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 ponds[4], 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 Koktuli, 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]

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[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?

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[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 understanding 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

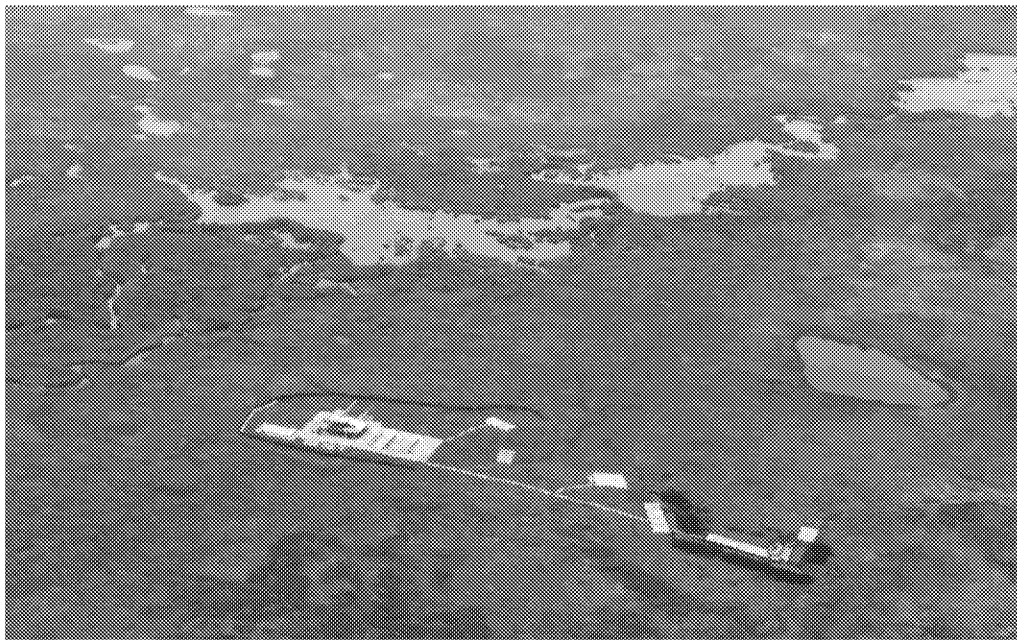

Figure 1. Aerial view of PLP drill rig platform located adjacent to an anadromous stream with a beaver dam in it. This stream flows south into Frying Pan Lake and then into the South Fork of the Koktuli and into the Nushagak River. Photo shows the platform situated on wetland tundra prior to installation 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.

