casting Adventures
 Tad Kisaka
 Owner / Guide
 Sitka, AK

Copper River Lodge
 Pat Vermillion
 Owner
 Iliamna, AK

Crystal Creek Lodge
 Dan Michels
 Owner
 King Salmon, AK

Denali Fly Fishing Guides, LLC
 Rick McMahan
 Owner
 Cantwell, AK

Dierick's Tslu River Lodge
 Greg Dierick
 Owner
 Yakutat, AK

EPIC Angling & Adventure, LLC
 Rus Schwausch
 Owner
 King Salmon, AK

Fishing Bear Lodge
 Justin Johns
 Owner
 Dillingham, AK

Glacier Guides, Inc.
 Jimmie C. Rosenbruch
 Owner / Master Guide
 Gustavus, AK

Great Alaska Adventure Vacations
 Kent John
 President
 Sterling, AK

Page 6 of 24

Hitaluga Guide Service, LLC
Cynthia Oliver
Co-Owner
Anchorage, AK

Icy Bay Lodge
Nick Coe
Vice President/Manager
Yakutat, AK

Igiugig Lodge, LLC
Brad Waitman
Owner / Operator
Igiugig, AK

Jake's Nushagak Salmon Camp
Eli Huffman
Owner / Manager
Dillingham, AK

Katmai Air, LLC
Raymond F. & Mariann Peterson
Owners
Kulik Lodge/Katmai Park, AK

Katmai Guide Service
Joe Klutsch
Owner / Master Guide
King Salmon, AK

Katmailand, Inc.
Raymond F. Peterson
President
Kulik Lodge/Katmai Park, AK

Kenai Area Fisherman's Coalition
Dwight Kramer
Chairman
Kenai, AK

Kodiak Sportsman's Lodge
Gary Sampson
Owner
Old Harbor, AK

Kvichak Anglers
Jared Paul Nelson
Owner
Igiugig, AK

Mission Creek Lodge, LLC
Dale DePriest
Owner
Aleknagik, AK

Mountain View Sports Center
John Staser
President
Anchorage, AK

Muskeg Excursions
Johnnie Laird
Owner/Guide
Ketchikan, AK

No See Um Lodge, Inc.
John Holman
President
King Salmon, AK

Ocean Point Alaska Adventures
Keegan McCarthy
Owner/Operator
Douglas, AK

Ouzel Expeditions, Inc.
Sharon Allred
Co-Owner
Girdwood, AK

Painter Creek Lodge
Jon Kent
President
Anchorage, AK

Quartz Creek Lodge
Dave & Pam Pingree
Owners/Operators
Kodiak, AK

Page 7 of 24

Rapids Camp Lodge
Amy Herrig
Owner / Operator
King Salmon, AK

Rainbow Bend Lodges
Tom & Tammy Baumgartner
Owners
King Salmon, AK

Rainbow River Lodge
Chad Hewitt
Managing Partner
Iliamna, AK

Reel Wilderness Adventures, Inc.
David Taylor
President
Dillingham, AK

River King Outfitters
Jon Boyd
Owner
Nushagak River, AK

River Wrangellers
Jennifer & Michael Harpe
Owners
Copper Center, AK

Royal Coachman Lodge
Pat Vermillion
President
Dillingham, AK

Royal Wolf Lodge
Chris & Linda Branham
Owners / Operators
Anchorage, AK

Saltery Lodge
Joe Paul
Manager/Captain
Naha Bay, AK

Sea Hawk Air
Rolan Ruoss
Owner
Kodiak, AK

Talaheim Lodge
Mark Miller
Owner
Anchorage, AK

The Alaska Sportsman's Lodge
Todd Calitri
General Manager
Igiugig, AK

Togiak River Outfitters, LLC
Larry Lund
Owner
Togiak, AK

Westwind Guide Service/AK Big Game Hunting
Anthony B. Lee
Owner
Wasilla, AK

Women's Fly Fishing
Cecelia "Pudge" Kleinkauf
Owner
Anchorage, AK

Arizona (5)

Arizona Flycasters Club
Gary Stinson
Conservation Chair
Phoenix, AZ

Arizona Sportsmen for Wildlife
Brian Pinney
AZSFW - WCC Foundation Chair
Phoenix, AZ

Arizona Wildlife Federation
Tom Mackin
President
Flagstaff, AZ

Page 8 of 24

Eastern Rocky Mtn Council (Fed. of Fly Fishers)
Richard J. Brown
Vice President – Conservation
Flagstaff

White Mountain Lakes Foundation
John Rohmer
President
Phoenix, AZ

Arkansas (3)

Southern Council (Federation of Fly Fishers)
Paul Goodwin
Vice President – Conservation
Mountain Home, AR

White River Chapter (Trout Unlimited)
Mark Romero
Conservation Committee
Lakeview, AR

Women's Fly Fishing of Japan
Misako Ishimura
Conservation Committee
Lakeview, AR

California (30)

Abel Automatics, Inc.
Jeff Patterson
Director of Sales
Camarillo, CA

Bob Marriott's Flyfishing Store
Stacia Siroonian
Vice President
Fullerton, CA

California Division (Izaak Walton League of America)
Peter Hillebrecht
President
Orange, CA

California School of Flyfishing
Ralph & Lisa Cutter
Owners
Nevada City, CA

Central Coast Fly Fishing
Geoff Malloway
Owner
Carmel, CA

Don Coffey Company
Mike Perusse
Sales
San Clemente, CA

Fly Fishers of Davis
Lowell Ashbaugh
Conservation Chair
Davis, CA

Flycasters of San Jose, Inc.
Chuck Hammerstad
Conservation Co-Chair
San Jose, CA

Galvan Fly Reels, Inc.
Bonifacio Galvan
President
Sonora, CA

Golden West Women Flyfishers
Cindy Charles
Conservation Chair
San Francisco, CA

Hatch Outdoors, Inc.
John Torok
President / CEO
Vista, CA

Hobie Cat Company
Jim Czarnowski
Director of Engineering
Oceanside, CA

Page 9 of 24

Jeff Bright Steelhead Flyfishing Expeditions
 Jeff Bright
 Owner
 San Francisco, CA

Marmot Mountain, LLC
 Mark Martin
 President
 Santa Rosa, CA

Mount Tamalpais Fly Fishers
 Kim Colby
 Vice President
 Marin County, CA

Nevada City Anglers
 Tony Dumont
 Owner
 Nevada City, CA

Northern California Council (Fed. of Fly Fishers)
 Anne-Marie Bakker
 President
 Sonoma, CA

Okuma Fishing Tackle
 Douglas Lasko
 President
 Ontario, CA

Outdoor Pro Shop, Inc.
 Ken Elie
 President
 Cotati, CA

Patagonia, Inc.
 Casey Sheahan
 President / CEO
 Ventura, CA

Peninsula Fly Fishers
 Mike Pineli
 Bulletin Editor
 Pacifica, CA

Pit River Company
 Brian McDonald & Joseph Nowak
 Managing Members
 Petaluma, CA

Sac-Sierra Chapter (Trout Unlimited)
 Kevin Mather
 President
 Sacramento, CA

Santa Barbara Flyfishers
 Lew Riffle
 President
 Santa Barbara, CA

Santa Cruz Fly Fishermen
 Sam Bishop
 President
 Santa Cruz, CA

Santa Lucia Fly Fishers
 Mike Kohle
 Conservation Chair
 San Luis Obispo, CA

The Fly Shop, Inc.
 Pat Pendergast
 Director of International Travel
 Redding, CA

The Trout Spot
 Richard Desrosiers
 Owner
 Santa Clara, CA

The Trout Underground
 Tom Chandler
 Publisher
 Mount Shasta, CA

Wilderness Fly Fishers
 Clay Dodder
 Conservation Committee
 Santa Monica, CA

Page 10 of 24

Colorado (10)

Angling Trade Magazine
Kirk Deeter
Editor-In-Chief
Pine, CO

CJR Flyfishing
Clint J. Rossell
Owner / Operator
Idaho Springs, CO

Collegiate Peaks Anglers
Steve Craig
President
Salida, CO

Colorado Backcountry Hunters & Anglers
John Gale
Co-Chair
Boulder, CO

Fishpond, Inc.
John Land le Coq
Co-Founder
Dillon, CO

Fly Fishing Outfitters
John Packer
Owner
Avon, CO

Grand Valley Anglers Chapter (Trout Unlimited)
David Trimm
President
Grand Junction, CO

Scott Fly Rod Company
Jim Bartschi
President
Montrose, CO

The Angling Book Store
Ben Furimski
Owner
Crested Butte, CO

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

Umpqua Feather Merchants
Brent Bauer
Operations Manager
Louisville, CO

Connecticut (4)

Compleat Angler
Scott Bennett
Owner
Darien, CT

North Cove Outfitters, Inc.
Brian Owens
Manager
Old Saybrook, CT

Nutmeg Guide Service
Jeff Church
Owner
Southbury, CT

Sturm, Ruger & Company, Inc.
Mike Fifer
President / CEO
Southport, CT

Delaware (2)

A Marblehead Flyfisher
Terry Peach
Owner
Wilmington, DE

White Clay Outfitters
Kenneth Prager
Vice President
Newark, DE

District of Columbia (1)

National Capital Chapter (Trout Unlimited)
Andrew J. Spence
President
Washington, DC

Page 11 of 24

Florida (8)

AVID Tackle
 Tim Johnson
 Partner / Co-Founder
 Palm Beach Gardens, FL

Florida Wildlife Federation
 Preston Robertson
 Vice President
 Tallahassee, FL

Mangrove Coast Fly Fishers
 Evan Jones
 President
 Sarasota, FL

Norm Zeigler's Fly Shop
 Norm Zeigler
 Owner
 Sanibel Island, FL

Sanibel Island Fly Fishers
 Norm Zeigler
 Board of Directors
 Sanibel Island, FL

Suncoast Fly Fishers
 Tom Gadacz
 President
 Saint Petersburg, FL

Tarpon Coast Fly Fishers (Fed. of Fly Fishers)
 Roger Maler
 President
 Hernando Beach, FL

Tibor Reel Corporation
 Marianne Papa
 Vice President
 Delray Beach, FL

Georgia (1)

Gray's Sporting Journal
 Mike Floyd
 Director of Sales
 Augusta, GA

Idaho (13)

Ballistic Spey Lines
 Lee Davison
 President
 Idaho Falls, ID

Carriboo Conservancy, Inc.
 Bud Smalley
 President
 Pocatello, ID

Down River Design Company
 David Page
 President
 Irwin, ID

Fluid Peak Films
 Lauren Schall & David Page
 Owners
 Swan Valley, ID

Jimmy's All Seasons Angler
 Jimmy Gabettas
 Owner
 Idaho Falls, ID

Kast Gear
 Colby Hackbarth
 Chief Executive Officer
 Idaho Falls, ID

Morning Star Lanyards
 Lynda MacButch
 Owner
 Pocatello, ID

Page 12 of 24

RIO Products International
Simon Gawesworth
Marketing Manager
Idaho Falls, ID

Sandpoint Outfitters
Calvin Fuller
Owner
Sandpoint, ID

Smith Optics
Ned Post
President
Ketchum, ID

Snake River Outfitters
Lee Davison
President
Idaho Falls, ID

SunCloud
Peter Crow
General Manager
Ketchum, ID

The Waterworks-Lamson
Ryan Harrison
President
Ketchum, ID

Illinois (2)

Chicago Fly Fishing Outfitters
Andy Kurkulis
Owner
Chicago, IL

Elliott Donnelley Chapter (Trout Unlimited)
Grant Brown
President
Chicago, IL

Indiana (1)

FlyMasters of Indianapolis
Jon Widboom
Owner
Indianapolis, IN

Iowa (1)

Iowa Wildlife Federation
Joe Wilkinson
President
Solon, IA

Kansas (2)

Heart of America Flyfishers (Fed. of Fly Fishers)
Kevin Carril
Conservation Chair
Overland Park, KS

Kansas Wildlife Federation
Steven Sorensen
Vice President – Conservation
Wichita, KS

Kentucky (1)

Bluegrass Chapter (Trout Unlimited)
Gary S. Rose
President
Lexington, KY

Louisiana (2)

Coldwater Committee (Fed. of Fly Fishers)
Robert Tabbert
Chairman
Lafayette, LA

Louisiana Wildlife Federation
Keith R. Saucier
First Vice President
Gonzales, LA

Page 13 of 24

Maine (3)

Eldredge Brothers Fly Shop
 Jim Bernstein
 Shop Manager
 Cape Neddick, ME

L.L. Bean, Inc.
 Mac McKeever
 Senior Public Relations Representative
 Freeport, ME

Maine Sport Outfitters
 Paul McGurren
 Fly Shop Manager
 Rockport, ME

Maryland (4)

Lateral Line, Inc.
 Brandon White
 Founder
 Easton, MD

Mayfly Enterprises, Ltd.
 Jim Greene
 President / CEO
 Chevy Chase, MD

Mid-Atlantic Council (Federation of Fly Fishers)
 James Porter
 President
 Columbia, MD

Potomac Valley Fly Fishers
 John Brognard, Sr.
 President
 Middletown, MD

Massachusetts (2)

Central Mass Chapter (Trout Unlimited)
 Phillip Horowitz
 President
 Framingham, MA

Greater Boston Chapter (Trout Unlimited)
 David Glater
 President
 Boston, MA

Michigan (7)

Castaway Films
 Grant Wiswell
 Owner
 Saline, MI

Dwight Lydell Chapter (Izaak Walton League of America)
 Robert Stegmier
 Conservation Chair
 Rockford, MI

Great Lakes Council (Federation of Fly Fishers)
 James Schramm
 President
 Pentwater, MI

Greenhighlander Flyfishing
 Bret Reiter
 Owner
 Linden, MI

Midwest Custom Fly Rods
 Steven W. Clark
 Owner
 Royal Oak, MI

OutsideHub.com
 Steve Dooley
 President
 Southfield, MI

USAontheFly.com
 Ken Van Every
 Owner
 Holt, MI

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

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Minnesota (9)

Bob Mitchell's Fly Shop
Michael Alwin
Owner
Lake Elmo, MN

Great Lakes Fly Shop
John Fehnel
Owner
Duluth, MN

J.W. McCabe Chapter (Izaak Walton League of America)
Brent Gurtek
President
Duluth, MN

Minnesota Division (Izaak Walton League of America)
Curt Leitz
President
Saint Paul, MN

Sporting Life Adventure Travel
Paul Hansen
Vice President – International Operations
Saint Michael, MN

The Fly Angler
Scott Struif
Manager
Blaine, MN

W. Breckenridge Chapter (Izaak Walton League of America)
Steven Schaust
President
Brooklyn Park, MN

White Fox Fur & Feather Company
Jay DeLeon
Owner
Pemberton, MN

Whitefish Studio
Bob & Lisa White
Owners
Marine on St. Croix, MN

EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

Missouri (2)

Ozark Fly Fishers, Inc.
Wallis Warren
Conservation Director
Saint Louis, MO

Southwest Missouri Fly Fishers
Paul Goodwin
President
Springfield, MO

Mississippi (1)

Fish Portraits, LLC
Curt Redden
Founder
Hattiesburg, MS

Montana (28)

Big Sky Inflatables, LLC
Richard Stuber
Owner
Stevensville, MT

Canvasfish.com
Derek DeYoung
Owner
Livingston, MT

Castafly Travel, LLC
Robert Boyce
Owner
Bozeman, MT

Confluence Films
Jim Klug
Producer
Bozeman, MT

DR. SLICK Co.
Steve Fournier
Owner
Belgrade, MT

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Fishing with Larry
Guy Schoenborn
Vice President
Columbus, MT

Flathead Wildlife, Inc.
Chuck Hunt
President
Kalispell, MT

Fly on the Wall Travels, LLC
Tyson O'Connell
President
Missoula, MT

Four Rivers Fishing Company
Greg Smith
President
Twin Bridges, MT

Gallatin River Lodge
Keith Comiso
General Manager
Bozeman, MT

Hellgate Hunters and Anglers
Land Tawney
President
Missoula, MT

Lakestream Outfitters
Justin Lawrence
Outfitting Manager
Whitefish, MT

Madison-Gallatin Chapter (Trout Unlimited)
Travis Morris
President
Bozeman, MT

Merco Products
Lyle R. Graff
President
Nye, MT

Missouri River Flyfishers
Sam Wike
President
Great Falls, MT

Montana Fly Fishing Connection, LLC
Joe Sowerby
Owner / Outfitter
Missoula, MT

Mystery Ranch Backpacks
Mark Seacat
Marketing Director
Bozeman, MT

Ro Drift Boats
Robert Eddins
President
Bozeman, MT

Simms Fishing Products
K.C. Walsh
Owner / President
Bozeman, MT

Steelhead Committee (Fed. of Fly Fishers)
Will Atlas
Co-Chair
Livingston, MT

Stonefly Inn & Outfitters
Dan Leavens
Owner
Twin Bridges, MT

Sweetwater Travel
Pat Vermillion
Owner
Livingston, MT

The Missoulian Angler Fly Shop
Russell Parks
Owner
Missoula, MT

Page 16 of 24

The Trout Shop
 Jerry Lappier
 President
 Craig, MT

Triple-M-Outfitters
 Mark Faroni
 Owner / Outfitter
 Dixon, MT

Turneffe Flats Resort (Belize)
 Craig Hayes
 President
 Bozeman, MT

Yellow Dog Flyfishing Adventures
 Jim Klug
 Founder / Director of Operations
 Bozeman, MT

Yellowstone Angler
 James Anderson
 Co-Owner / Manager
 Livingston, MT

Nebraska (2)

HuntingLife.com
 Kevin Paulson
 Founder / CEO
 Lincoln, NE

Recycled Fish
 Teeg Stouffer
 Executive Director
 Nebraska City, NE

Nevada (2)

Hendrix Outdoors
 Mont G. Adams
 Partner
 Fallon, NV

Sagebrush Chapter (Trout Unlimited)
 Mike Caltagirone
 President
 Reno, NV

New Hampshire (4)

ASA / Eastern Fishing & Outdoor Exposition
 Jonathan Sauers
 Show Director
 Portsmouth, NH

Fly Fish America magazine
 Crispin Battles
 Editor & Art Director
 North Conway, NH

On Target magazine
 Crispin Battles
 Editor & Art Director
 North Conway, NH

Thompson / Center
 Craig Cushman
 Director of Marketing
 Rochester, NH

New Jersey (1)

FlyfishMagazine.com
 Lee Murdock
 Publisher
 Medford, NJ

New Mexico (2)

Land of Enchantment Guides
 Noah Parker
 Owner
 Velarde, NM

Taos Fly Shop
 Nick Streit
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 Taos, NM

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New York (6)

Neversink River Guide Service
Art Salomon
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North Flats Guiding, LLC
David Blinken
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O.A. Mustad & Son (USA), Inc.
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Managing Member
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North Carolina (2)

Nantahala River Lodge
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The Green Drake
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Winston Salem, NC

North Dakota (1)

Jason Mitchell Outdoors
Jason Mitchell
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Beulah Fly Rods
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Medford, OR

Catch Magazine
Brian O'Keefe
Owner
Powell Butte, OR

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Owner / Guide
Maupin, OR

Deschutes River Camp
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Madras, OR

ExpeditionMatch.com
Adam Hughes
Owner
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ffp Compound Rods
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Koffler Boats, Inc.
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Lake in the Dunes
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River City Fly Shop
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The Ashland Fly Shop
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Vermont (1)

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EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

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North Fork Anglers
Tim Wade
Owner
Cody, WY

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EPA Letter from Sport Fishing and Hunting Interests on Bristol Bay Alaska (Nov. 2010)

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Managing Director
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Richard Wheatley Limited
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Managing Director
Malvern, Worcestershire

Roxton's Worldwide
Charlie White
Director of Fishing
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TIFFANY & CO. CELEBRATES
BRISTOL BAY, ALASKA
ONE OF AMERICA'S
PRICELESS TREASURES

The Bristol Bay watershed is the spectacular home of America's greatest wild salmon fishery and one of the most beautiful and pristine places on earth.

