UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

November 6, 2019

Matthew Reece
Minerals Program Manager
Juneau Ranger District
8510 Mendenhall Loop Road
Juneau, Alaska 99801

RE: Coeur Alaska's Inc. Expansion of Kensington Mine Environmental Impact Statement (EIS) Scoping Document and Plan of Operations Amendment 1

Dear Mr. Reece:

The National Marine Fisheries Service (NMFS) has reviewed the 2019 Kensington Mine Project EIS scoping documents and provides the following comments to the United States Forest Service (USFS) regarding issues of concern and essential fish habitat (EFH). The Plan of Operations Amendment 1 (USFS 2018) outlines how Coeur Alaska Inc. (Coeur) plans to continue mining operations for the next 4.5 M tons of processed ore, which will take approximately 10 years. NMFS suggests that USFS consider a wider range of alternatives during the environmental review process to best protect the marine and fresh water EFH. NMFS is providing these suggestions based on our authorities under the EFH provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act.

Issues of Concern to NMFS

EFH is present in Berners Bay for all five species of Pacific salmon (chinook, coho, chum, sockeye and pink) and the following species of groundfish; arrowtooth flounder, flathead sole, rex sole, rock sole, Dover sole, dusky rockfish, Pacific cod, Pacific ocean perch, shortraker rockfish, rougheye rockfish, sablefish, sculpins, skates, walleye pollock, yelloweye rockfish (NMFS 2019). Two species listed in the forage complex of the North Pacific Fishery Management Council's Fishery Management Plans are also of concern: Pacific herring, and eulachon. For many of the above species there is juvenile rearing and spawning habitat in addition to adult habitat.

A similar set of adults species is present in Lynn Canal where Sherman Creek enters Lynn Canal, however, there is less spawning habitat and juvenile rearing habitat because the eastern edge of Lynn Canal has very little shallow area (depths exceed 300 feet within 1,100 feet of shore) and generally has stronger currents than Berners Bay. The fresh waters of Slate, Johnson, Sherman and Ophir creeks also provide salmon habitat (Alaska Department of Fish and Game 1994).

In reply to USFS request for comments on September 20, 2019, NMFS provides suggestions for: Options for tailings storage; Suggestions Germane to any Alternative; and Criteria to Evaluate Alternatives.

Proposed Action: Plan of Operations Amendment 1 (POA1)

POA 1 suggests raising the Lower Slate tailings dam by 36 feet (lift 4) to 776 a.m.s.l. to accommodate 28 feet of water on top of the next 4.5 M tons of tailings. Since Lower Slate impoundment will then be the same elevation as Upper Slate Lake, they would be combined into one large lake holding approximately 3,500 acre feet. The Lower Slate impoundment is currently a tailings pond with a few sculpin present, whereas Upper Slate Lake is a natural lake with good water quality and a population of Dolly Varden Char. The final height of the proposed tailings dam would be 90 feet and create a risk of breaching and releasing metal laden tailings into Berners Bay.

A tailings dam failure at this location would eliminate salmon habitat in Slate Creek and greatly affect spawning and rearing habitat for several EFH species and forage fish in Berners Bay. This impact would likely depress eulachon and herring spawning for decades and thereby decrease food for the species that prey on them. Eulachon only spawn in eight estuaries in Southeast Alaska (Armstrong 2016) and the southern Eulachon are genetically different from the northern populations (Flannery et al. 2013) so losing one spawning population would be significant. A study of Lake Quesnel, below the Mt Polley tailings failure, showed that two years later the lake bottom closest to the mine was covered with mine tailings, had fewer bacterial communities, and mostly cycled sulfur rather than cycling nitrogen (Hatam et al. 2019). Over the past decade the rate of tailings dam failures have doubled worldwide even with technological advances (Armstrong et al. 2019, Bowker and Chambers 2015). The USFS should evaluate the threat of a tailings dam failure at this location and its effects to EFH.