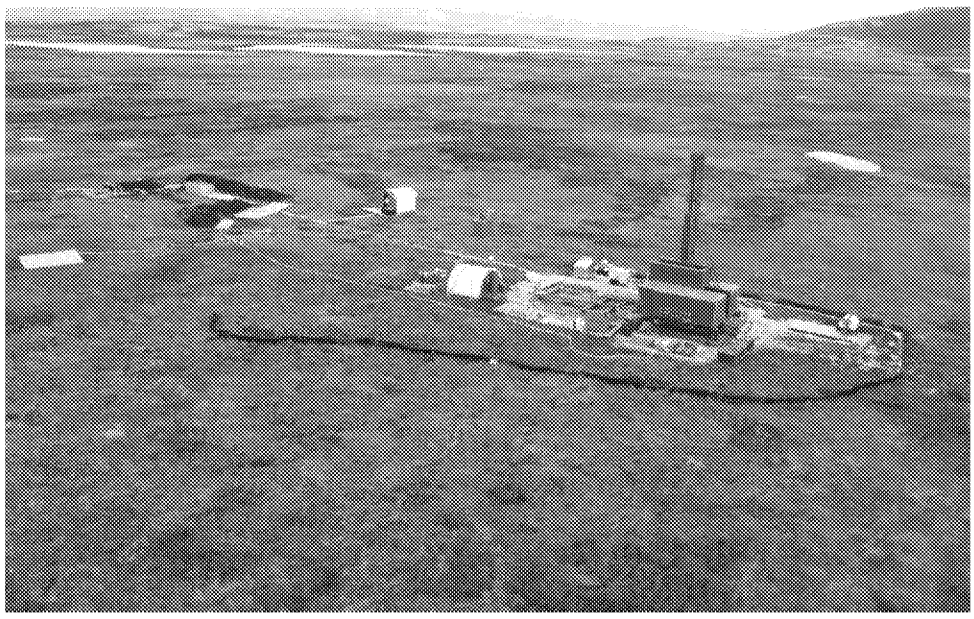

Figure 2. Aerial view of the PLP drill rig platform from Figure 1, one month later. With the heavy drill rig now installed, the platform and silt fences have been pushed down into the tundra. Grey water from the drilling muds and operation surrounds the silt fences on tundra adjacent to the anadromous 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.

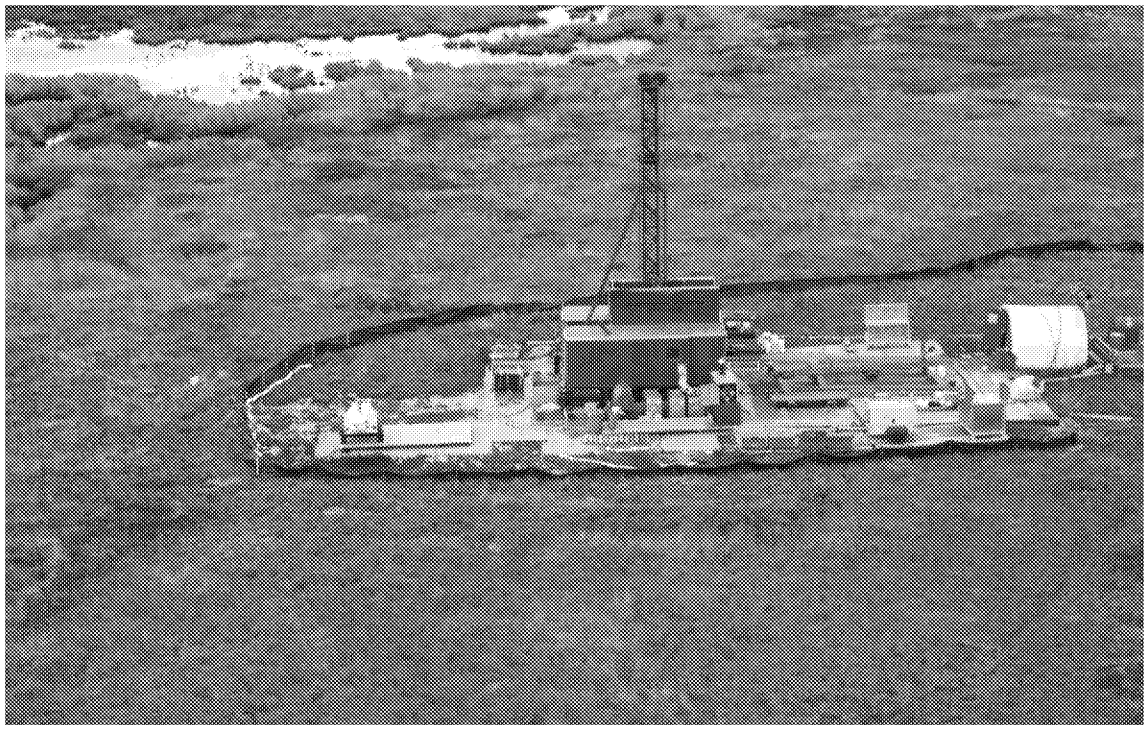

Figure 5. Aerial view of the PLP drill rig platform from Figures 1 and 2. To the left of the drill rig there is visible grey water settling on the tundra from the drilling muds and operation. This operation occurred close to an anadromous stream (top of photo). Silt fences and operation platform have settled into the tundra due to the vibrations from drilling.
Photographer Rick Halford, September 1, 2011.