This is why Tiffany & Co. is so concerned about the proposal to locate an enormous gold and copper mine in the very heart of this watershed.

Tiffany & Co. and other jewelers have publicly announced that we will not use gold from the proposed Pebble Mine. Tiffany's experience in over 173 years of sourcing gemstones and precious metals tells us that there are certain places where mining cannot be done without damaging the landscape, wildlife and communities.

Bristol Bay is one such place.

As we weigh the inevitable risks against the promised reward of the Pebble Mine, we know there will be other gold and copper mines to develop. But we will never find a more majestic and productive place than Bristol Bay.

TIFFANY & CO.

1



July 23, 2012

Attn: Docket # EPA-HQ-ORD-2012-0276
U.S. Environmental Protection Agency
Office of Environmental Information (OEI)
Mail Code 2822-T
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Comments of the National Mining Association on EPA's Draft Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska

To Whom It May Concern:

The National Mining Association (NMA) appreciates the opportunity to submit these comments on the U.S. Environmental Protection Agency's (EPA) May 2012 draft report, *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska* (Draft Assessment). NMA is a national trade association whose members include the producers of most of the nation's coal, metals, industrial and agricultural minerals; the manufacturers of mining and mineral processing machinery, equipment and supplies; and the engineering and consulting firms, financial institutions and other firms serving the mining industry.

As an initial matter, NMA would like to note that it, along with the State of Alaska, multiple tribes and native regional corporations, and others, requested that EPA extend the public comment period on the Draft Assessment. 60 days is hardly sufficient to review a three volume draft study addressing a roughly 15 million acre area that cites to over 2,000 additional documents and covers complex scientific, technical, and legal issues. EPA, however, denied all such requests. The rushed manner in which EPA is conducting the Draft Assessment belies EPA's claims that it is working "in close coordination with federal, State, and tribal organizations in an open, transparent, and public manner."¹

Additionally, NMA submits the following comments, which address several of the legal and scientific infirmities of the Draft Assessment, as well as the far-reaching and troubling precedent that it sets. However, in light of this short time frame, any failure of NMA to comment on a specific section of the Draft Assessment should not be construed as an agreement on the part of NMA with that section.

¹ Apr. 5, 2012 letter from Regional Administrator Dennis J. McLerran to Alaska Attorney General Michael C. Geraghty at pg. 1 (attached).

The Draft Assessment was Conducted Pursuant to Questionable Legal Authority

EPA has stated that, in May 2010, EPA “was asked by nine tribes, two commercial fishing organizations, the Bristol Bay Native Corporation, and others to initiate a Clean Water Act, Section 404(c) process to prohibit or restrict discharges of dredged or fill materials associated with metallic sulfide mining within the headwaters of the Bristol Bay watershed.”² In response to that petition, as well as a separate petition from other tribes and the Governor of Alaska asking EPA not to take action under 404(c), EPA initiated the Draft Assessment. EPA has been clear to assert over the course of the Draft Assessment that “the Agency’s longstanding regulations clearly authorize the Administrator to prohibit or restrict use of a defined area of the waters of the U.S. prior to submittal of an application for a CWA section 404 permit.”³ Even EPA’s request for nominees for an external peer review panel to review the Draft Assessment expressly cites EPA’s authority as Clean Water Act (CWA) Sec. 404.⁴ EPA does not point to any other provision for its statutory authority in that request.

EPA now claims, however, that in conducting the Draft Assessment, the agency was operating pursuant to CWA Sec. 104. It is disingenuous for EPA to invoke Sec. 104 post hoc as the impetus for the Draft Assessment in light of the context in which the Draft Assessment was initiated, as well as EPA’s expansive claims about its 404(c) authority. It is true that Sec. 104 allows EPA to “establish national programs for the prevention, reduction and elimination of pollution,” but it is also clear that EPA is performing *this* study in the context of 404(c). Additionally, Sec. 104 specifically requires that studies be conducted “in cooperation with other Federal, State, and local agencies.”⁵ The Draft Assessment, on the other hand, is being conducted despite great opposition from the State of Alaska, which further undermines EPA’s contention that it is acting under its CWA Sec. 104 authority.

Further confusing matters is the fact that the agency has continually contradicted itself with respect to how the study will be utilized. One EPA Regional Administrator stated that “to be clear...the Watershed Assessment is not a regulatory action, and it will not have any legal consequences,”⁶ while an Associate Administrator claimed that “we are conducting the assessment to inform future decision making.”⁷ The Draft Assessment itself states that “the assessment is intended to provide a scientific and technical foundation for future decision making.”⁸ However, if the assessment will

² *Id.*

³ May 18, 2012 letter from Arvin Ganesan, EPA Associate Administrator, to Rep. Darrell Issa at pg. 1 (attached). Note that NMA does not concur with EPA’s expansive assertions concerning its authority under CWA Sec. 404(c).

⁴ 77 *Fed. Reg.* 11111 (Feb. 24, 2012), available at <http://www.gpo.gov/fdsys/pkg/FR-2012-02-24/html/2012-4325.htm>.

⁵ Clean Water Act Section 104(a)(1).

⁶ Apr. 5, 2012 letter from Dennis J. McLerran, EPA Regional Administrator, to Alaska Attorney General Michael C. Geraghty at pg. 2 (attached).

⁷ May 18, 2012 letter from Arvin Ganesan, EPA Associate Administrator, to Rep. Darrell Issa at pg. 1 (attached).

⁸ Draft Assessment at ES-1.

provide a basis for future decision making – which in light of the circumstances could well be a decision about EPA’s application of 404(c) – how can it not have any legal consequences? EPA is using semantics to deflect attention from the fact that it initiated this study in the context of a 404(c) petition, and in doing so has elected to, by means of a hypothetical and poorly conducted study, prematurely and questionably determine effects that are appropriately determined in the context of the Sec. 404 regulatory regime.

Perhaps most importantly, EPA has failed to answer the fundamental question of *why* it has chosen to conduct the Draft Assessment in this manner. With the Draft Assessment, EPA has essentially created a straw man – a hypothetical mine, not based on any actual mine plan or application as no such plan has been submitted – and has, without giving proper consideration to mitigation and engineering measures that would be in place in a real mine, determined that that straw man is inadequate to protect salmon ecosystems. Yet, as Alaska’s Attorney General clearly pointed out to EPA, the CWA Sec. 404(b)(1) guidelines – which EPA develops jointly with the U.S. Army Corps of Engineers (Corps) and which the Corps implements with respect to any Sec. 404 permit – as well as other state and federal regulatory analyses, address the exact same concerns being looked at in the Draft Assessment.⁹ However, unlike the Draft Assessment, these permitting processes are well-established, sanctioned by law, balanced in approach, and are not conducted in a premature manner. Furthermore, the Sec. 404 process itself, for which the Corps, not EPA, is the primary permitting authority, includes agency coordination and state water quality certification measures – measures that belie the notion that EPA’s 404(c) veto authority, or general CWA research authority for that matter, is so broad as to allow for preemptive studies and veto actions before a permit application has even been submitted. Additionally, as NMA will discuss in greater detail below, EPA’s preemptive actions with respect to a potential 404(c) action will have a chilling impact on investment and the economy. It is therefore especially troubling that EPA has failed to articulate a clear rationale for this precedent-setting Draft Assessment.

In the case of *Minard Run Oil Company v. U.S. Forest Service*, the U.S. Court of Appeals for the 3rd Circuit held that “Congress would not have mandated the inclusion of regulations in deeds with reserved rights if those rights were subject to all generally applicable Service regulations.”¹⁰ In other words, the 3rd Circuit stated, the government should not “apply a general provision when doing so would undermine limitations created by a more specific provision.”¹¹ Applying the court’s ruling to the Draft Assessment, EPA should not purport to act under a general cooperative CWA research provision for establishing national programs to achieve the exact aims of the specific CWA Sec. 404 regulatory regime. EPA Regional Administrator Dennis J. McLerran perhaps said it best when he responded to Alaska’s Attorney General, stating that “many of your legal concerns would only be relevant and can only be addressed in the

⁹ By way of example, the CWA 404(b)(1) guidelines address the consideration of direct and cumulative impacts and the formulation of alternatives.

¹⁰ *Minard Run Oil Company et als. v. United States Forest Service et als.*, 670 F.3d 236, 252 (3d Cir. 2011).

¹¹ *Id.*, citing *In re Philadelphia Newspapers, LLC*, 599 F.3d 298, 307 (3d Cir. 2012).

context of a specific regulatory action.”¹² The same logic can and should be applied here – the potential impacts to a particular watershed of mining conducted in a specific area that is open to mineral exploration are best and most fairly considered once an actual mine plan and application have been submitted. EPA has the opportunity to object to a mine site before any adverse environmental impacts have occurred in the normal course of the Sec. 404 permit process pursuant to its limited role under Sec. 404,¹³ and there is no reason why EPA should be spending its time and taxpayer money – not to mention the money of the State of Alaska and all parties involved – on a rushed and biased assessment that is of questionable legal and scientific merit.

NMA would also like to note that EPA should strike any sections of the Draft Assessment that rely upon EPA’s draft guidance concerning the delineation of “waters of the United States” that is currently under review at the Office of Management and Budget. That guidance has never been adopted by EPA or the Corps, and is itself of questionable legal authority. Reliance on that document in the Draft Assessment is therefore inappropriate.

The Draft Assessment was Rushed and Lacks Scientific Credibility

The Pebble Partnership, an industry group exploring mining prospects in Southwest Alaska, conducted scientific studies of the area in question - the Pebble Partnership Environmental Baseline Studies - over the course of five years, at a cost of over \$120 million. The studies contain over 27,000 pages of first-hand research conducted in Southwest Alaska. By contrast, EPA’s Draft Assessment was conducted over approximately one year, at a cost unknown to the public, and contains no unique or first-hand research. Rather, EPA’s Draft Assessment is based solely on outside research, some of which comes from sources with a known bias against projects in the study area and that contain unsubstantiated claims. The State of Alaska has even stated that “EPA may not currently have sufficient scientifically vetted water quality and hydrological data for the area to conduct the review EPA proposes for its watershed assessment.”¹⁴ Furthermore, while the Draft Assessment makes assertions about the Bristol Bay watershed, it focuses on only a very small part of two hydrologic units in that watershed and assumes such a small area is representative of the entire 40,000 square mile region.

The Draft Assessment is also filled with unlikely scenarios and assumptions that are not sufficiently placed in proper context. For example, section 5.2 of the Draft Assessment attempts to quantify the impact that development may have on stream-flow rates, but later acknowledges that doing so accurately is not feasible. Similarly, Section

¹² Apr. 5, 2012 letter from Regional Administrator Dennis J. McLerran to Alaska Attorney General Michael C. Geraghty at pg. 2 (attached).

¹³ See *NMA v. Jackson*, 816 F. Supp. 2d 37 (D.D.C. 2011) (holding that EPA has a limited role under CWA Sec. 404 and EPA cannot develop new evaluation processes that expand that role).

¹⁴ Mar. 9, 2012 letter from Alaska Attorney General Michael C. Geraghty to EPA Regional Administrator Dennis McLerran at pg. 5 (attached).

4.4.3.1 makes unrealistic assumptions about the volume of material that could flow from a failed pipeline due to EPA's failure to take into consideration the fact that flow rates reduce during shut downs, thereby reducing the volume of material spilled. "Cumulative impacts" from various sites, such as the Groundhog property, are discussed, despite the fact that resources at those sites are unproven and in some instances no geologic exploratory drilling has even been conducted. Finally, the risk assessment sections, which discuss things that might go wrong at a mine site, are not noted in a proper and explanatory context as they would be in a typical risk assessment document. Such issues undermine the scientific credibility of the Draft Assessment and call into question the fundamental fairness of the process itself.

Furthermore, in addition to not addressing any of the potentially positive impacts of mining development in the Bristol Bay area, the Draft Assessment also inexplicably fails to address mitigation and impact avoidance or minimization actions that would undoubtedly be included in any mine plan, thereby unfairly overstating and sensationalizing the potential impacts of any proposed mine. In its description of a major tailings pond failure, EPA merely states that "remediation *may* occur following a tailings spill, but it is uncertain."¹⁵ This statement, which EPA bases its findings of potential impacts on, is misleading and not based in fact, as immediate remediation in the event of a tailings pond failure is prescribed by both state and federal laws. Similarly with respect to a tailings dam failure, EPA examines scenarios where dams are not built to specification despite the fact that it is outside the realm of possibility that a dam of this size would be permitted if it did not meet designated criteria. EPA also only after describing in detail the potential for various tailings accidents points out that the likelihood of a tailings dam failure is "one...every 10,000 to 1 million mine years."¹⁶ In another example, Section 6.4 assumes inadequately sized and poorly constructed culverts, despite the fact that Alaska has culvert design requirements aimed at eliminating the potential impacts discussed in the Draft Assessment. EPA does not give a reason as to why Alaska's standards were not given consideration in the Draft Assessment. Likewise, the case studies noted in Box 6.1 of the Draft Assessment include scenarios where mining began in the late 1800's, and no notation is made of the establishment of and changes to the regulatory, environmental and engineering standards that have since been developed over the last hundred years and which any proposed mining in Bristol Bay would employ.

While the problems explained above would be troubling in any context, NMA is particularly concerned with EPA's shoddy science and unfair assumptions with respect to a purported "scientific assessment" of potential mining impacts that was initiated in response to a petition for EPA to exercise its 404(c) veto authority. EPA is one of many entities – public and private, state and federal – studying the potential impacts of a major mining operation in the Bristol Bay area. Multiple interests must be given fair consideration, and the stakes are high. Calling this rushed, biased study "sound science" and using it as a basis for decision making in such an important case amounts

¹⁵ Draft Assessment at 6.1.1.1 (emphasis added).

¹⁶ Draft Assessment at 4-47.

to an endorsement of bad science, bad law, and bad policy, and EPA should stop this misguided effort and focus its resources on performing its responsibilities under its well-established regulatory schemes.

EPA Cannot Use the Draft Assessment to Second-Guess or Set De-Facto Water Quality Standards

Section 5.3 of the Draft Assessment addresses water quality, and presumes that mining operations will meet applicable water quality standards. However, in spite of the fact that water quality standards are presumed met, the Draft Assessment nevertheless implies that unacceptable adverse stream impacts would occur as a result of mining. For example, despite the fact that “the copper criterion...is one of [EPA’s] best supported criteria,” the Draft Assessment states that “it is always possible that it would not be protective in particular cases due to unstudied conditions or responses.”¹⁷ Similarly, the Draft Assessment states that “chemical criteria and standards do not address...unusual sensitivities of the biotic community...Therefore, meeting all criteria could still result in toxicity resulting from combined effects.”¹⁸ Likewise, EPA states that “criteria for chemicals other than copper...may be inaccurate estimates of threshold concentrations for toxic effects in these highly pure waters,”¹⁹ and that “the water quality criteria and standards used in this assessment may not be protective of all macroinvertebrate taxa that are important prey for fish.”²⁰ Such assertions amount to the second-guessing of EPA-approved water quality standards, and it is highly inappropriate for EPA to imply in a draft watershed assessment that state and federal water quality standards are not protective of aquatic life. There are very specific regulatory processes – indeed, many of which EPA mentions when describing the federal criteria – designed to develop state and federal water quality requirements. It is improper for EPA to claim in a hastily conducted study that mines meeting those scientifically sound, legally developed standards may nevertheless cause unacceptable harm to water quality.