Options for Tailings Storage

Tailings storage is often the mining plan component most likely to affect EFH. Expanding the Tailings Treatment Facility as proposed to 120 acres and containing the tailings and 3,200 acre feet of water behind a dam with a final height of approximately 90 feet greatly increases the risk to EFH. This EIS for mine expansion should analyze a variety of options for how mine operators store the tailings. NMFS recommends that the USFS consider these options to store the tailings:

1) Cap the Tailings in Lower Slate Site, however, do not Re-establish a Lake

Consider an option that would fill the current Tailings Treatment Facility (740 feet a.m.s.l) with tailings to within a few feet of the top and then cap it with clean material to lessen the extent of damage should the current facility fail. This would leave Upper Slate Lake intact with its healthy population of Dolly Varden char. The operator could construct an artificial Slate Creek channel on the East side of the former Slate Creek valley. The current dam height would accommodate several more years of tailings, and that capacity could be utilized while a new tailing storage facility was developed.

2) Switch to Tailings Paste behind the Lower Slate Tailings Dam

Consider an option to convert additional tailings to a paste. The area that formerly held Slate Lake could be contoured with tailings paste to have a 1 – 5 percent slope both side valley (SW to

NE) and down valley. This would create a similar amount of tailings storage with a lower final tailings dam. The paste would decrease dam failure risk, as even if the dam breached, the paste would only creep towards Berners Bay. This option could contain some of these elements:

- Leave Upper Slate Lake and Spectacle Lakes intact.
- Have stream design professionals engineer the Slate Creek channel from the Upper Slate to below the tailings dam that would remain stable in the 500-year recurrence event. It would need to have a steep cascade or series of drops.
- Stop depositing paste tailings in the Lower Slate area at about year 8 or at 3.5 M tons of tailings and use the final two years to add topsoil and revegetate.
- During the final two years put tailings on the Comet side if Coeur plans another expansion. If Coeur plans to button up the mine, return 90% of the final 1 M tons tailings back into 10+ miles of stopes and tunnels.
- Sloped paste tailings would shed the water from a 25-year event into the channel sized and designed to convey the water rather than attempt to contain it the tailings impoundment.

3) Place Tailings on the Comet Side

Consider an option to place future tailings on the Comet side. Lynn Canal is deeper and has stronger currents than Berners Bay, and provides less juvenile and spawning habitat and therefor a tailings breach would affect fewer acres of EFH for a shorter time period. Additionally, eulachon do not spawn where Sherman Creek enters the Lynn Canal. This alternative was the selected alternative in 1992 Final Environmental Impact Statement (USFS 1992) which indicates it is practicable. NMFS preference would be for the applicant to analyze dry stack tailing (Alternative E), paste tailings, and a wet tailings impoundment (preferred alternative in 1992 Record of Decision) all on the Comet side. Finally, the Comet side could accommodate mine growth beyond this 10-year expansion.

Suggestions Germane to Any Alternative

1) Planning Timeframes and Best Decisions

It is common practice to write NEPA documents for a mine expansion of approximately 10-years because the mine operator is not sure of the extent of the ore body and future mineral prices are unknown. Most hardrock mines intend/hope to continue mining for multiple decades. There is growing consensus that this short timeline planning may be leading to choices that are suboptimal both for the environment and perhaps for the operator (Chambers 2019). Consider other periods or volumes besides 4.5 M tons of tailings and approximately 10 years.

2) Placing Higher Percentage of Tailings Back in the Mine

In the last few years, Coeur has returned 40% of the tailings into the mine works, thereby decreasing tailings storage space needed and the potential of a tailings dam failure. NMFS suggests alternatives include a still higher percentage of tailings returned to the mine. This

should be practicable because with each passing year there is additional vacant space inside the mine stopes and tunnels. If this is impracticable because mine tunnels need to be left open for mining past this current 10-year expansion, then the USFS should re-evaluate if a 4.5 M ton tailings expansion is the correct project to be analyzing.

3) All Graphitic Phyllite Material Should be Returned to the Mine

NMFS suggests Coeur place all existing loose graphitic phyllite material in the mine before the USFS permits this mine expansion. We understand that it was not all mined by the current mine operator, but it would demonstrate that Coeur intends to continue containing and/or treating all acid mine drainage.