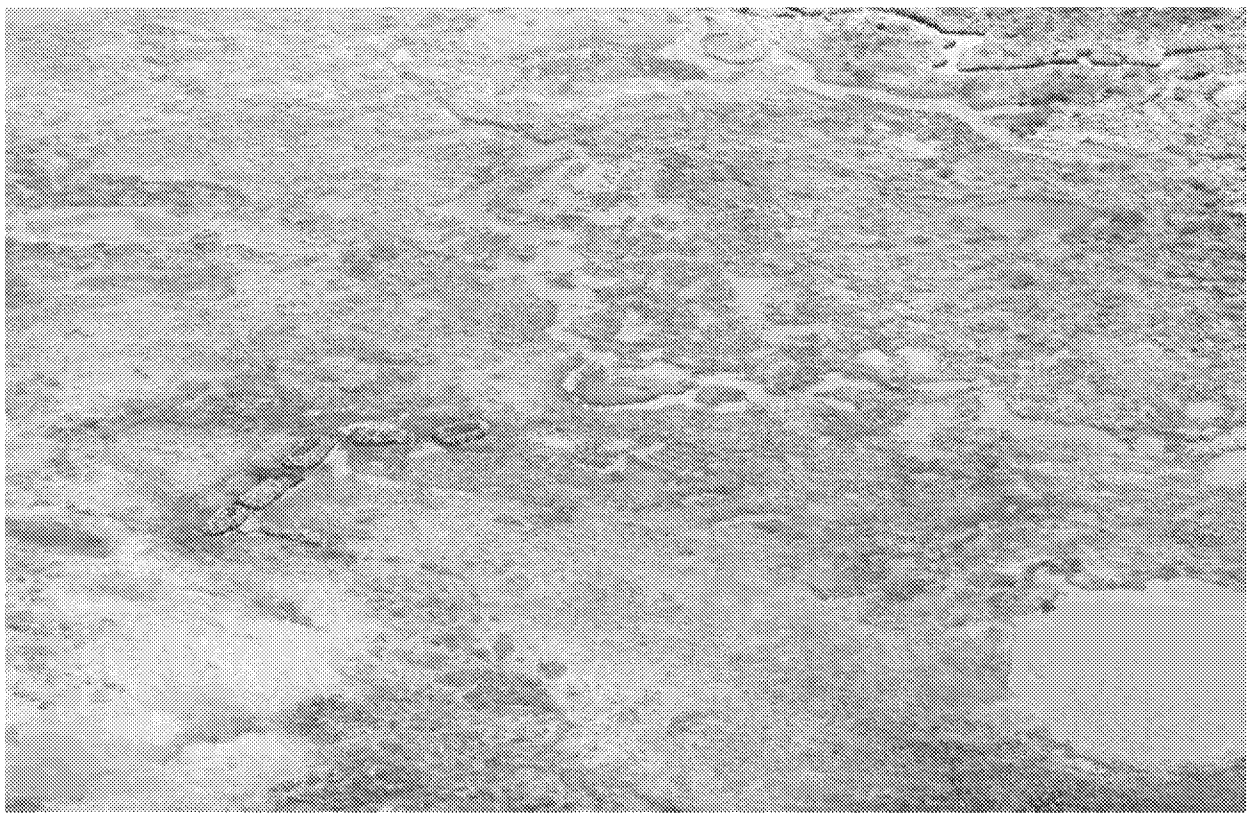

Figure 6. Aerial view of PLP drill site shown in Figures 1-5. Photo is taken after the site was supposedly remediated. The six mounds on the tundra are the sumps filled with cuttings, drilling muds, and excavated soil. The grass under the operations platform is still matted down. The area is surrounded 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.