NMA is also concerned that EPA will use this draft document as support for imposing a de facto conductivity water quality standard on any proposed mine site in Bristol Bay. Specifically, EPA states that “dissolved salts (expressed as conductivity or total dissolved solids) are a potential risk to stream biota...However, there are not applicable criteria and the actual salinity and the mixture of ions in the effluent are highly uncertain. For these reasons, any discharge permits for mines in the Bristol Bay watershed should include relevant whole-effluent toxicity testing and monitoring of biotic communities in receiving streams.”²¹ Proposed mining operations in the Bristol Bay area will have to meet all applicable water quality standards, which are contained in Alaska’s EPA-approved permitting program. The State of Alaska is responsible for

¹⁷ Draft Assessment at 5-57.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ Draft Assessment at 6-26.

²¹ Draft Assessment at 5-59.

establishing water quality standards under CWA Sec. 303, and implementing those standards through the CWA Sec. 402 permitting process. Such implementation includes making determinations as to whether discharges have a reasonable potential to cause or contribute to an excursion above an applicable water quality standard. EPA cannot simply pre-determine that mining will cause adverse water quality impacts and superimpose a water quality requirement not included in the approved state standards by means of the Draft Assessment, and EPA should remove this language from the Draft Assessment.

EPA's Actions with Respect to the Draft Assessment Amount to Bad Public Policy

EPA's unprecedented actions with respect to the Bristol Bay watershed are premature and will have a stifling effect on investment, as nearly all major industrial and manufacturing sectors require CWA Sec. 404 permits and could thus be subject to similar "watershed assessments." Why would companies invest hundreds of thousands if not millions of dollars and do years of scientific research concerning U.S. properties if they know that the government intends to step in and stop their projects in their tracks before a permit application has even been submitted? How can companies believe that industry is given a fair chance in the U.S. when the government releases incendiary, one-sided studies based on rocky science and questionable legal authority that effectively stir up public fear and act as a roadblock to project development? Alternatively, how can EPA espouse the importance of environmental justice on the one hand, and prematurely admonish a mining operation that could provide jobs and revenues for a region facing severe economic hardships, not to mention provide many of the minerals that improve the quality of life for all Americans, on the other?

The lands in question are open to mineral exploration, and the state of Alaska does not endorse EPA's actions with respect to the Draft Assessment.²² EPA should respect that fact, and should stop its actions with respect to the Draft Assessment. Fundamental fairness, sound public policy, economic stability, the rule of law, and common sense necessitate that EPA abandon this effort to substitute hypotheticals and guesswork for sound science and a well-established permitting scheme. NMA would respectfully ask that EPA do so.

Sincerely,



Amanda E. Aspatore
Assistant General Counsel
National Mining Association

²² See, e.g., Mar. 9, 2012 letter from M. Geraghty to D. McLerran (attached).

**Comments for the Record on behalf of
the Natural Resources Defense Council**

**Before the U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight**

**“EPA’s Bristol Bay Watershed Assessment – A Factual
Review of a Hypothetical Scenario” hearing on August 1,
2013**



Submitted August 15, 2013

By

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I. INTRODUCTION

On behalf of its 1.3 million members and activists, the Natural Resources Defense Council (“NRDC”) is pleased to submit these comments to the U.S. House of Representatives Committee on Science, Space, and Technology Subcommittee on Investigations and Oversight regarding that Subcommittee’s August 1, 2013 hearing titled “EPA’s Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario.” NRDC thanks the Subcommittee for its hearing and welcomes the opportunity to provide these comments for the hearing record. We believe our comments will help clarify some of the issues that were discussed at the hearing, particularly agency authority under the Clean Water Act and the National Environmental Policy Act.

NRDC is a nonprofit organization of more than 350 scientists, lawyers, and environmental specialists dedicated to protecting public health and the environment in the United States and internationally, with offices in New York, Washington D.C., Montana, Los Angeles, San Francisco, Chicago, and Beijing. Founded in 1970, NRDC uses law, science and the support of 1.3 million members and online activists to protect the planet’s wildlife and wild places and to ensure a safe and healthy environment for all living things.

The U.S. Environmental Protection Agency (“EPA”) prepared its Draft Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay (“Watershed Assessment” or “Assessment”) pursuant to authority under Section 104 of the Clean Water Act. The agency released its first Assessment in May 2012, two years after receiving petitions under Section 404(c) of the Clean Water Act for EPA action to prohibit, deny, or restrict the specification of the proposed Pebble Mine site in Bristol Bay, Alaska as a disposal area for the discharge of dredged or fill mining material.¹ EPA subsequently held numerous public hearings, considered 233,000 public comments in response to the first Assessment (over 90% in support of the Assessment), consulted with tribes, and received input from a peer review panel of twelve independent scientific experts before releasing its second draft Watershed Assessment in April 2013.

The Bristol Bay watershed – and the salmonid, wildlife, and Native communities that call it home – exist in a rare and pristine state of self-sustainability, undisturbed by

¹ Six federally-recognized tribes originally petitioned EPA. Those six petitioner tribes are Nondalton Tribal Council, Koliganik Village Council, New Stuyahok Traditional Council, Ekwok Village Council, Curyung Tribal Council and the Levelock Village Council. *See* A Joint Letter from Six Fed.-Recognized Tribes in the Kvichak & Nushagak River Drainages of Sw. Alaska, to Lisa P. Jackson, Adm’r, EPA (May 2, 2010), available at <http://ourbristolbay.com/pdf/tribes-letter-to-epa-on-404-c.pdf>.

EPA later received additional requests from Ekwok Village Council, Clarks Point Tribal Council, and Twin Hills Village Council (collectively “Tribes”), as well as the Bristol Bay Native Corporation and Bristol Bay Native Association. *See* Bristol Bay Native Ass’n, Res. 2010-32: A Resolution Requesting the EPA to Invoke Section 404(c) of the Clean Water Act as Appropriate in the Kvichak & Nushagak Drainages of the Bristol Bay Watershed to Protect Habitat & Existing Uses (2010) (on file with author); Bristol Bay Native Ass’n, Res. 2012-04: A Resolution in Support of BBNC’s Recommendations for Proactive EPA Action to Protect the Waters & Salmon of Bristol Bay (2012) (on file with author).

significant human development. The watershed forms part of one of the last remaining virtually roadless areas in the United States. Bristol Bay is home to the largest sockeye salmon fishery in the world, supporting half of the world's wild sockeye salmon and generating \$1.5 billion annually.² Approximately 70% of the salmon returning to spawn are harvested, and the commercial salmon harvest has been successfully regulated to maintain a sustainable fishery and, in turn, sustainable salmon-based ecosystems. The Bristol Bay watershed, and its high quality commercial, recreational, and subsistence fisheries, represent an aquatic resource of national – and global – importance.

In its revised Assessment, EPA clarifies the risks that large-scale mining poses to the Bristol Bay watershed, focusing on impacts to the region's salmon and other fish populations, wildlife populations, and Alaska Native cultures.³ The agency underscores that even with no human or system failure (an impossible scenario in the long-term), a mine of any foreseeable size will reduce water flow in the region, directly eliminate up to 4,800 acres of wetlands, and dewater up to 90 miles of streams. With inevitable operational failures, EPA finds these risks would increase significantly, even catastrophically, in the event of a tailings dam failure.

EPA's Assessment describes the adverse impacts that three different mine scenarios would have on the Bristol Bay environment. The scenarios are heavily based on mine details described in (1) Northern Dynasty Minerals' ("NDM" or "Northern Dynasty") "Preliminary Assessment of the Pebble Project, Southwest Alaska" ("Wardrop Report"),⁴ a 2011 document filed with the U.S. Securities and Exchange Commission, and (2) NDM's 2006 "Surface Water Right Applications," "Ground Water Right Applications," and "Application for Certificate of Approval to Construct a Dam," permit applications filed with the State of Alaska.⁵ The Assessment also considers the Pebble Limited Partnership's ("PLP," or "Pebble") 2012 "Environmental Baseline Document" ("EBD"), which was intended to characterize the environmental studies conducted by PLP or its predecessors from 2004 to 2008 – but not released until 2012.⁶ Pebble's EBD has not yet undergone a thorough, independent peer review. With this information, the

² GUNNAR KNAPP ET AL., UNIV. OF ALASKA ANCHORAGE INST. OF SOC. & ECON. RESEARCH, THE ECON. IMPORTANCE OF THE BRISTOL BAY SALMON INDUSTRY 1 (Apr. 2013), *available at* <http://fishermenforbristolbay.org/wp-content/uploads/2013/02/CFBB-ISER-FINAL-REPORT-5-10-2013.pdf>. This report was completed after publication of the second draft Watershed Assessment and should be reviewed and considered in the final Watershed Assessment.

³ EPA, AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA (SECOND EXTERNAL REVIEW DRAFT) 910-R-12-004BA-C (2013) [hereinafter, "EPA ASSESSMENT"].

⁴ WARDROP, PRELIMINARY ASSESSMENT OF THE PEBBLE PROJECT: SW. ALASKA (Feb. 17, 2011), *available at* http://www.northerndynastyminerals.com/i/pdf/ndm/Pebble_Project_Preliminary%20Assessment%20Technical%20Report_February%2017%202011.pdf [hereinafter "WARDROP, PRELIMINARY ASSESSMENT"].

⁵ PEBBLE PROJECT – WATER RIGHT APPLICATIONS, ALASKA DEP'T OF NATURAL RES., *available at* <http://dnr.alaska.gov/mlw/mining/largemine/pebble/water-right-apps/index.cfm>.

⁶ PEBBLE PROJECT: ENVTL. BASELINE DOCUMENT, <http://www.pebbleresearch.com/> (last visited June 25, 2013). Fully financed by PLP, the EBD purports to describe the existing physical and chemical (climate, water quality, trace elements), biological (wetlands, fish and aquatic invertebrates, wildlife, habitat), and social environments (land and water use, socio-economics, subsistence) within the Bristol Bay and Cook Inlet regions where development of the Pebble Mine is proposed. *Id.*

Assessment documents its conclusions based on thorough, scientifically sound, qualitative analyses.

EPA's analysis first considers "routine" operations and their "unavoidable" impacts – in other words, the environmental impacts that *will* take place if a mine is developed, assuming that the mine experiences no significant human or engineering failures during operation or in the following centuries. Though EPA cautions that this assumption is not realistic – because accidents and failures *always happen* in complex and long-lasting mining operations, even assuming flawless planning, engineering, operation, and maintenance – the Assessment anticipates unacceptable adverse effects on the Bristol Bay environment, which is the threshold for initiating action under Section 404(c) of the Clean Water Act. Even under routine operation, the agency documents unacceptable adverse effects on fish, streams, wetlands, and wildlife – including loss of streams, anadromous waters and wetlands, "toxic" levels of copper in the streams around the mine, reduced reproduction of salmonids, loss of population diversity, and the death of salmonids and invertebrates.⁷

EPA next reviews projected impacts from operational failures. The agency documents the "catastrophically damaging" impacts of a tailings dam failure to both fish and waters.⁸ Either standing alone or coupled with anticipated cumulative impacts, these devastating impacts unquestionably support a conclusion that 404(c) action is needed to prevent the foreseeable harm attendant to large-scale mining in the Bristol Bay watershed.

EPA's Assessment paints a stark picture for Bristol Bay: far from enjoying the protections that the "national treasure"⁹ and "significant resource of global conservation value"¹⁰ proclaimed by the Obama administration surely deserves, the watershed would face certain dewatering, destruction, and pollution from large-scale mining like the Pebble Mine. Mining would risk not only the salmon – and both the commercial and sports fishing industries – but also the wildlife and people who depend on salmon to survive. Confronted with this documented risk of environmental destruction, EPA has the clear legal authority to take action under Section 404(c) of the Clean Water Act. That authority was recently upheld by the D.C. Court of Appeals, which reaffirmed EPA's broad authority to prohibit, restrict, deny or withdraw areas for dredge and fill material under Section 404(c) "*whenever*" the agency finds unacceptable adverse effects.¹¹ If ever there were a case for using this power, it is the case of the Pebble Mine or any similar large-scale mine proposed to be located at the headwaters of Bristol Bay – particularly given Anglo American's track record of polluting the environment and damaging the health of local communities discussed in Section IV below.

⁷ EPA ASSESSMENT, *supra* note 3, at 14-1 to 14-19.

⁸ *Id.* at 13-30.

⁹ Press Release, U.S. Dep't of the Interior, Sec'y Salazar Announces Comprehensive Strategy for Offshore Oil & Gas Dev. & Exploration (Mar. 31, 2010), *available at* http://www.doi.gov/news/pressreleases/2010_03_31_release.cfm.

¹⁰ EPA ASSESSMENT, *supra* note 3, at 5-27.

¹¹ *Mingo Logan Coal Co. v. EPA*, 714 F.3d 608, 613 (D.C. Cir. 2013).

Advance 404(c) protection of Bristol Bay is supported by the Clean Water Act, and its regulations, prior interpretation and application, and consistent judicial precedent. Sound scientific analysis projects unacceptable adverse effects from mining in the region. Because mining companies have not applied for federal permits, the National Environmental Policy Act is not implicated.

Some of the testimony at the hearing suggested that Section 404(c) would allow EPA to somehow circumvent the environmental review process. As discussed below, this perception is simply wrong. EPA has the authority and the responsibility under Section 404(c) the Clean Water Act to prevent the certain devastation that its Assessment describes.

II. AUTHORITY UNDER THE CLEAN WATER ACT

EPA's mandate under Section 404(c) of the Clean Water Act is to prohibit, deny, restrict, or withdraw dredge and fill projects that are reasonably likely to have an "unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas."¹² The Agency's 404(c) authority to protect against such effects is both jurisdictionally expansive and substantively limited. On the one hand, EPA action is subject to no temporal limitation, as affirmed this April by the D.C. Circuit. EPA has the unequivocal right to act pursuant to Section 404(c) "whenever" failure to do so would result in unacceptable adverse environmental effects¹³ – before, during or after a permit application has been submitted.

On the other hand, EPA must find the requisite likelihood of "unacceptable adverse effect" to at least one of the prescribed areas of environmental impact. Despite the mining companies' continued protestations to the contrary ("EPA has entirely ignored the economic and diversification benefits that mine development would bring to the local region, the State of Alaska and the United States"; "similarly conspicuous by its absence in [the Assessment] is any reference to unemployment and poverty data"¹⁴), 404(c) action is limited to an evaluation of impacts on the relevant *environmental resources only*. This includes: significant degradation of waters of the United States (40 C.F.R. § 230.10(c));¹⁵

¹² 33 U.S.C. § 1344(c) (West); *see also* Denial or Restriction of Disposal Sites; Section 404(c) Procedures, 44 Fed. Reg. 58,076, 58,078 (Oct. 9, 1979) (to be codified at 40 C.F.R. pt. 231) [hereinafter "Denial or Restriction of Disposal Sites"].

¹³ *Mingo Logan Coal*, 714 F.3d at 613.

¹⁴ N. DYNASTY MINERALS, COMMENTS ON EPA'S ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA 30, 33 (July 23, 2012), *available at* <http://www.northerndynastyminerals.com/ndm/BristolBay.asp?ReportID=558876> [hereinafter "N. DYNASTY 2012 COMMENTS"].

¹⁵ EPA, FINAL DETERMINATION OF THE U.S. ENVTL. PROT. AGENCY PURSUANT TO § 404(C) OF THE CLEAN WATER ACT CONCERNING THE SPRUCE NO. 1 MINE, LOGAN CNTY., W. VA. 43 (Jan. 13, 2011), *rev'd on other grounds*, *Mingo Logan Coal*, 714 F.3d at 611, *available at* http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/upload/Spruce_No-1_Mine_Final_Determination_011311_signed.pdf; 76 Fed. Reg. 3126, 3128 (Jan. 19, 2011).

secondary effects (40 C.F.R. § 230.11(h));¹⁶ and cumulative effects (40 C.F.R. § 230.11(g))¹⁷—and not, for example, copper’s role in “the United States’ economic and national security.”¹⁸ Even Pebble has conceded this fact: “[the Clean Water Act] does not confer on EPA the authority to assess a project’s predicted adverse economic impact.”¹⁹ This same principle also defeats the argument advanced at the hearing by majority witness Mr. Daniel McGroarty that national security concerns related to the need for copper and other minerals in weapons should allow Pebble Mine to proceed.

A. EPA Has Unequivocal Authority to Impose 404(c) Restriction “Whenever” it Deems Appropriate

Several of the majority witnesses at the hearing, as well as the mining companies,²⁰ have taken the erroneous position that EPA cannot initiate 404(c) proceedings to protect Bristol Bay before a permit application has been submitted. This argument ignores the plain language of the regulation, *and it was flatly rejected by the D.C. Circuit last April.*

Upon review of EPA’s 404(c) veto, the court of appeals reversed a district court ruling that the agency lacked statutory authority to withdraw a disposal site specification of the Spruce No.1 Surface Mine permit four years after it was granted to Mingo Logan Coal.²¹ In making this determination, the court rejected the mining company’s argument that EPA’s authority under 404(c) is in any way temporally restricted. The 404(c) term “whenever,” the Court held, truly means *whenever*:

Using the conjunction “whenever,” the Congress made plain its intent to grant the Administrator authority to prohibit/deny/restrict/withdraw a specification at *any* time.

¹⁶ *See, e.g., Id.* at 83 (“The adverse secondary effects discussed . . . include substantial changes in aquatic communities, such as loss of fish and salamander diversity and sensitive mayfly and stonefly taxa, as well as shifts to more pollution-tolerant taxa.”).

¹⁷ *See, e.g.,* Water Pollution Control; Final Determination of the Assistant Adm’r for Water Concerning Three Wetland Properties Owned by Henry Rem Estate, Marion Becker, et al. & Senior Corp., 53 Fed. Reg. 30,093, 30,093–94 (Aug. 10, 1988) (veto based in part on cumulative impacts as described at 52 Fed. Reg. 38,519 (Oct. 16, 1987)); *see also* Final Determination Concerning the Jack Mayband Site Pursuant to Section 404(c) of the Clean Water Act, 50 Fed. Reg. 20,291 (May 15, 1985) (veto based in part on cumulative impacts to the area, including functional losses in the St. Helena Sound ecosystem, as described at 49 Fed. Reg. 30,112, 30,114 (July 26, 1984)); Water Pollution Control; Final Determination of the Assistant Administrator for External Affairs Concerning the Sweedens Swamp Site, 51 Fed. Reg. 22,977, 22,978 (June 24, 1986).

¹⁸ PEBBLE LIMITED PARTNERSHIP (CROWELL & MORING LLP) COMMENTS ON *AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA*, IN DOCKET NUMBER #EPA-HQ-ORD-2012-0276, at 24 (July 23, 2012), *available at* <http://www.northerndynastyminerals.com/i/pdf/ndm/attachment-3-of-8.pdf> [hereinafter “CROWELL & MORING”].

¹⁹ *Id.* at 12.

²⁰ *See, e.g.,* Press Release: Pebble Calls on the EPA to Abandon Flawed, Biased Approach (Apr. 26, 2013), *available at* <http://corporate.pebblepartnership.com/perch/resources/pebble-releaseepa-bbwa-1.pdf>; [hereinafter, “Apr. 26, 2013 PLP Press Release”]; CROWELL & MORING, *supra* note 18, at 3; NORTHERN DYNASTY 2012 COMMENTS, *supra* note 14, at 2-3.

²¹ *Mingo Logan Coal*, 714 F.3d at 609.

To find otherwise “would eliminate EPA’s express statutory right” and “thereby render 404(c)’s parenthetical ‘withdrawal’ language superfluous—a result to be avoided.”²²

Claims that EPA must wait to protect Bristol Bay until a mining application has been submitted are equally flawed. This would *both* render superfluous the “whenever” provision of the regulation *and* overtly contradict its plain language:

The Administrator may [] prohibit the specification of a site under section 404(c) with regard to any existing *or potential* disposal site *before a permit application has been submitted* to or approved by the Corps or a state.”²³

The plain language of the regulation contradicts several of the majority witnesses’ – as well as Pebble’s – position that a “hypothetical” mine scenario is an improper basis for initiating 404(c) action. The regulation clearly contemplates 404(c) protection for “potential” disposal sites “before” submission of an application. For instance, in the 1979 preamble to its regulations implementing 404(c), EPA explained that “the statute clearly allows it to use 404(c) *before an application is filed*” and that “... [S]ection 404(c) authority may be exercised *before a permit is applied for*, while an application is pending, or after a permit has been issued. In each case, the Administrator may prevent any defined area in waters of the United States from being specified as a disposal site, or may simply prevent the discharge of any specific dredge or fill material into a specified area.”²⁴ Advanced restriction is just as viable as a 404(c) response to a permit application because both are based upon a predictive assessment from which “actual events will undoubtedly deviate.” Indeed, “[e]ven an environmental assessment of a proposed plan by a mining company would be an assessment of a scenario that undoubtedly would differ from the ultimate development.”²⁵

Mining proponents further argue that an “expansive” interpretation of EPA’s authority under Section 404(c) is “unwarranted” because EPA’s role in Section 404 permitting is “secondary to that of the Army Corps of Engineers.”²⁶ This view not only misrepresents the longstanding construction of the regulations (“[w]hile Congress had faith in the Corps’ administrative experience, it recognized EPA as the ‘environmental conscience’ of the Clean Water Act”²⁷), but it too was refuted by the court of appeals in *Mingo Logan*:

²² *Mingo Logan Coal*, 714 F.3d at 613–14.

²³ 40 C.F.R. § 231.1(a) (2012) (emphasis added).

²⁴ Denial or Restriction of Disposal Sites, *supra* note 12, at 58076-77 (emphasis added).

²⁵ EPA ASSESSMENT, *supra* note 3, at ES-27. See DAVID M. CHAMBERS, CTR. FOR SCI. IN PUB. PARTICIPATION, COMMENTS ON DOCKET #EPA-HQ-ORD-2013-0189 (June 28, 2013) at Attachment B (hardrock mines frequently expanded beyond their initially permitted size).

²⁶ N. DYNASTY 2012 COMMENTS, *supra* note 14, at 41.

²⁷ Denial or Restriction of Disposal Sites, *supra* note 12, at 58081.

[S]ection 404 vests the Corps, rather than EPA, with the authority to issue permits to discharge fill and dredged material into navigable waters and to specify the disposal sites therefor. ... Nonetheless, the Congress granted EPA a broad environmental ‘backstop’ authority over the Secretary’s discharge site selection in subsection 404(c)...²⁸

EPA’s 404(c) authority is not “confined to the permitting process under Section 404(a)” as the mining interests would have us believe, but rather, “[t]he Secretary’s authority to specify a disposal site is *expressly made subject* to subsection (c) of section 404.”²⁹

EPA’s position is not only legally sound, but also well-grounded in common sense. If PLP is entitled to file a permit application before EPA can act under 404(c), then other potential mining developers would presumably be similarly entitled, with the result that EPA would be required to take repeated actions under 404(c) to protect a single area. It makes far greater sense for EPA to proceed, as it has in this case, by analyzing the potential effects of large-scale mining generally in an area of concern, based on scenarios that cover a range of potential mine design alternatives. Requiring the agency to wait for the filing of successive individual permit applications would result in a waste of resources, both for the agency and any interested parties.

And the resulting cloud of uncertainty would serve no one. Indeed, consideration of 404(c) action now is ultimately beneficial even to mine development interests like PLP, because it will protect it and other stakeholders with mining claims in the watershed from investing additional resources in a project manifestly unsuited to the pristine and ecologically rich Bristol Bay watershed. As EPA noted in 1979, the use of pre-application 404(c) protection “may well have some economic benefits that outweigh some of the costs,” because it takes place “before industry has made financial and other commitments.”³⁰ For mining interests that have emphasized the “nearly \$600 million” they have invested in the Pebble Project to date,³¹ the *Mingo Logan* opinion – allowing for the withdrawal of a mining permit years after additional funds have been expended for research, development, and construction are complete – is a clear testament to the value of the advance 404(c) determination petitioned here. It would also address State concerns raised in the *Mingo Logan* case: namely, that delayed 404(c) action results in a “squandering” of State resources (i.e., reviewing permit applications and issuing permits and water quality certifications),³² which could otherwise have been avoided by an earlier determination.

²⁸ *Mingo Logan Coal*, 714 F.3d at 612 (internal quotations omitted).

²⁹ *Mingo Logan Coal*, 714 F.3d at 610 (internal quotations omitted) (emphasis added).

³⁰ Denial or Restriction of Disposal Sites, *supra* note 12, at 58077 (“EPA feels that the statute clearly allows it to use 404(c) before an application is filed.”).

³¹ Transcript of Interview by Monica Trauzzi with John Shively, CEO, Pebble Ltd. P’ship, on OnPoint (June 13, 2013), available at <http://www.eenews.net/tv/videos/1698/transcript>.

³² Randy Huffman, Brief of Amicus Curiae on Behalf of the State of W. Va. & in his Official Capacity as Cabinet Sec’y of the W. Va. Dep’t of Env’tl. Prot., in Support of Appellee Mingo Logan Coal & in Support of Affirmance 12; *Mingo Logan Coal*, 714 F.3d at 608.

B. The Science Supports 404(c) Action to Protect Bristol Bay

EPA has sufficiently established that mining in Bristol Bay would result in “unacceptable adverse effects” to fishery areas (including spawning and breeding areas), recreational areas, and wildlife, which is the statutory trigger under 404(c). The threshold for action pursuant to Section 404(c) is a *reasonable likelihood* of unacceptable adverse effects:

[A]bsolute certainty is *not* required. Because 404(c) determinations are by their nature based on predictions of future impacts, what is required is a reasonable likelihood that unacceptable adverse effects will occur — not absolute certainty but more than mere guesswork.³³

In this case, there can be no reasonable doubt that this standard has been met. As EPA has explained, “regardless of design and operation standards, *any large-scale mine*³⁴ in the Bristol Bay region would have a footprint that would affect aquatic resources.”³⁵ In other words, unacceptable adverse effects will occur from any large-scale mine developed in Bristol Bay regardless if the mine designs are based on 2006 State permit applications, 2011 SEC filings, or future permit applications. This is because Bristol Bay is home to the largest sockeye salmon fishery in the world, supporting 46% of the average global abundance of wild sockeye salmon. Between 1990 and 2009, the average annual inshore run of sockeye salmon in Bristol Bay was approximately 37.5 million fish. Of the sub-watersheds in the Nushagak and Kvichak River watersheds, 63% are documented to contain at least one species of spawning or rearing salmon within their boundaries, and 12% are documented to contain all five species.³⁶

Any large-scale mining in the Bristol Bay region — regardless of the exact mine plan — “would necessarily involve the destruction of streams and wetlands through excavation and filling associated with the mine pit, waste rock piles, tailings impoundments, borrow pits, and the transportation corridor.”³⁷ Downstream water flow reduction would irreparably degrade salmon populations and fisheries, and damage one of the very keys to salmon health and volume in this area — their biodiversity. The required new access road would cause population fragmentation, exposure to sediment, and decreased groundwater-surface water connectivity. Furthermore, salmon prevalence supports Bristol Bay’s ecosystem strength as a whole, and degraded salmon populations would impair the region’s wildlife. Alaska Natives would suffer health and cultural harm from mining because for centuries their way of life has depended on salmon for subsistence, as well as for cultural, social, and spiritual identity.³⁸

³³ Denial or Restriction of Disposal Sites, *supra* note 12, at 58078 (emphasis added).

³⁴ In its Assessment, EPA evaluated three scenarios, all of which would be considered “large-scale”: 20 year/0.25 billion tons; 25 year/2.0 billion tons; and 78 year/6.5 billion tons.

³⁵ EPA ASSESSMENT, *supra* note 3, at 6-3 (emphasis added).

³⁶ *Id.* at 5-11.

³⁷ *Id.* at 6-37.

³⁸ *Id.* at ES-24 to ES-25.

Specifically, EPA breaks its analysis down to “routine” (failure-free) mining operations with “unavoidable” adverse effects, and those resulting from failures – both day-to-day and severe, including human error, mechanical failure, accidents, and other unplanned events. Unavoidable effects are *expected* to occur even if the mine is flawlessly built, operated, and closed. The Assessment reveals that these alone are sufficient to trigger 404(c). When potential failures are added to this analysis, impacts are even more extreme, and projections of adverse effects are dire. Mining impacts are fundamentally pessimistic because over the extreme long-term, even those failures with low statistical probability become “likely.”³⁹ Their low probability derives from a very low rate of occurrence, but over the centuries-long existence of a mine, some sort of failure is expected.

The unavoidable impacts of three “perfectly performed” mine scenarios with no accidents, leaks or failures, in which 0.25, 2.0, and 6.5 billion tons of ore are extracted over the course of 20, 25, and 78 years, respectively, include:

- Loss of 24, 56, or 90 miles of streams, constituting 4%, 9%, and 14% of total stream length within the mine footprint;
- Loss of 5, 15, or 22 miles of documented anadromous waters (2%, 7%, and 11% of total anadromous fish stream length), known to support spawning and rearing habitat for coho, Chinook, and sockeye salmon and Dolly Varden;
- Loss of 11.5 to 42 miles of headwater streams supporting habitat for non-anadromous fish species;
- Altered groundwater-surface water hydrology between the main channel and off-channel habitats, which are critical to juvenile salmonids, nutrient processing, and export rates of resources and materials for aquatic ecosystems;
- Loss or substantial change of riparian floodplain wetland habitat;
- Streamflow reductions causing adverse effects on habitat in 9.3, 16, and 34 miles of streams;
- Erosion of population diversity essential to the stability of the overall Bristol Bay salmon fishery;⁴⁰
- Leakage sufficient to cause toxic levels of copper in 38 and 51 miles of stream under the Pebble 2.0 and 6.5 scenarios, respectively.⁴¹

Because EPA evaluated only the components of a mine that have the potential to adversely affect aquatic resources regulated under the Clean Water Act, the cumulative footprint of a large-scale mine at the Pebble deposit would likely be much larger than the described scenarios. For example, by adding mining and processing facilities, drainage management structures, other storage and disposal facilities, and other operational infrastructure – as described in NDM’s Wardrop Report – the footprint of Pebble 2.0 would increase from 9.7 to 36 square miles, the mine site would contain more than 12 miles of main roads (as well as numerous pit and access roads), and the net power

³⁹ *Id.* at 14-17.

⁴⁰ *Id.* at 7-60.

⁴¹ EPA ASSESSMENT, *supra* note 3, at 14-17.

generation would exceed by more than 100 times the current maximum electrical load of the largest population center in the Bristol Bay watershed.⁴²

Clearly, even these “unavoidable” effects would alter Bristol Bay completely and irreparably. Yet, a mine without failures is simply not a realistic possibility. Failures “always happen in complex and long-lasting operations,”⁴³ EPA explains, “even if their magnitude is ‘uncertain.’”⁴⁴ And once failures are incorporated into the analysis, long-term environmental damage could be “catastrophically damaging to fisheries.”⁴⁵ EPA’s conclusions regarding impacts from failures of a tailings dam; product concentrate, return water, or diesel pipelines; roads and culverts; or water collection and treatment include:

- Loss of more than 18 miles of salmonid stream and associated wetlands for years to decades (a highly conservative estimate of what would more likely extend well over 90-185 miles in the Bristol Bay Watershed);⁴⁶
- Acute and chronic toxic exposure to fish and invertebrates;
- Impeded fish passage in 11 to 21 salmonid streams;⁴⁷
- Wastewater treatment plant releases ranging from short-term and innocuous to long-term and highly toxic to fish and invertebrates.⁴⁸

An additional and acute risk of mining in Bristol Bay stems from the region’s diverse hydrologic landscapes, which “shapes the quantity, quality, diversity, and distribution of aquatic habitats throughout the watershed,” and creates a freshwater system that supports multiple critical salmon life stages.⁴⁹ Mining would alter groundwater–surface water hydrology, nutrient processing, and export rates of resources and materials for aquatic ecosystems downstream. The “inherent complexity” of the region’s salmon-supporting hydrology means that hydrological models used to estimate exposures are “inevitably simplifications.”⁵⁰ It is therefore extremely difficult to identify and control the potential range of impacts from mining,⁵¹ creating “one of the greatest sources of uncertainty for the water quality risks.”⁵²

Interactions between salmon and other wildlife species are “complex and reciprocal,”⁵³ and reduction in wildlife would be expected from the mine scenario footprint and from routine operations under each scenario. The highly productive Pacific

⁴² *Id.* at 6-3.

⁴³ *Id.* at 7-1.

⁴⁴ DAVID A. ATKINS ET AL., AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA 16 (Sept. 17, 2012), available at <http://www2.epa.gov/bristolbay/peer-review-process> [hereinafter, “PEER REVIEW”].

⁴⁵ EPA ASSESSMENT, *supra* note 3, at 13-30.

⁴⁶ JOHNNIE N. MOORE, REVIEW OF REPORT EPA 910-R-12-004BA: AN ASSESSMENT OF POTENTIAL MINING IMPACTS ON SALMON ECOSYSTEMS OF BRISTOL BAY, ALASKA (May 17, 2013).

⁴⁷ EPA ASSESSMENT, *supra* note 3, at ES-18.

⁴⁸ *Id.* at 14-17.

⁴⁹ *Id.* at 3-18, 3-44.

⁵⁰ *Id.* at 8-58.

⁵¹ *Id.* at 7-60, 7-57.

⁵² *Id.* at 8-58.

⁵³ EPA ASSESSMENT, *supra* note 3, at 5-28.

salmon runs also directly contribute to the large wildlife populations in the region. Salmon are a “cornerstone” species,⁵⁴ with deep importance to the greater ecosystem. They affect ecosystem productivity and regional biodiversity through nutrient transportation.⁵⁵ A wide number of animals feed on salmon, including brown bears, bald eagles, other land birds and wolves. These animals would suffer direct effects by a reduction in salmon abundance. The effects of reduced salmonid production on wildlife would be complex, difficult to quantify, and may not be linearly proportional. The loss of salmon – and brown bears as a result – would result in “significant changes in the productivity, diversity and physical structure of their communities far beyond just their ‘food chain’ interactions.”⁵⁶

Alaska Natives and Bristol Bay residents in the watershed also depend – and have for generations – on salmon for their subsistence. Alaska Natives are “particularly vulnerable” to any changes in the quantity or quality of salmon resources,⁵⁷ and reduced salmon stocks would seriously threaten their health, way of life, and the survival of their communities. Subsistence-based living is vital to Alaska Native identity, and it plays a central economic, social, and cultural role. Any change in salmon resources would likely have detrimental adverse effects on human health, spiritual well-being, the social support system of food sharing, cultural continuity, and mental health.⁵⁸

Finally, as EPA accurately notes, the region “takes on even greater significance when one considers the condition of Pacific salmon populations throughout their native geographic distributions.” Pacific salmon are gone from 40% of their historical breeding ranges in the western United States. Where populations remain, their numbers tend to be significantly impaired or dominated by hatchery fish. This status of Pacific salmon throughout the United States underscores the “value of the Bristol Bay watershed as a salmon sanctuary or refuge,” and highlights the Bristol Bay watershed as a “significant resource of global conservation value.”⁵⁹ Allowing its degradation should be out of the question, which is why we believe EPA should use its authority under Section 404(c) of the Clean Water Act to protect Bristol Bay from large-scale mining like the Pebble Mine.