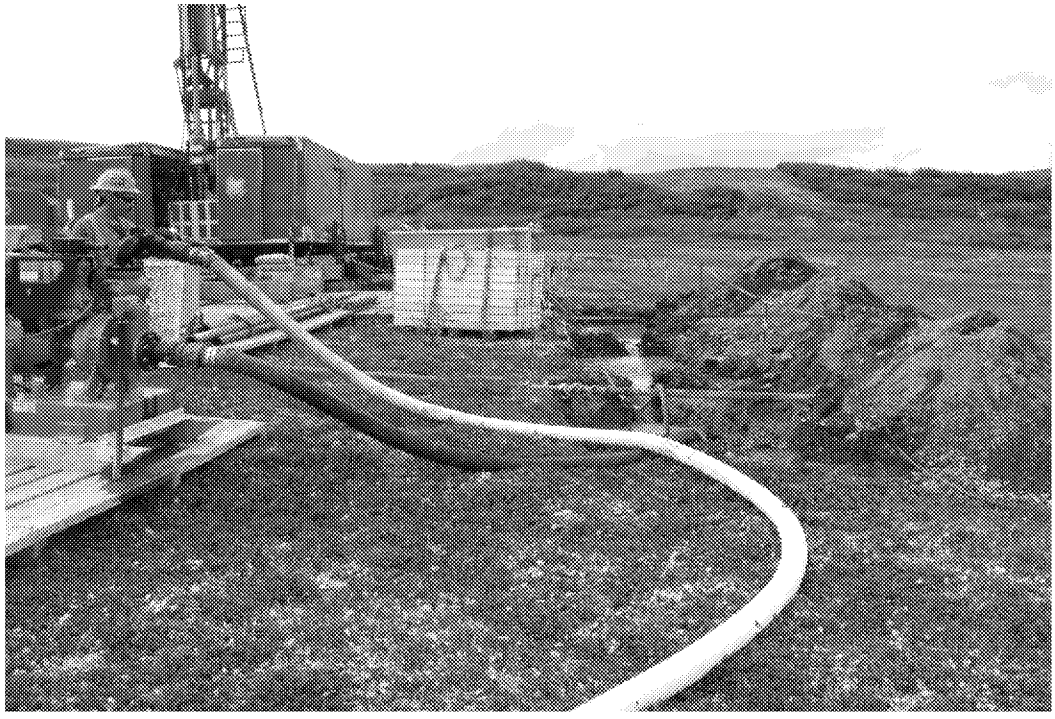

Figure 8. PLP employees pumping water containing drilling muds and fluids out of the sumps through a hose to be deposited on upland tundra (as seen in Figure 7).
Photographer Rick Halford, September 2009.