EPA’s authority to prohibit or restrict Pebble Mine under the Clean Water Act is separate and distinct from any process under the National Environmental Policy Act, discussed below.

⁵⁴ Mary F. Willson et al., *Fishes & the Forest: Expanding Perspectives on Fish-Wildlife Interactions*, 48 *BioScience* 455, 456 (1998), available at <http://www.fish.washington.edu/people/naiman/contemporary/papers/willson.pdf>.

⁵⁵ EPA ASSESSMENT, *supra* note 3, at 5-27 to 5-28.

⁵⁶ *Id.* at 14-12.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 5-27.

III. AUTHORITY UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (“NEPA”) is this country’s “basic national charter for protection of the environment.”⁶⁰ Congress enacted NEPA to “encourage productive and enjoyable harmony between man and his environment,” “promote efforts which will prevent or eliminate damage to the environment,” and “enrich understanding of the ecological systems and natural resources important to the Nation.”⁶¹ To achieve these goals, NEPA requires federal agencies to fully consider and disclose the environmental consequences of an agency action before proceeding with that action.⁶²

NEPA requires all agencies of the federal government to prepare a “detailed statement” regarding all “major federal actions significantly affecting the quality of the human environment.”⁶³ This statement must describe (1) the “environmental impact of the proposed action,” (2) any “adverse environmental effects which cannot be avoided should the proposal be implemented,” (3) alternatives to the proposed action, (4) “the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity,” and (5) any “irreversible or irretrievable commitment of resources which would be involved in the proposed action should it be implemented.”⁶⁴ The fundamental purpose of the analysis is to force the decision-maker to take a “hard look” at the environmental consequences of her proposal, before a decision to proceed is made.⁶⁵ The analysis must be an objective, neutral document, not a work of advocacy to justify a predetermined result.⁶⁶

NEPA’s implementing regulations require agencies to explore the complete universe of “direct effects,” the “reasonably foreseeable” “indirect effects” of the entire proposed action,⁶⁷ as well as the action’s “cumulative impacts” in light of “other past, present, and reasonably foreseeable future actions.”⁶⁸ NEPA also requires agencies to consider “alternatives to the proposed action.”⁶⁹ The discussion of alternatives is the “heart” of the NEPA process and is intended to “provid[e] a clear basis for choice among options by the decisionmaker and the public.”⁷⁰ The alternatives analysis should “serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.”⁷¹

⁶⁰ 40 C.F.R. § 1500.1(a).

⁶¹ 42 U.S.C. § 4321.

⁶² *Id.* at § 4332(2)(C); 40 C.F.R. §§ 1501.2, 1502.5.

⁶³ 42 U.S.C. § 4332(C).

⁶⁴ *Id.* at § 4332.

⁶⁵ 40 C.F.R. § 1502.1.

⁶⁶ *Id.* at § 1502.2(g).

⁶⁷ *Id.* at § 1508.8.

⁶⁸ *Id.* at § 1508.7.

⁶⁹ 42 U.S.C. § 4332(2)(C)(iii) & (E).

⁷⁰ 40 C.F.R. § 1502.14.

⁷¹ *Id.* at § 1502.2(g).

NEPA's implementing regulations further require agencies to disclose and analyze measures to mitigate the impacts of proposed actions.⁷² An agency's analysis of mitigation measures must be "reasonably complete" in order to properly evaluate the severity of the adverse effects of an agency's proposed action prior to the agency making a final decision.⁷³ NEPA's implementing regulations also require agencies to ensure the "professional integrity, including scientific integrity" of material relied upon in their analysis.⁷⁴

In situations where an agency has not yet decided to prepare a full Environmental Impact Statement ("EIS"), the agency must prepare an environmental assessment ("EA") to determine whether the action will have a significant effect on the environment.⁷⁵ Whether a project may have "significant" impacts, and therefore whether an EIS is required, depends on two components: context and intensity.⁷⁶ The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.⁷⁷ Intensity means "the severity of the impact."⁷⁸ Where an agency prepares an EA instead of an EIS, it must discuss both the need for the proposed action and alternatives to it, address the environmental impacts of both the proposal and the alternatives, and "provide sufficient evidence and analysis for determining whether to prepare" an EIS.⁷⁹ If, after preparing an EA, the agency concludes that an EIS is not necessary, it must issue a finding of no significant impact ("FONSI") that adequately explains why the project will "not have a significant effect on the human environment" and why an EIS will not be prepared.⁸⁰

Here, the requirements of NEPA have not been triggered. Because PLP has not applied for a 404 permit with the Army Corps of Engineers to dispose of dredged or fill material from the Pebble Mine, it is solely EPA's authority under Section 404(c) of the Clean Water Act that is dispositive. Contrary to PLP's claims, review under NEPA is not required before EPA may invoke its authority under Section 404(c). In other words, NEPA does not somehow entitle PLP to separate NEPA review before EPA can prohibit or restrict Pebble Mine under the Clean Water Act.

As President Obama recognized, NEPA is the "cornerstone of our nation's modern environmental protections."⁸¹ It was enacted in 1969 precisely to ensure that projects like the one pursued by PLP cannot be approved without environmental review. NEPA was never intended to burden EPA actions necessary under Section 404(c) to

⁷² *Id.* at §§ 1502.14(f), 1502.16(h).

⁷³ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

⁷⁴ 40 C.F.R. § 1502.24.

⁷⁵ *Id.* at § 1501.4(a)-(b).

⁷⁶ *Id.* at § 1508.27.

⁷⁷ *Id.* at § 1508.27(a).

⁷⁸ *Id.* at § 1508.27(b).

⁷⁹ *Id.* at § 1508.9.

⁸⁰ *Id.* at § 1508.13.

⁸¹ The White House, Presidential Proclamation -- 40th Anniversary of the National Environmental Policy Act, available at <http://www.whitehouse.gov/the-press-office/presidential-proclamation-40th-anniversary-national-environmental-policy-act>.

prevent large-scale mining from contaminating a resource like Bristol Bay. In fact, EPA action under Section 404(c) triggers separate notice and comment requirements under the Clean Water Act – a rigorous process subject to similar standards of transparency, public participation and informed agency decision making as NEPA.

PLP has created an environment of anxiety and uncertainty by failing to apply for permits, despite almost a decade of promises to do so. As Senator Lisa Murkowski recently stated, PLP has promised “imminent” action for “nearly a decade” but “after years of waiting, it is anxiety, frustration, and confusion that have become the norm” in many Alaska communities.⁸² It is precisely because of these years of anxiety and confusion – created entirely by PLP – that federally recognized tribes, the Bristol Bay Native Corporation, the commercial and sport fishing industries of Bristol Bay, and numerous conservation groups petitioned EPA to initiate action under Section 404(c) of the Clean Water Act. Once finalized, EPA’s Watershed Assessment will provide more than enough information for the agency to make a 404(c) determination to protect Bristol Bay. Any potential large-scale mining project proposed in Bristol Bay would benefit from this early and informed 404(c) decision making process. For all of these reasons, Section 404(c) of the Clean Water Act is the applicable statute now – both to address the pending petitions before EPA for 404(c) action as well as the harm and confusion caused by PLP’s delay.

IV. BRISTOL BAY SHOULD NOT BE LEFT IN THE HANDS OF MINING COMPANIES THAT HAVE MISLED THE PUBLIC, THEIR INVESTORS, AND EPA

During the hearing, much of the discussion focused on whether EPA properly conducted its Watershed Assessment by using hypothetical mining scenarios based on the information provided by PLP. As noted by minority witness Mr. Wayne Natri, EPA appropriately relied on PLP’s own project data and plans to form its assumptions and baseline data when developing the Assessment. These materials provide detailed information, maps, and descriptions on which to assess realistic, fact-based mining scenarios. Indeed the mining company itself characterized its plans as set out in the Wardrop Report as economically viable, technologically achievable and permissible.

It’s the mining companies’ use of material – not EPA’s – that is questionable, since those companies have willfully disseminated contradictory information to the public. As described in a letter from Senator Maria Cantwell to the U.S. Securities and Exchange Commission,⁸³ Northern Dynasty submitted its “Wardrop Report” to meet filing requirements with the SEC on February 24, 2011. When it did so, it informed the

⁸² Letter from Senator Lisa Murkowski to John Shively, PLP CEP, Mark Cutafini, Anglo American CEO, and Ron Thiessen, NDM CEO (July 1, 2013), *available at* http://www.pebblewatch.com/images/stories/pdfs/LAM_Letter.pdf.

⁸³ Letter from Senator Maria Cantwell, to Elisse B. Walter, Chairman, U.S. Securities & Exchange Comm’n (Mar. 18, 2013), *available at* http://www.cantwell.senate.gov/public/_cache/files/169563c5-e840-4021-911d-74f63d55e13f/SEC%20pebble%20final%2003182013.pdf [hereinafter, “Senator Cantwell Letter”].

SEC and investors that the proposed design and specifications were “feasible and permissible.” EPA relied on this language in its first draft Assessment, stating that Pebble 2.0 and Pebble 6.5 are among the most likely to be developed in the watershed, as they “reflect projects based on extensive exploration, assessment, and preliminary engineering, which are described in [the Wardrop Report] as ‘economically viable, technically feasible and permissible.’”⁸⁴

Yet, in order to block EPA’s efforts, PLP referred to the “very same Wardrop Report” as a “fantasy proposal” when it delivered formal testimony to the EPA in August of 2012,⁸⁵ and, in its submission to EPA regarding the first draft Assessment, as a “generic mine development scenario” that “today could not be legally built.”⁸⁶ These conflicting formal statements to two different federal agencies – statements that cannot both be true – leave the public, corporate investors, and two United States regulatory bodies to wonder if NDM is misleading its investors and the Securities and Exchange Commission, or intentionally providing contradictory testimony to EPA. Such blatant manipulation of critical facts renders EPA’s words of caution particularly salient:

The promises of today’s mine developers may not be carried through by future generations of operators whose sole obligation is to the shareholders of their time.⁸⁷

Furthermore, the dismal operational track record of Anglo American (“Anglo”) (50% PLP owner) belies Pebble’s claim that it “has always incorporated the *best* design and operational standards for physical project elements.”⁸⁸ Anglo has a track record of environmental pollution and damage to the health of local communities. For example, Anglo’s Iron Duke mine in Zimbabwe made part of a nearby river virtually fishless and was the likely cause of a “fish kill” resulting from mine effluent.⁸⁹ In a town near Anglo’s Black Mountain Mine in South Africa, children were found to have high blood lead levels that impaired their performance in school.⁹⁰ Anglo’s mine in Ireland polluted sediment in nearby rivers, causing the Irish EPA to advise against fishing or allowing animals to drink from the rivers temporarily.⁹¹ This warning came *after* Anglo worked to overcome local concerns about the environmental impacts of mining. In addition, a 2001

⁸⁴ EPA ASSESSMENT, *supra* note 3, at 6-19.

⁸⁵ Senator Cantwell Letter, *supra* note 83, at 2.

⁸⁶ CROWELL & MORING, *supra* note 18, at 46; THE PEBBLE P’SHIP, DOCKET ID NO. EPA-HQ-ORD-2012-0276: COMMENTS OF PEBBLE LIMITED PARTNERSHIP & VARIOUS EXPERTS 2 (July 23, 2012), *available at* <http://www.northerndynastyminerals.com/i/pdf/ndm/attachment-1-of-8.pdf>.

⁸⁷ EPA ASSESSMENT, *supra* note 3, at 14-16.

⁸⁸ N. DYNASTY 2012 COMMENTS, *supra* note 14, at 16.

⁸⁹ S Ravengai et al., *Impact of Iron Duke Pyrite Mine on Water Chemistry & Aquatic Life – Mazowe Valley, Zimbabwe*, 31 *Water SA* 219, 226 (Apr. 2, 2005), *available at* <http://www.ajol.info/index.php/wsa/article/download/5190/12747>.

⁹⁰ Yasmin von Schirnding et al., *A Study of Pediatric Blood Lead Levels in a Lead Mining Area in S. Africa*, 93 *Environmental Research* 259, 259 (2003), *available at* <http://ehrn.co.za/publications/download/08.pdf>.

⁹¹ Press Release, Ir. Env’tl. Prot. Agency, *Metal Pollution of River Sediment in Certain Sections of the Drish & Rossestown Rivers*, (Apr. 27, 2006), *available at* <http://www.epa.ie/newsandevents/news/previous/2006/name,47972,en.html>.

study of 34 mines around the world found that Anglo-owned mines had the highest concentration of arsenic in their surface water.⁹² The company's history abroad belies the company's promise to "co-exist" successfully⁹³ with the salmon in Bristol Bay.

In fact, the regulatory mechanisms developed to protect against corporate irresponsibility cannot realistically be expected to hold these mining companies to their environmental obligations over the long term. Though operators of hardrock mining facilities in Alaska are required to demonstrate financial assurance for reclamation, waste management, and dam safety costs as a way of anticipating future need for remediation, the requirement cannot promise to guard against the risks associated with mine existence in perpetuity. First, the mine developer is required only to demonstrate financial assurance.⁹⁴ When the human institution responsible for developing the mine is no longer in existence — a reasonable probability over the thousands of years that the mine will persist — such assurances mean little. Indeed, of the ten operating, proposed, or closed Alaskan mines today, one has already gone into bankruptcy without adequate bonding to cover mine closure (Illinois Creek).⁹⁵ Furthermore, even assuming long-term corporate management, financial assurance does not require coverage for chemical or tailings spills.⁹⁶ Inevitably, where financial assurance is inadequate, it is the taxpayers who are left holding the proverbial bag for significant clean-up costs, unpaid by the mining companies whose assurances, however enthusiastically given, were never realized. And it is the local residents who must live with the environmental consequences.⁹⁷

⁹² PHILIP MATTERA, ANGLO AM.'S TRACK RECORD: RHETORIC OR REALITY? CMTY., WORKER SAFETY, PUB. HEALTH, & ENVTL. PROBLEMS AT ANGLO AM. MINING OPERATIONS 10 (2008), available at http://www.ourbristolbay.info/pdf/anglo_trackrecord_final.pdf.

⁹³ *Transcript: Alaska Gold: Frontline*, PBS, <http://www.pbs.org/wgbh/pages/frontline/environment/alaska-gold/transcript-26/> (last visited June 27, 2013) (quoting John Shively).

⁹⁴ EPA ASSESSMENT, *supra* note 3, at 6-36.

⁹⁵ As EPA notes:

Environmental impacts associated with premature closure may be more significant than impacts associated with planned closure, as mine facilities may not be at the end condition anticipated in the closure plan and there may be uncertainty about future re-opening of the mine. For example, PAG waste rock in our mine scenarios would likely still be on the surface in the event of a premature closure. If the mine closed because of a drop in commodity price, there would be little incentive to incur the cost of moving or processing millions of metric tons of PAG waste rock. Because premature closure is an unanticipated event, water treatment systems might be insufficient to treat the excessive and persistent volume of low pH water containing high metal concentrations.

Id. at 6-35 to 6-36.

⁹⁶ *Id.* at 4-10.

⁹⁷ *Id.*

V. CONCLUSION

EPA's revised Watershed Assessment thoroughly documents that large-scale mining in Bristol Bay would irrevocably devastate one of the most highly-functioning and productive salmon ecosystems remaining anywhere in the world, as well as the sustainable communities, wildlife, and local economy that it supports. EPA's authority is clear: it may prevent dredge and fill projects "*whenever*" failure to do so would be *reasonably likely* to have an "unacceptable adverse effect" on fisheries and wildlife. These legal thresholds have been met—and surpassed—here. The long-term nature of any mining project, the improbability that mining institutions would live up to their monitoring commitment (or even survive) for the *centuries* the mine would remain in existence, and the inevitable harm that large-scale mining would inflict on the region and its sensitive resources all contribute to a conclusion of unacceptable adverse effects on the future of Bristol Bay.

EPA has clear legal authority and a solid factual basis to invoke Section 404(c) of the Clean Water Act to protect Bristol Bay. Using this authority, EPA can provide clarity now. NEPA, while unquestionably a cornerstone for environmental protection, is a separate process that has not been triggered. To provide certainty now to Alaska Natives, commercial and sports fishing industries, and others who rely on Bristol Bay, we believe EPA should expeditiously issue a 404(c) ruling.

Respectfully submitted,

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By 

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August 14, 2013

U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Subject: Subcommittee on Oversight hearing titled "EPA's Bristol Bay Watershed Assessment – A Factual Review of a Hypothetical Scenario" August 1, 2013

Dear Chairman Broun and Subcommittee Members:

My name is William Riley. I worked for the U.S. Environmental Protection Agency's Region 10 Office in Seattle, Washington from 1980 to 2007. Region 10 includes the states of Oregon, Idaho, Washington and Alaska. During this time I was heavily involved in the Clean Water Act (CWA) permitting and National Environmental Policy Act (NEPA) review of every major mine in Alaska as well as in Idaho.

I managed the first Environmental Impact Statement (EIS) for the Red Dog lead/zinc mine, as well as the first Diamond-Chuitna coal mine EIS and later on managed the EIS process for the Pogo gold mine. In 1985 I became the manager of the Region's CWA Aquatic Resources/404 program, then served as the Regional Mining Coordinator from 1995 to 2004. During these years I managed development of the Alaska-Juneau gold mine and Kensington gold mine Technical Assistance Reports and, at the request of industry and mining advocates, managed development of the very popular EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska (EPA 2003), now in its third printing I believe. This document describes the information EPA needs to process mining proposals and permit applications, providing suggested methods for data collection and analysis.

In 2004 I became Director of the Region 10 Office of Environmental Assessment, an office of scientists and risk assessors. All in all I worked on over twenty mining projects and served as the main interface between EPA and the mining industry in the Northwest and Alaska for many years. I also served early on (1984) as the Region's first Indian Policy Coordinator.

I am writing today to provide my perspective on the EPA's draft Bristol Bay Watershed Assessment (BBWA) and on several issues that were raised during the August 1, 2013 oversight hearing held by your subcommittee. Specifically I would like to address:

- The very real, well documented mining scenarios addressed in the draft BBWA;
- The sound science EPA relied on in developing the draft BBWA;

- The breadth and depth of EPA expertise relative to modern mining practices;
- The inability of modern mining practices to avoid, minimize or mitigate the unacceptable environmental impacts of current proposals to mine the Pebble deposit;
- EPA's Trust Responsibility to the Native Alaska tribes who have petitioned EPA to use EPA's Clean Water Act 404(c) authority to protect the sustainable and extremely high value, both culturally and economically, salmon resources of Bristol Bay;
- The appropriateness of EPA using its CWA 404(c) authority to restrict discharges of dredge and fill material, in this case mining waste, to Waters of the U.S. to provide:
 - Protection of the invaluable salmon resources of Bristol Bay
 - Predictability for any company proposing to mine in the Bristol Bay watershed
 - A path forward for the Clean Water Act section 404 as well as State of Alaska permit processes and associated National Environmental Policy Act (NEPA) Environmental Impact Statements.

But I want to begin by quickly reviewing the well-documented, unavoidable impacts of the mining scenarios described in what's generally referred to as the Wardrop Report (Wardrop, 2011). This report was prepared by a third party (Wardrop, a Tetra Tech company) at the request of Northern Dynasty Minerals (NDM) to satisfy the requirements of the Canadian and U.S. securities exchange commissions. The document states very clearly that the proposed project is "economically viable, technically feasible, and permissible" (Wardrop, 2011). The same proposal to mine the Pebble deposit is described in NDM's 2006 application for water rights to the State of Alaska. The unavoidable impacts would include:

- The direct loss of up to 90 miles of wild salmon spawning and rearing habitat;
- Indirect loss through hydrologic modification of another 54 miles of wild salmon spawning and rearing habitat;
- The discharge of billions of tons of potentially toxic mine wastes, both tailings and waste rock, to 4800 acres of wetlands and streams;
- A discharge of wastewater on the order of 49 million cubic meters/year, no doubt the largest wastewater discharge in the entire state of Alaska, that would need to meet extremely low water quality criteria (e.g., between 0.027 and 2.4 ug/l of copper) without the benefit of dilution, most likely in perpetuity.

These findings are quite clear from the draft BBWA and they are also consistent with and corroborate findings in a report prepared for the Bristol Bay Native Corporation by myself and Thomas Yocom, a former EPA National Wetlands Expert, titled Mining the Pebble Deposit: Issues of 404 Compliance and Unacceptable Environmental Impacts (Riley and Yocom, 2011).

In stark contrast, the large mine projects I worked on and helped to permit, including the Red Dog lead and zinc mine, the Greens Creek lead and silver mine and the Fort Knox, Kensington and Pogo gold mines, all have significant impacts. But they all pale in comparison to the Pebble project. All of their mine tailings combined would amount to but a small fraction of the tailings that the Pebble project would generate. They all avoid direct and indirect impacts to salmon. And they rely heavily on dilution water to meet effluent limits, an advantage unavailable to the Pebble project due to the preponderance of wild salmon spawning and rearing habitat in all potential receiving waters (per State of Alaska Water Quality Standards, 18 AAC 70).

The draft BBWA addresses realistic mining scenarios

As previously stated, the draft BBWA considers the ecological risks associated with mining scenarios described in the independently produced Wardrop report and in NDM's 2006 applications to the State of Alaska for water rights. And while the Wardrop report describes the project as "economically viable, technically feasible, and permissible," and thus suitable for the investment community, it is worth noting that only the 45 year mining scenario and beyond are considered economically viable per the Wardrop report (i.e., the 25 year, 2.5 billion ton mining scenario would not provide a sufficient economic return). Hence, only the ecological risks associated with the largest mining scenario considered by EPA in the draft BBWA, the 6.5 billion ton scenario, appear to be realistic.

I would also point out that in my many years of reviewing and processing mining permit applications and managing NEPA analyses of those proposed projects, the Wardrop report and the water rights applications offer as much or more detail than most mining projects at this phase of what can be a lengthy and very complex permitting process. The Wardrop report details the size of structures and facilities (i.e., the overall footprint) as well as the proposed solid waste management plan and wastewater treatment process. Further, the baseline studies prepared by NDM and the Pebble Limited Partnership (PLP) are quite detailed and comprehensive, certainly adequate to begin the initial environmental review of the project. And EPA has supplemented this information with over 1300 references. While mine plans do evolve over time, and may even change once permits are issued (e.g., Red Dog), the scenarios described in the draft BBWA are sufficiently detailed in my opinion to base sound conclusions regarding environmental risk, particularly with respect to the basic footprint of the mining scenarios.

EPA has used sound science to develop the draft BBWA

The BBWA is rooted in good science. The EPA initially developed a Framework for Ecological Risk Assessment in 1992 and in 1998 published Guidelines for Ecological Risk Assessment based in part on peer-reviewed issue papers and case studies previously developed by EPA's Risk Assessment Forum. "A major theme of the guidelines is the interaction among risk assessors, risk managers, and interested parties at the beginning (planning and problem formulation) and end (risk characterization) of the risk assessment process. In problem formulation, the guidelines emphasize the complementary roles of each in determining the scope

and boundaries of the assessment, selecting ecological entities that will be the focus of the assessment, and ensuring that the product of the assessment will support environmental decision making. The risk characterization section discusses estimating, interpreting, and reporting risks and applies an ecological perspective to recent Agency policy encouraging clear, transparent, reasonable, and consistent risk characterizations. The Guidelines emphasize that the interface between risk assessors, risk managers, and interested parties is critical for ensuring that the results of the assessment can be used to support a management decision.¹”

Having managed numerous environmental assessments and EIS’s throughout my 33 year career in public service, Ecological Risk Assessment is by far the preferred analytical tool for examining pathways for pollutants to potentially affect species of interest, such as salmon. An ecological risk assessment was, in fact, a part of the Alaska-Juneau Gold Mine Project Technical Assistance Report (EPA Region 10, 1994). The process begins with development of a conceptual model that illustrates the potential pathways for physical, chemical and/or biological stressors to affect ecological endpoints. Assumptions and specific analytical methods may be challenged via the public review and peer review processes and re-visited, re-analyzed in a subsequent draft as EPA has done with the draft BBWA. Uncertainties in the assessment are identified and their potential consequences evaluated. Inevitably there will be disagreements among experts. Some argue the BBWA is biased against the project, others argue it is too conservative. But based on the enormous number of public comments on the draft BBWA and their content, there is overwhelming support for the BBWA and its conclusions.

As for the data the BBWA relies on, it has always been EPA standard practice, fortunately for taxpayers, for project proponents to collect their own baseline data, as PLP has done here, using EPA sampling protocols and standard methods of analysis. EPA took this information into account in the BBWA, and other experts have reviewed and commented on it.

Lastly, the expertise that EPA used in developing the BBWA draws from a pool of highly qualified scientists and experts in the following disciplines:

- plant ecology,
- stream fish ecology and habitat,
- aquatic ecology,
- wetlands and watersheds,
- hydrology,
- ecosystem modeling,
- environmental assessment,
- ecological risk assessment,
- waste and chemical management,
- geotechnical and geoenvironmental engineering,
- geology, and
- civil engineering/environmental restoration.

¹ See <http://www.epa.gov/raf/publications/guidelines-ecological-risk-assessment.htm>

These authors were assisted by an additional thirty-nine experts in additional fields including, but not limited to:

- anthropology,
- economics,
- bioeconomics,
- habitat conservation,
- environmental engineering and chemistry,
- forest ecology,
- mineral resources,
- toxicology

Having spent the bulk of my professional career managing interdisciplinary teams, mostly with respect to assessing the environmental impacts of large-scale hard rock mining, I believe the EPA applied not just good science but used an exceptionally well-qualified team of experts to develop the draft BBWA. EPA also went beyond requisite peer review by including public meetings with the peer review panel.

EPA understands modern mining methods and practices

In his testimony, Dr. Kavanaugh asserted that modern mining methods would essentially eliminate the risks of failure as described in the draft BBWA and that EPA simply doesn't understand modern mining methods. I strongly disagree. In Region 10 alone there are mining engineers, geologists and hydrologists who have all worked in the mining industry. In 1995 Region 10 organized a Regional Mining Team to develop a more informed and better coordinated and integrated approach to addressing environmental issues and policies associated with large-scale mining across all EPA programs. The Region produced a Regional Mining Strategy (last updated in 2005) that focuses on the following principles:

- Understand the Environmental Impacts of Mining
- Early Involvement in new mining operations
- Develop and Maintain Effective Partnerships with other agencies, states, tribes, and industry
- Focus Efforts on Priority Sites/Watersheds
- Use Existing Tools More Effectively
- Maintain/Enhance In-house Expertise
- Maintain a Primary Point of Contact on Mining Issues
- Utilize a Team Approach to Site Management
- Promote Scientific and Technological Improvements
- Improve Policy Basis for Decisions
- Evaluate Progress and Make Improvements

On a national level, EPA organized a National Mining Team to promote better consistency and information exchange among the ten EPA Regions and EPA Headquarters program offices. The National Mining team developed EPA's National Hardrock Mining Framework which expands on the principles embodied in Region 10's mining strategy.

In 2003 EPA Region 10 published EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska (EPA Region 10, 2003) which was developed under my direction and is referenced multiple times in the draft BBWA. This document was prepared in response to industry requests and with industry support for guidance on information required by EPA to process CWA permits (National Pollutant Discharge Elimination System wastewater discharge permits and 404 dredge and fill permits) and associated NEPA documents. It explains in plain language why certain information, such as a credible water balance and proper geochemical characterization of the ore body and surrounding waste rock, is necessary for permit development. It reviews modern mining practices and provides recommendations for gathering reliable data and performing the analyses necessary to support conclusions that a proposed project will comply with CWA requirements, as well as other statutes such as the Clean Air Act (e.g., Prevention of Significant Deterioration). The document was subject to review by the mining industry and other interested parties and includes responses to comments.

Another example of EPA's understanding of modern mining practices is reflected in the design of the Pogo gold mine project near Delta Junction, Alaska. EPA managed the EIS process for this project which has now been operating successfully for several years. In cooperation with Teck, the project proponent, as well as the Corps of Engineers and State of Alaska agencies (Department of Environmental Conservation, Department of Natural Resources and Department of Fish and Game), EPA analyzed a number of conceptual project designs, ultimately selecting for permitting an alternative that included an underground mine, a fully lined dry stack tailings storage facility with an extensive seepage collection system, backfilling a portion of tailings in the mine, a state-of-the-art wastewater treatment facility and, to avoid potential exposure of salmon in the Goodpastor River, an off-channel mixing pond (screened at the upper and lower ends) that provides 25:1 dilution prior to any effluent reaching the Goodpastor. Unlike the Pebble proposal, which would feature a very large open pit, massive and largely unlined tailings impoundments and waste rock dumps, this modern mine avoids and minimizes impacts to aquatic resources. And it is also worth noting that the CWA 404 dredge and fill permit was issued for placement of the liner and drain system beneath the dry stack tailings such that no potentially toxic mine tailings are ever discharged to waters of the U.S.

Modern mining methods will not reduce environmental impacts to acceptable levels

Dr. Kavanaugh asserts that modern mining methods would assure that the failure scenarios addressed in the draft BBWA would never occur or would at the very least be quickly corrected. Even if this were true, the unavoidable environmental impacts associated with the mining project footprint alone (mine pit, waste rock dumps, tailing storage facilities, access road

and other infrastructure) of even the smallest scenario addressed would far exceed the impacts of any CWA dredge and fill permits previously issued in Region 10 or anywhere across the nation. Bearing in mind that only the largest scenario addressed, the 6.5 billion ton scenario, is deemed economically viable per the Wardrop report, the draft BBWA predicts the direct and indirect impacts would include:

- Mining of the Pebble deposit would cause the direct loss of up to 90 miles of streams;
- Mining of the Pebble deposit could alter stream flow up to an additional 34 miles of streams;
- Mining of the Pebble deposit would cause the loss of up to 4800 acres of wetlands;
- Leaching of copper during standard operation could directly impact salmonids in up to 35 miles of river and stream beyond the mine footprint;
- Leaching during standard operation could indirectly impact salmonids in up to 51 miles of stream within the mine footprint.

Furthermore, the baseline environmental studies conducted by PLP confirm that local substrates are highly porous and the underlying bedrock is highly fractured (PLP, 2012) creating an environment that has been described by PLP's own consultants as a "leaky bathtub." Surface waters and ground waters are highly connected which helps create very productive fish habitat. But such porosity presents tremendous challenges to the creation and proper maintenance of mine waste storage facilities. Unless they are fully lined and equipped with an extensive seepage collection system, which has not been proposed, waste rock dumps and tailings storage facilities are likely to leak, permitting metal laden and potentially acidic leachate to reach salmon bearing waters.

Also of note is the very high annual net precipitation, over 45 inches per year at Tailings Storage Facility G (PLP 2012, Chapter 8) which is higher than at most other Alaska mines. This is significant when one considers the very large footprint of the project. All that net precipitation falling on solid waste facilities that cover 1000's of acres, minus a fraction that would be used in ore processing and would be incorporated in the mine tailings, as well as ground water pumped out of the mine pit, would require treatment to meet Water Quality Criteria end-of-pipe, without benefit of a mixing zone per Alaska's Water Quality Standards (due to the preponderance of wild salmon spawning and rearing habitat). Due to the very low hardness in all potential receiving waters, the hardness-based metals criterion for copper would be very low, estimated at between 0.027 ug/l and 2.4 ug/l (USEPA 2013, Table 87). I seriously doubt that any modern mine anywhere in the world has been required, let alone succeeded, to meet such a minute effluent limit on an on-going basis, particularly when the waste stream is of a magnitude as that predicted for Pebble – on the order of 49 million cubic meters per year (approximately 35 million gallons per day) according to the draft BBWA. Add to this challenge the fact that the project area is at sub-freezing temperature for half the year or more and it would appear that this tremendous volume of wastewater would need to be treated and discharged in just six months, essentially

doubling the requisite treatment capacity. Given these considerations, EPA's risk assessment with respect to failures of the wastewater treatment facilities is perhaps highly conservative, not unrealistic.

Lastly, PLP and others have urged EPA to wait for completion of the mining plan, including the aquatic resources compensatory mitigation plan, before deciding whether to pursue a 404(c) action. As detailed in a paper by Thomas Yocom, former EPA National Wetlands Expert, and Rebecca Bernard titled Mitigation of Wetland Impacts from Large-Scale Hardrock Mining in Bristol Bay Watersheds (Yocom and Bernard, 2013) that was published earlier this year in the Seattle Journal of Environmental Law, "the size, unique nature, and permanence of habitat losses associated with large-scale hardrock mining in Bristol Bay watersheds are unlikely to be offset adequately through compensatory mitigation. Therefore, the impacts would be unacceptable and not permissible under Section 404 of the CWA." The authors conclude there are simply inadequate opportunities within the Mulchatna River or Lake Iliamna watersheds to create, replace or restore the unavoidable aquatic habitat losses from the Pebble project.

The draft BBWA fulfills in part EPA's Trust Responsibility to Native Alaskans

President Reagan published a Federal Indian Policy on January 24, 1983. That policy stressed two related themes: that the Federal Government will pursue the principle of Indian "self-government" and (2) that it will work directly with the Tribal Governments on a "government-to-government" basis. The EPA was one of the first agencies in the Federal government to develop and adopt its own policies in 1984 that clearly reflect these principles and this trust responsibility. So when a number of Federally recognized Alaska Tribes petitioned the EPA to protect the salmon resources of Bristol Bay using its CWA authorities, EPA responded appropriately by initiating a study, using modern analytical methods (an Ecological Risk Assessment) to address the legitimate concerns expressed by these Tribal governments. And throughout the course of developing the BBWA, the EPA consulted with these Tribal governments as they developed an informational basis for addressing the potential use of its CWA 404(c) authority to prohibit, deny or restrict discharges of dredge or fill material to Waters of the U.S.

Appropriate EPA 404(c) restrictions on the discharge of dredge and fill material would provide protection, predictability and cost savings for all

Some members of the subcommittee have argued that initiating a CWA 404(c) action would deny the proponents of the Pebble mine "due process" as afforded by the normal permitting and NEPA processes. I would argue that it makes no sense to spend the enormous amount of time, effort and money on permitting and NEPA processes when the project is so unlikely to qualify for CWA permits. A consistent theme embodied in EPA's National Mining Framework and EPA Region 10's Regional Mining Strategy is early involvement by EPA in order to avoid any surprises whenever a new mining project is proposed. This helps save time

and money and provides predictability for the regulated community. This is why Region 10 prepared the Hardrock Mining Source Book – to save prospective applicants time and money by avoiding “do overs” when it comes to data gathering and technical analyses. Similarly, I believe EPA needs to make very clear up front what the expectations are for complying with provisions of the CWA.