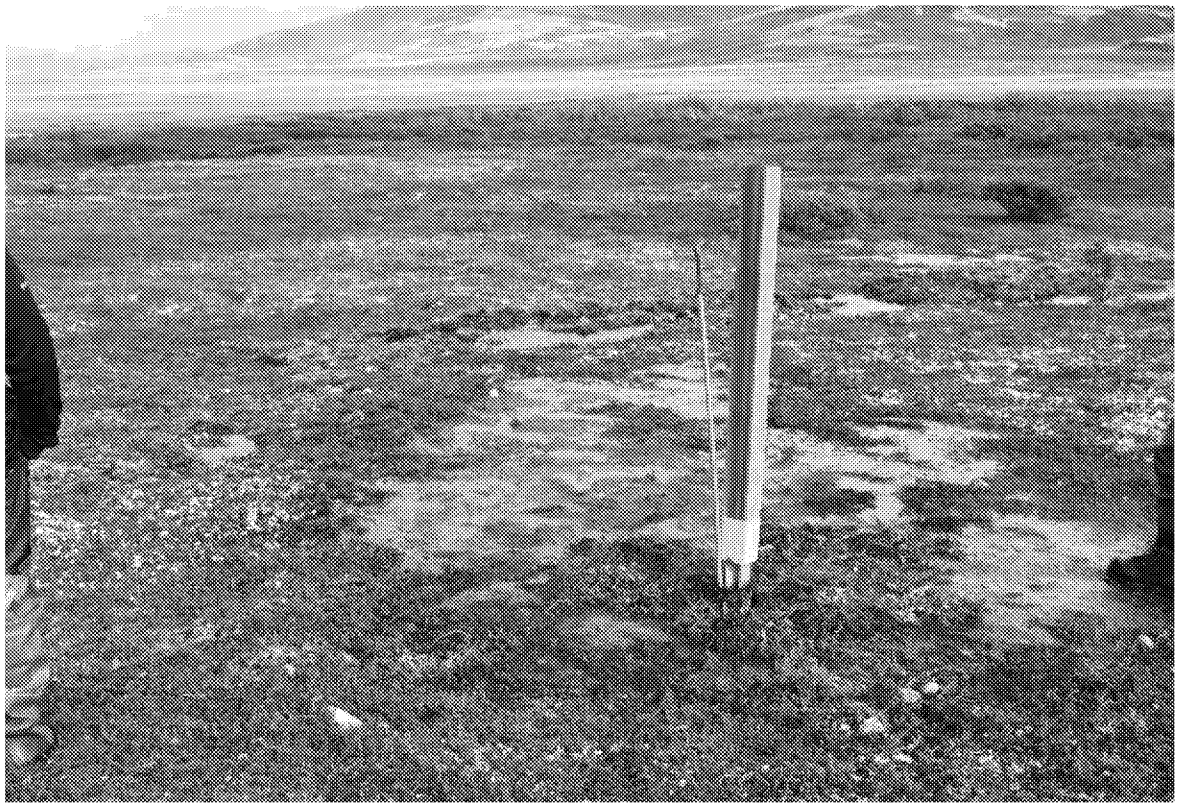

Figure 9. An uncapped well hole from the drill rig shown in Figures 8-9, three years after operations ceased. This well hole was not properly plugged, leading to artesian flow with groundwater and minerals leaching on the site. This flow occurred for three years before PLP pumped high pressure concrete and materials into the well hole to stop the artesian flow.

Photographer Rick Halford, September 1, 2012

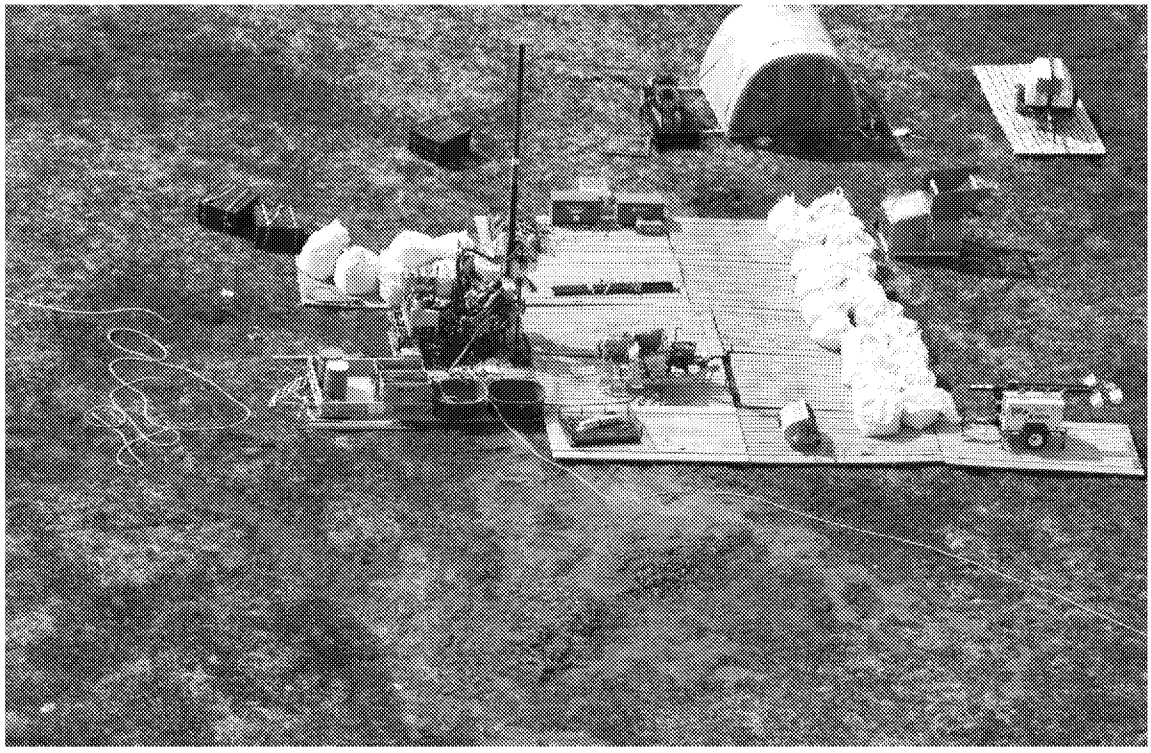

Figure 10. Aerial view of the well shown in Figures 7-9. The orange stain on the tundra is from water and minerals spilling from the well hole. Photographer Rick Halford, June 25, 2012.