In our report prepared for the Bristol Bay Native Corporation Mining the Pebble Deposit: Issues of 404 Compliance and Unacceptable Environmental Impacts (Riley and Yocom, 2011), we recommend that EPA move forward with a CWA 404(c) action to restrict any CWA 404 discharges of dredge or fill material from the Pebble project to achieve the following three performance standards which are met by every other mine currently operating in Alaska:

- no discharge of fill material to wild salmon spawning and rearing habitat;
- no discharge of toxic material to waters of the U.S.;
- no discharge of fill material that will require treatment of seepage and runoff in perpetuity

I believe these are reasonable standards that essentially provide a “target” for anyone proposing to mine in any watershed that supports wild salmon spawning and rearing. When you consider the tremendous expenditures by American tax payers to restore wild salmon habitat elsewhere, such as the dismantling of dams on the Elwha River in Washington, does it make any sense to then permit the destruction of perfectly intact, highly productive salmon spawning and rearing habitat in the last remaining, sustainable salmon fishery on Earth?

And when other modern mines are able to contain their mine wastes by constructing fully lined tailings impoundments and waste rock dumps, does it make any sense to allow another company to discharge their mine wastes directly into highly productive aquatic environments?

And lastly, in view of the vast number of inactive mines that continue to leach acid mine drainage and toxic metals into nearby waters many years after mine closure, sending the clean-up bill to taxpayers, does it make any sense to grant CWA permits for waste facilities that future generations will be required to manage in perpetuity?

These are reasonable standards met by other mines that can be imposed now, in advance of final mine planning, permitting and NEPA processes that provide the predictability that all prospective applicants need and deserve and that will assure the long-term protection of the invaluable and sustainable salmon resources of Bristol Bay.

Sincerely,

(original signed by)

William M. Riley

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Will Team Obama ignore the rule of law and preemptively veto Pebble mine?

By John Shively

Published August 01, 2013

Today in Washington, a landmark environmental law is under attack. Politically motivated groups are pressing the Obama administration to ignore the National Environmental Policy Act and rush a decision on a copper mine in Alaska.

This lobbying and PR campaign is probably the greatest threat NEPA has faced since it became law more than 40 years ago, but public awareness is low.

How has this threat gone unnoticed?

Probably because the company proposing the mine -- the Pebble Partnership, where I serve as CEO -- isn't the one putting NEPA in danger.

Instead, environmental groups are running the campaign to subvert and evade NEPA. This runs counter to many political stereotypes, I know. But the campaign is real, and if the activists win, the consequences will be felt across the nation.

The Pebble deposit, located on state land in southwestern Alaska, is one of the world's largest copper reserves.

This mineral is essential to modern life. It is used in everything from power lines to smartphones to automobiles. The U.S. imports about 35 percent of the copper it needs.

My company wants to invest at least \$6 billion building the Pebble mine, and we expect it will support roughly 15,000 jobs across the U.S. for three decades and perhaps much longer.

So far, we have spent eight years and over \$500 million conducting geological, engineering and environmental studies to prepare a formal permit application to state and federal regulators.

When the application is submitted, NEPA will be triggered, subjecting both our mine plan and our environmental safeguards to years of exhaustive review by regulatory agencies, environmental groups and the general public.

My company will have to prove that building and operating the mine won't hurt Bristol Bay's salmon populations and the region's commercial fishing industry; that southwestern Alaska can have both fishing jobs and mining jobs.

If we can't clear the high hurdle set by the NEPA process, we won't get a permit, and there will be no mine.

But don't take my word for it.

The New York-based Natural Resources Defense Council calls NEPA an "incredibly successful law" which has "helped preserve some of America's most treasured places."

NRDC President Frances Beinecke hailed NEPA as the "green Magna Carta," which has "worked well to protect our national treasures and resources."

The NRDC has even fought sensible bipartisan reforms to NEPA, fearing they would put regulatory reviews on the "fast track." NEPA "works as it stands," Beinecke says, "and it should stay that way."

Except, that is, when NEPA gets in the way of the NRDC's agenda.

To block the Pebble mine, the NRDC is proposing the ultimate NEPA "fast track." Rather than wait for my company to apply for a permit, and rely on the "green Magna Carta," Beinecke and movie star Robert Redford are demanding the Obama administration act now by issuing what's known as a "preemptive veto."

This unprecedented and legally dubious move would completely circumvent NEPA.

It would prevent my company from submitting a permit application, and replace years of painstaking NEPA reviews and due process with a snap political decision.

In everyday terms, it would be like a teacher failing a student before they take the exam.

For now, the U.S. Environmental Protection Agency hasn't rewarded the NRDC's hypocrisy by issuing a premature veto. But the EPA did rush out a "watershed assessment" that speculates about copper mining impacts for Bristol Bay.

Instead of waiting for our permit application, EPA simply guessed what the mine would look like, assumed my company would use century-old technology and environmental practices, and relied on so-called research from anti-mining advocacy groups like Earthworks.

This report is completely unscientific, but predictably, the NRDC says it's good enough to justify premature action by the EPA.

This isn't just a problem for Alaska.

If environmental activists can kill one project by evading the NEPA process, you can bet they will use the same strategy again and again, until it's routine.

In fact, activists are already planning a Bristol Bay-style "watershed assessment" for the Great Lakes, which could be used against all kinds of construction projects in the industrial Midwest.

That's because tens of thousands of other projects nationwide, including highways and housing developments, need the same kind of earthmoving permits as the Pebble mine.

According to consulting firm The Brattle Group, projects that go through this permitting program are worth \$220 billion a year to the U.S. economy.

I respect people's questions about the Pebble mine. But those questions should be answered according to science, engineering and the law -- not the political demands of activist groups.

<http://www.foxnews.com/opinion/2013/08/01/will-team-obama-ignore-rule-law-and-preemptively-veto-pebble-mine/>

Read more: <http://www.foxnews.com/opinion/2013/08/01/will-team-obama-ignore-rule-law-and-preemptively-veto-pebble-mine/print##ixzz2d6ncnQ7r>



Chris Wood
President and CEO

July 31, 2013

The Honorable Paul Broun
Chairman, Subcommittee on Oversight
Committee on Science, Space, and Technology
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Broun,

On behalf of Trout Unlimited's (TU) 145,000 members nationwide, I am writing to voice our concerns about your August 1st Science and Technology Oversight Subcommittee hearing on the Environmental Protection Agency's (EPA) Watershed Assessment of Bristol Bay, Alaska. Please include our letter in the hearing record.

TU's mission is to conserve, protect and restore North America's trout and salmon fisheries and their watersheds. Protecting the world class fisheries from the likely harm caused by the proposed Pebble Mine—which would be one of the world's largest open pit mines, located in the headwaters of Bristol Bay's most productive rivers—is our highest conservation priority.

I appreciated you making time to discuss this issue with me in person in December of last year, and I know you share our desire to protect this precious fishery. But based on the two letters you have written EPA and the nature of the upcoming hearing, it seems we are still far apart in our views about the proper role EPA and the nation's foremost natural resource law, the Clean Water Act, should play in protecting Bristol Bay. As a member of Congress with a history as a committed sportsman and conservationist, I ask that you use the upcoming hearing to take a fresh look at the facts of the issue, and I request that you speak to sportsmen and other major stakeholders from the Bristol Bay area to consider their views as we at TU have done over the past eight years.

I know that you have fished in the Bristol Bay watershed. I do not need to tell you how special of a place it is, but it does bear repeating. The rivers of the Bristol Bay watershed contain one of the most remarkable, economically valuable fisheries on earth. Many of TU's members view a trip there as an opportunity of a lifetime. To many of those who live in the Bristol Bay watershed, the fishery is not an inspiration but a livelihood; the area provides 14,000 recreational and commercial fishing jobs, and generates \$1.5 billion in annual economic activity.

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In your correspondence, you make clear that one of your chief concerns with the draft watershed assessment is its reliance on a “hypothetical” mine proposal. There is not very much that is hypothetical about this mine. Pebble Limited Partnership (PLP) has claimed that a mine scenario does not exist, while at the same time touting the economic value of it. PLP cannot have it both ways.

Northern Dynasty Minerals, one of the two principals in the Pebble Limited Partnership presented a mine plan to the Securities and Exchange Commission to secure investor support for the Pebble project, and has since lauded the mine’s potential benefits through an economic study based on reasonable mining scenarios in the Bristol Bay region. Furthermore, if Pebble does not have an actual plan, then it should immediately relinquish the water rights it filed in 2006 for 100 percent of the water of Upper Talarik Creek— sensitive fish habitat containing excellent rainbow trout and salmon habitat. Senator Murkowski recently agreed with many stakeholders in Alaska that PLP cannot continue on its path without unveiling a mining plan to the public.

Your other major criticism of EPA involvement is that it is too early in the decision-making process. In our view, EPA has taken a responsible step by responding to the request from major Alaskan stakeholders—including Alaska Native tribes and corporations, commercial fishermen, and sportsmen—to use its authority under the Clean Water Act to protect the Bristol Bay watershed’s irreplaceable resources from the destructive effects of industrial-scale mining. Though the proposed Pebble mine is understandably the focus of attention in light of its size and location, many more mining claims have been filed in the watershed. These would forever change the nature of the landscape and the value of the fishery. We believe it is in everyone’s best interest for EPA to set prudent limits on industrial-scale mining that will both protect the region’s unsurpassed fishery resources and the economies and communities they sustain, while clarifying for potential mine developers what is and is not permissible so they can make informed business decisions.

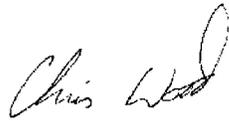
Further, EPA has gone far out of its way to hold a fair and open process. By the end of the process, EPA’s scientific assessment will have synthesized hundreds of existing studies, incorporated two formal comment periods totaling hundreds of thousands of comments, and undergone rigorous peer review.

What I hope is most compelling to you and other members of the oversight committee are the merits of the science of EPA’s assessment. Based on the SEC filing, the Alaska state water rights filing, and other available information, EPA has based its assessment on a wide range of potential mining scenarios. This assessment found that even in a best case scenario, Pebble mine would destroy 87 miles of salmon streams and 2,500 acres of wetlands, and create 10 billion tons of waste which would be stored in perpetuity in one of the most seismically active regions in the State. America’s foremost professional fisheries group, the American Fisheries

Society (AFS) and hundreds of leading scientists across the nation agree with TU that EPA's estimates of habitat and fisheries loss are conservative. EPA has done a commendable job assessing the existing science on the importance of the watershed.

If ever the EPA had the authority, and indeed, the necessity to protect a body of water, Bristol Bay is it. EPA has properly assessed the science and allowed a thorough public response to its findings. Our coalition of businesses, commercial and recreational fishermen, jewelers, outdoor industries, and Alaskan Natives, represents stakeholders from across the political spectrum who are united in the common purpose of protecting some of the most productive salmon and trout habitat on the planet that possesses huge commercial, subsistence and recreational value. Once again, I encourage you to meet with these various stakeholders at some point in the near future to hear their side of the story. As your oversight committee and hearing move forward, I also encourage you to reconsider your criticism of the EPA's process and to support the scientifically justified need to protect Bristol Bay.

Sincerely,

A handwritten signature in black ink that reads "Chris Wood". The signature is written in a cursive, flowing style.

Chris Wood
President and CEO
Trout Unlimited

August 14, 2013

U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Subject: Subcommittee on Oversight hearing titled "EPA's Bristol Bay Watershed Assessment –
A Factual Review of a Hypothetical Scenario" August 1, 2013

Dear Chairman Broun and Members of the Subcommittee:

My name is Thomas G. Yocom, and I served as National Wetlands Expert for the U.S. Environmental Protection Agency where I worked from 1984 until 2005. Prior to that I served as a biologist for the National Marine Fisheries Service and the U.S. Fish and Wildlife Service from 1971 to 1984, where, in part, I did research and published journal articles on biological impacts of thermal pollution from Great Lakes power plants and subsequently on impacts of Alaskan crude oil spills on marine organisms. Overall, my primary professional responsibilities from about 1978 until the present has involved projects that require authorization for discharges of dredged or fill material into the nation's waters, including wetlands. In other words, Department of the Army 404 permits.

Over my career I have reviewed thousands of permit applications. I also am a certified instructor in the identification and delineation (mapping) of "waters of the United States," including wetlands. Prior to my work related to the Pebble Mine project, I have worked on projects in California, Arizona, Nevada, Colorado, Hawaii, Louisiana, Utah, Guam, American Samoa, and the islands of the western Pacific, including the Republic of Palau. I have helped negotiate environmental mitigation and restoration projects involving tens of thousands of acres in northern and southern California and in the western Pacific. Upon my retirement from EPA, I was awarded the Administrator's Award for Excellence in recognition of these achievements.

I am an author of one of the very few peer-reviewed publications on how alternatives are evaluated under 404 regulations (Yocom et.al., 1989), and believe I fully understand how the restrictions in these regulations limit how and whether permits can be issued. I also helped lead an effort that resulted in the only 404(c) referral that EPA Region IX ever initiated; prior to completion, that 404(c) referral was withdrawn by EPA after the project sponsor agreed to pursue a less-damaging (and less-costly) alternative. Additionally, I am one of the authors of EPA's Memorandum of Agreement pursuant to Section 404(q) of the Clean Water Act that provides opportunities for EPA to resolve 404 permit disputes with the Corps.

Subsequent to my retirement from EPA in 2005, I have been an environmental consultant serving clients in the private sector on a variety of projects requiring permits. These projects have ranged from housing developments to mineral extraction, and my clients have also included governmental agencies and non-profit organizations.

In 2011, I was hired by the Bristol Bay Native Corporation (BBNC) and Trout Unlimited to assist in reviews the proposed Pebble Mine project. These and other organizations had, as you

know, petitioned EPA to pre-emptively “veto” the proposed Pebble Mine project. Whereas my experience with hardrock mining is limited, I do consider myself expert in the regulatory requirements of Section 404 of the Clean Water Act, and offered to perform an *a priori* assessment of the likelihood that the Pebble Mine project could comply with the regulations and qualify for a permit. In this effort, I collaborated with William M. Riley, former mining coordinator for EPA Region X in Seattle -- a retired EPA scientist like myself, but one very familiar with mining practices and mines in Alaska.

The reason that we focused on Clean Water Act compliance is that the regulations pursuant to Section 404 govern whether a project constructed in “waters of the United States” (see definitions of “waters” at 33 CFR 328.3), like the Pebble Mine project can be permitted. Compliance with these regulations (40 CFR 230) also forms the basis for initiation of most 404(c) actions by EPA. In contrast, the National Environmental Policy Act (NEPA) discloses potential project impacts to the public, but does not direct or restrict how or whether any project gets approved.

Neither EPA’s BBWA nor its 404(c) authority deny due process to permit applicants

Subcommittee statements during the August 1, 2013 hearing seemed to suggest that EPA’s use of its authority under Section 404(c) of the Clean Water Act denies due process to potential permit applicants that would otherwise be afforded them under NEPA. This perception is incorrect. Similarly, some on the Subcommittee appear to believe that Section 404(c) allows EPA to simply short-circuit the environmental review process and rule against certain projects. This perception is wrong.

Section 404(c) is part of the Clean Water Act statute, a law of the land that has been in place for over 30 years. Specifically, the statute reads: “(c) *The (EPA) Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary (of the Army). The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection.*”

The regulations that implement Section 404(c) give EPA Regional Administrators authority to assess the likelihood that discharges of dredged or fill material to any specific “water of the United States” would result in unacceptable adverse impacts to municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. That assessment involves public notice and opportunities for public hearings, public comments, and for input from the State and the affected landowners (see 40 CFR 231.1-231.8).

These regulations are hardly a short-cut. They are very much like a permit process and take months, at a minimum, to complete. The administrative record for some of EPA’s past 404(c)

processes are very large. From an environmental standpoint, the fundamental difference between EPA's 404(c) procedures and that of the Corps of Engineers permit application process is that EPA, not the Corps, is the finder of fact.

This is not an abandonment of due process. In fact, the project sponsors/landowners are contacted and are full participants in the process at the Regional and EPA Headquarters levels, and this opportunity for information exchange and negotiation has led EPA to withdraw its 404(c) recommendations in past cases. The project proponent is afforded additional opportunities to take corrective action to prevent an unacceptable adverse effect(s), satisfactory to the EPA Administrator before a final determination can be made by the Administrator. As examples, EPA withdrew its 404(c) recommendations when project sponsors were able to modify their proposals in order to avoid impacts that EPA considered to be potentially unacceptably adverse in a case in Alaska and another in California with which William Riley and I were respectively involved as EPA staff. In the history of the actions pursuant to Section 404(c), 29 cases have been initiated, but only 13 have led to completed actions that restrict, prohibit, or deny discharges of dredged or fill material associated with project proposals.

Only after the initial 404(c) public notice, public hearing(s), and comment and review period can the Regional Administrator refer the matter to the EPA Administrator with a recommendation that the Administrator consider making a formal determination to restrict, prohibit, or, in the case of a site where the Corps may already have issued a permit, deny discharges of dredged or fill material into a specific site that contains "waters of the United States."

Members of this Subcommittee should also understand that EPA's Bristol Bay Watershed Assessment (BBWA), when completed does not constitute a 404(c) action. EPA cannot take any action pursuant to Section 404(c) of the Clean Water Act, unless and until it has followed the procedures that are specified in Clean Water Act regulations (see 40 CFR 231.1 – 231.8). However, EPA's BBWA could provide important supportive documentation for EPA to initiate such procedures, or, alternatively, to assist the Corps in its evaluation of a permit application for the Pebble Mine project, should an application be forthcoming.

It is reasonable and appropriate for the federal government to act proactively when there is clear evidence that a proposed project will not comply with federal regulations. One way that the Corps of Engineers and EPA take such actions is through pre-application consultations wherein potential permit applicants meet with State and federal agency representatives and describe their proposed projects. At those meetings, agency staff can alert project sponsors that their projects are unlikely to be permitted as proposed, and can, therefore, save project sponsors from wasting time and money in seeking authorization for a proposal that is not permissible.

In the case of the Pebble Mine project, the sponsor participated in similar interagency consultations, but these were discontinued by the agencies after the project sponsor repeatedly failed to produce information about its proposal that it had been asked to provide. Nevertheless, the previous formal proposals that were made by the project sponsor in 2006, subsequent reports it submitted to Canadian and United States securities and exchange commissions, and environmental baseline data it collected between 2004 and 2008 (but withheld until 2012), provide sufficient data, in my opinion, for EPA to initiate the 404(c) process on the basis that the

proposed Pebble Mine project would likely result in unacceptable adverse impacts to fishery resources and wildlife habitat. These data developed by the project sponsor clearly indicate that any economically viable mining of the Pebble deposit (25-year project or greater) would result in thousands of acres of losses of fish and wildlife habitat that could not be adequately offset within the watersheds where such mitigation would be required under the regulations. In addition, the Pebble Mine would require permanent storage and treatment of tailings in drainages where there is substantial precipitation and no available mixing zones to dilute the wastewater.

Furthermore, there seems to be a perception that EPA's initiation of its 404(c) process, as described in federal regulations, always leads to a prohibition against all discharges of dredged or fill material. In fact, the thirteen 404(c) actions that EPA has completed have imposed restrictions that are project specific. Even in its most recent action involving mountain-top mining, EPA restricted discharges in one drainage while allowing mining-related discharges in others.

It is appropriate for EPA to initiate its 404(c) process rather than wait until the permitting process and NEPA analysis are completed

In his witness testimony before the Subcommittee, Lowell Rothschild noted 20 factors that had been analyzed in a Florida mining EIS with which he was familiar. These factors included:

1. Surface Water Resources
2. Groundwater Resources
3. Water Quality
4. Aquatic biological communities
5. Wetlands
6. Wildlife Habitat
7. Species listed under federal and state species protection laws
8. Economic Resources
9. Socioeconomics
10. Environmental Justice
11. Radiation
12. Cultural Resources
13. Historic Properties
14. Surface geology and soils
15. Air Quality
16. Noise
17. Land use
18. Cumulative effects
19. The relationship between short-term use of the environment and long-term productivity; and
20. Irreversible and irretrievable commitment of resources

Mr. Rothschild notes that these factors go well beyond wetlands, water quality, and wildlife. He suggests that a 404(c) action by EPA would fail to fully assess all of the potential impacts of a mining project because the 404(c) process would have a narrower focus.

There is no question that the Clean Water Act focuses on the physical, chemical, and biological integrity of the nation's waters, or that the regulations pursuant to Section 404 of the Clean Water Act are concerned primarily with the aquatic environment. NEPA, on the other hand, relates to public disclosure of the overall impacts of a federal action on the human environment.

Nevertheless, an analysis pursuant to 404 compliance would likely cover several of the same factors that Mr. Rothschild outlined, including:

1. Surface water resources;
2. Ground water resources;
3. Water quality;
4. Aquatic biological communities;
5. Wetlands;
6. Wildlife habitat;
7. Threatened and endangered species; and
8. Cumulative impacts/effects.

The analysis would also likely consider other impacts insofar as identifying the least environmentally damaging practicable alternative (LEDPA) which, under 404 regulations, can include consideration of non-aquatic impacts such as noise and air quality.

Moreover, a 404 analysis would also cover alternatives that would not necessarily be identified in an EIS, inasmuch as the 404 alternatives analysis requires that only the least environmentally damaging practicable alternative (LEDPA) be considered for permitting. Such alternatives can include options that the permit applicant does not presently own or control, and that the permit applicant may not want to pursue. And, even though an applicant may ultimately propose the LEDPA, that alternative may nevertheless prove to be not permissible if, for example, it violates water quality standards, causes or contributes to significant degradation of the aquatic environment, or fails to adequately offset unavoidable project impacts through appropriate mitigation measures.

Finally, and most importantly, NEPA is triggered by a major federal action. In the case of the proposed Pebble Mine project, that federal action includes the need for a Department of the Army permit to discharge dredged or fill material into the "waters of the United States;" it is that authorization that would lead to the Corps of Engineers being the lead agency if an EIS was to be prepared.

No one disputes that it would be impossible to extract minerals from the Pebble deposit without discharging dredged or fill material into "waters of the United States." The Pebble deposit is overlain with streams, open water areas, and wetlands, and all nearby drainages that could potentially serve as tailings storage facilities also contain tributary streams and associated wetlands and open water areas. In fact, the Pebble project sponsors have needed Clean Water Act authorization for the discharges of fill material associated with their extensive and ongoing exploratory drilling efforts, but because these impacts have been considered less than significant their NEPA analysis is cursory.

Whereas the NEPA process under a full Environmental Impact Statement would likely cover a wider range of factors, NEPA does not, as Mr. Rothschild states, drive any particular agency decision. Rather, it serves to inform the public about the potential range of impacts that might result from the federal action, in this case a Department of the Army permit. As such, regardless of the additional information that might be developed in an Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA), if mining the Pebble deposit would not comply with Clean Water Act regulations, it cannot be permitted, and preparation of an Environmental Impact Statement would not be a worthwhile expenditure of agency resources or those of a project sponsor.

The Clean Water Act regulations contain very specific restrictions that do, contrary to NEPA, drive a particular permit decision. Permit applications that do not comply fully with these regulations must be denied, by regulation (see 33 CFR 323.6(a)).

Let me use this analogy. Let's say that the Department of Motor Vehicles (DMV) is an agency of the United States government. It's major federal action is issuing a driver's license, a form of permit. Persons are eligible to obtain a driver's license if they also pass certain qualifying requirements. In applying for a license, the "permit applicant" is subjected to a range of analyses, including a birth certificate for proof of age and citizenship, an eye test, a written test to determine applicant's knowledge of driving rules and regulations, a driving test to establish basic driving proficiency, etc. Let's pretend that is the NEPA analysis. Let's call the legal driving age of 16 a Clean Water Act restriction to discharge. Into the DMV comes a 12-year old boy seeking a driver's license. This 12-year-old permit applicant produces a birth certificate indicating he is 12 years old. Should the DMV subject the applicant's proposal to additional analysis (an eye test, written and driving tests, etc.)? No, that would be a waste of time and resources, because that additional information is only relevant if the applicant qualifies for a permit.

So, if EPA believes certain proposed discharges of dredged or fill material are prohibited by law, should it inquire further about air quality, noise, and archeological sites? I would strongly argue that such assessments, as would be undertaken as part of preparing a full EIS, are wasteful, and that the government is not acting in the best interests of the regulated community and taxpayers if it does not take early action.

Accordingly, it serves no one to proceed through a long and costly EIS process if a project is likely to fail to qualify for a permit. As William Riley and I concluded in our report (Riley and Yocom 2011), there is ample evidence that mining the Pebble ore deposit will fail to comply with the restrictions on discharges of dredged or fill material. It is equally clear that the direct impacts of the project, even after consideration of potential mitigation measures, would result in unacceptable adverse impacts to fish and wildlife resources because thousands of acres of wetland and aquatic habitats would be lost with no means of replacing them (Yocom and Bernard 2013). And, although project sponsors may suggest that they will reroute surface water drainages to convey flows previously carried by streams destroyed through mining activities, these man-made channels will not compensate for the thousands of acres of the complex mosaic of streams, open-water areas, and wetlands that exist at the Pebble Mine site. These losses

would dwarf the impacts of projects for which EPA has initiated its 404(c) authority in the past (Yocom and Bernard 2013).

If a Pebble Mine project would not qualify for permitting, the project should not be subjected to a full NEPA analysis

In our December 2011 report to the Bristol Bay Native Corporation and Trout Unlimited, William Riley and I concluded that the Pebble Mine project would not qualify for permitting. Witness Wayne Nastri referenced our report in his testimony.

Inasmuch as William Riley and I used a similar approach to that of EPA's BBWA, I would expect some skepticism from some members of the Subcommittee about conclusions reached in the absence of an actual permit application from the Pebble Mine sponsors. We, like EPA, based our mining "scenario" on information that was developed almost entirely by those same project sponsors.

I believe it is appropriate to clear the air a bit about what is hypothetical and what is not. Here are a few facts that I believe serve to support the conclusions that William Riley and I reached, as well as those reached by EPA in its BBWA:

1. The location we selected for the Pebble ore deposit is not hypothetical. The Pebble deposit is known and fairly well delineated. We did nothing to change how the project sponsor and its consultants have described and mapped the deposit. Similarly, its mineral content has been described by the project sponsor as well as the quantities of waste rock and tailings that would be generated for its project; it is those figures we used in our report. We did not independently estimate these quantities.
2. The location of at least 30 potential tailings storage facilities have been identified and studied by the project sponsor, which concluded that, environmentally, the best site for constructing an initial tailings storage facility is in an unnamed tributary to the North Fork Koktuli River. We did not question this conclusion and created no hypothetical alternative to what the project sponsor showed in its own reports and continues to display on its own website (http://www.northerndynastyminerals.com/ndm/Prelim_A.asp). Even if the project sponsor were to select a different site, its own studies preclude the possibility of finding a site that would not destroy wetland and aquatic resources.
3. Beginning in about 2004, the project sponsor began conducting extensive studies to quantify and map the streams, open-water bodies, and associated wetlands that its consultants found within an extensive mine mapping area, including the Pebble deposit and within the same North Fork Koktuli River tributary drainage it has identified for construction of its initial tailings storage facility. Although the underlying data were, and continue to be withheld, the project sponsor finally released reports summarizing its findings immediately prior to EPA's scheduled release date for the initial draft of its BBWA. The Pebble Mine sponsors' report covering wetland and aquatic areas concluded that roughly one-third of all areas it mapped contained streams, open-water areas, and associated wetlands. William Riley and I did not have access to these reports and maps when we finalized our report, but applying them now results in revised

estimates that are even more adverse than our previous estimates that relied on National Wetlands Inventory maps. It may be worth noting that it is my professional opinion, based in part on a visit to the proposed mine site, that if anything, reliance on the project sponsor's percentage estimates leads to conclusions that underestimate the actual project impacts, particularly for the areas overlying and surrounding the Pebble deposit.

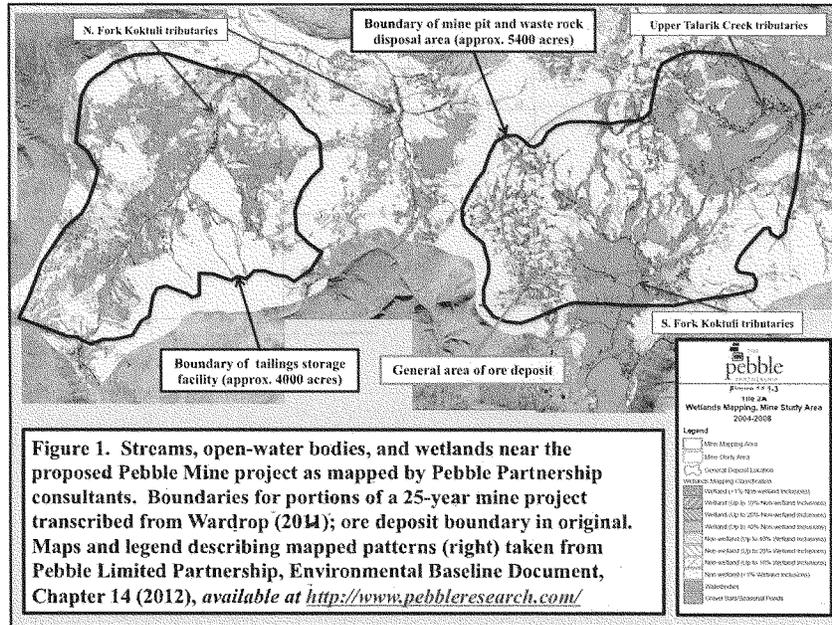
4. In a 529-page detailed report (Wardrop report 2011) that we understand was submitted to the Canadian securities and exchange commission, the project sponsor describes a 25-year project, as well as 45-year and 78-year mine plans. Even though it is clear from that report, as well as from other information generated by the project sponsor to potential investors, that the project sponsors would ultimately seek to have the mine operate for at least 45 years, William Riley and I chose to analyze whether the smallest alternative, the 25-year project, could qualify for a permit under the Clean Water Act regulations. The footprint of that 25-year project is shown on Northern Dynasty Minerals' website (http://www.northerndynastyminerals.com/ndm/Prelim_A.asp) where it has been displayed continuously since its Wardrop report was released in February 2011. We did nothing to alter the project sponsor's own description or associated figures showing its proposed 25-year mine footprint.

5. Average net precipitation (after evaporation of water and snow are subtracted) for the areas of the Pebble deposit and potential tailings storage facility sites nearby is over 30-inches per year according to the project sponsor. We did not hypothesize those figures, even though we now believe they are underestimates. That amount of precipitation, released downstream primarily during the summer months, leads to an estimated wastewater stream that is substantial and will need perpetual treatment. Congress' Government Accountability Office (GAO) has strongly recommended that EPA improve the record of hardrock mining in the United States, which has produced many Superfund sites. GAO recommends that mining projects not be approved that would require perpetual treatment (United States Government Accountability Office 2006). A large-scale mining of the Pebble deposit will produce a wastewater stream that requires treatment in perpetuity in order to meet water quality standards at the point of discharge (no mixing zone).

6. Simply combining the project sponsor's 25-year project footprint (over 9400 acres) to its estimates of the extent of streams, open-water bodies, and associated wetlands, yields a minimum direct and permanent loss of well over 3000 acres of habitats that support salmon as well as other fish and wildlife resources (Figure 1, herein). Under Clean Water Act regulations, those losses would need to be offset, primarily within the same watershed (see Yocom and Bernard 2013). Inasmuch as there are no areas where these losses could be replaced through restoration or enhancement of degraded habitats, I believe that not only would the artificially small 25-year Pebble Mine project fail to comply with federal Clean Water Act regulations and be prohibited from authorization, but even smaller projects would be likely to fail as well.

7. And, even though the Pebble Mine sponsors may propose a smaller project, NEPA would require that the project impacts include any reasonably foreseeable related impacts. The President's Council on Environmental Quality (CEQ), which oversees NEPA, frowns on what it refers to as "piece-mealing" whereby a larger project seeks to avoid environmental scrutiny by breaking the project into smaller parts and seeking authorization for these independently.

Similarly, the Corps requires permit applicants to seek authorization for their entire project, including future phases. Unless the Pebble Mine sponsors could somehow show that they and any successors in interest would not construct a footprint larger than a 25-year project, or smaller, as EPA considered, the requirements of NEPA would include the future impacts of full build-out.



EPA should use its 404(c) process to adopt restrictions to limit mining impacts

William Riley’s and my report makes three straightforward recommendations, based upon a 25-year mining scenario that is the project sponsor’s, not ours. We have recommended that EPA initiate a 404(c) process to restrict, not prohibit, discharges of dredged or fill material associated with mining the Pebble deposit and other large-scale mines that may be proposed in the Bristol Bay watershed. EPA’s 404(c) process could result in restricting discharges of dredged or fill material 1) from areas that are salmon spawning and rearing habitat; 2) that does not meet testing requirements demonstrating that such material is not toxic to aquatic life; and 3) the runoff or seepage from which would require treatment in perpetuity.

Inasmuch as there have been no previous mining projects that have been allowed to discharge into salmon habitat, nor violate testing requirements, these restrictions are not precedent setting in any way. Similarly, the restriction to prevent mining projects from leaving behind a

perpetual-treatment burden for the public to bear is entirely within the recommendations that Congress' GAO has stressed to EPA.

Summary

In summary, I believe EPA utilized appropriate information in relying on documents produced by or for the project sponsor in reaching its conclusions and recommendations. I realize that some, including members of this Subcommittee will hold that unless and until the Pebble Mine project sponsors actually apply for a permit, there is guesswork involved, and that predicted impacts and/or risks may not be accurate.

The fundamental issue here is whether such potential inaccuracies cause conclusions to slightly miss the mark while staying in the ballpark, or whether the inaccuracies lead to conclusions that are orders of magnitude from the actual impacts and/or risks. I believe that EPA has, as William Riley and I did in our assessments, stayed well within the correct ballparks of impacts and risks, and in doing so, relied on the project sponsor's own data.

As it stands, I believe our conclusions are correct that the Pebble Mine, even at its artificially small 25-year project size, would violate Clean Water Act regulations. If so, then everyone's time and money will be wasted if Congress, in the name of due process, somehow pressures EPA not to act, and in doing so enables the Pebble Mine project to go through a long, drawn-out, and in this case, wasteful NEPA process, only to have the project found in violation of Clean Water Act regulations and denied by the Corps and/or subsequently vetoed by EPA.

I believe that there is no project in EPA's history that is a clearer case for advance 404(c) restrictions than the discharges of dredged or fill material associated with mining the Pebble deposit. No project comes close in my experience, and that experience covers the past 30 years.

Thank you for the opportunity to provide comments.

Sincerely,

(original signed by)

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