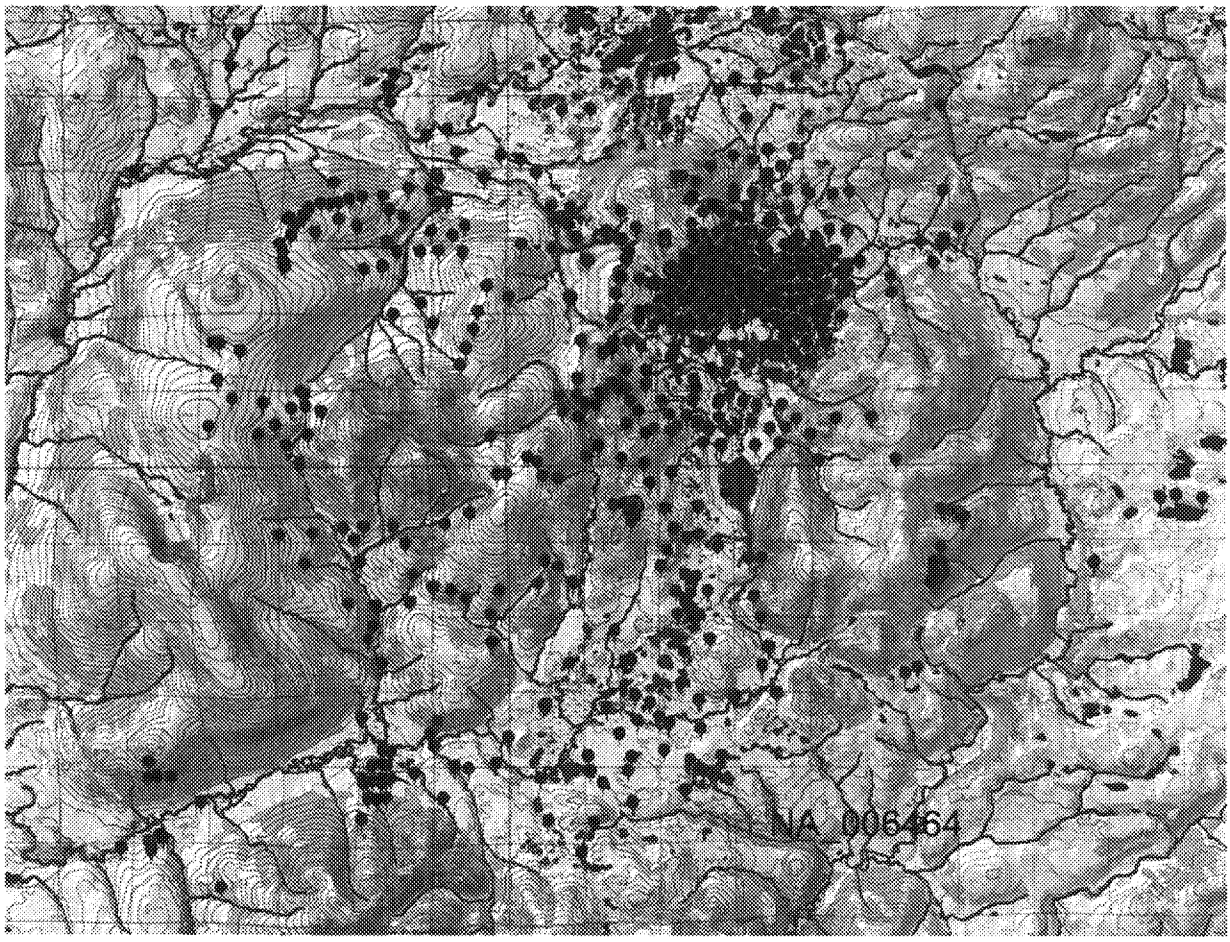

Figure 11. Map depicting locations of PLP drill sites through 2011.

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

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[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 years 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 Koktuli 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]

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[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, 2008-2013[21]

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., 2006-2008[22]

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.