4) Increases to Daily Mining Maximums

As long as Lower Slate tailings impoundment is the only place for tailings, increasing daily totals from 2,000 to 3,000 tons of ore increases the potential for adverse impacts to EFH. Sharp increases in throughput have been linked to several tailings dam failures in the last decade including Mt. Polley (Armstrong et al. 2019). Intense rainfall is another very common factor in dam failures (Santamarina et al. 2019). NMFS's primary concern is the amount of additional tailings stored outside the mine rather than the actual processing rate. A monthly maximum processing total, partially based on the tons of tailings returned to mine the month before, would be another approach.

5) Make the Failure Modes Analysis Assessable to the Public

Tailings dam failure is the largest threat to EFH. Share the Failure Modes Analysis with the public and compare the risk associated with various tailing facilities in each alternative including "no action".

6) Incorporate Climate Change Prediction into Designs

Future climate projections should be incorporated into the evaluation of engineering of all new facilities and/or tailings impoundment expansion. According to the Scenarios Network for Alaska & Arctic Planning, rainfall intensity is projected to increase in Southeast Alaska (International_Arctic_Research_Center 2019), which increases the risk of a tailings dam failure.

7) Monitoring Plan

Between the 2004 SEIS and the start of mining in 2010, Coeur switched from being permitted under an NPDES permit to APDES # AK005057-1 permit. This eliminated most monitoring in Sherman Creek, however there is still a water treatment plan on the Comet side. Monitoring of anadromous fish in Johnson Creek was also eliminated. NMFS suggests USFS revisit monitoring plan to make sure it can achieve the monitoring objectives.

8) Complying with Wetlands Protection Regulations

While on site mitigation for loss of wetlands or spawning habitat is ideal, it is not always the environmentally preferred alternative. In the scope of a 10-year mine expansion, purchasing

offsite mitigation credits may be a preferred alternative to mitigate for the loss of wetland functions and to comply with federal statutes designed to protect these habitats. NMFS strongly encourages all wetland mitigation be implemented on a watershed or 6-digit HUC scale.

9) Sub-Aqueous Closure of the Mine

POA1 states that at closure they will plug the two portals on the Berners Bay side, raise the water level inside the mine approximately 1,000 feet and only treat water on the Comet side. Hydraulic conductivities in the ore veins are moderate (Golder Associates 2017) making it challenging to contain the water. This plan is currently conceptual; Coeur should fully develop an engineered, peer-reviewed, plan before the USFS issues the FEIS. If the mine is not watertight at closure, or it starts leaking mine water after an earthquake, EFH would be affected.

10) Closing the Tailing Facilities Water Treatment Plant

The seep water treatment plant below the tailing facility should remain operational until at least 20-years post closure as acid mine drainage takes a while to develop. Depending on how the tailings impoundment capping/closure works, and how wet the following decade is, the footing of the tailing dam could be dry for years and then start seeping. Water quality monitoring should continue for three decades after the mine closes. NMFS encourages USFS to ensure enough bonding remains in place to cover acid mine drainage cleanup decades in the future. If Coeur expects a "self-sustaining aquatic ecosystem" in the re-established larger Slate Lake, they need to monitor benthic invertebrates.

11) Pipes Decommissioning at Closure

Consider removing tailings slurry pipe, diversion pipe, and all other pipes at closure as opposed to decommissioned as stated in POA1. If left in place, these pipes will continue to alter hydrology for decades and may move contaminated water to fish bearing streams.

12) Fish Passage at Roads

All permanent crossing of fish bearing streams should accommodate the 100-year flow event and be designed to USFS Aquatic Organism Passage standards. Some crossing do not currently meet this standard (Albrecht 2018).

13) Water Use Reporting

The Alaska Department of Natural Resources is tracking water use because drought periods, like the one in Southeast Alaska in 2019, are indicating that water use has the potential to exceed supply, which could affect fish habitat. NMFS encourages the applicant to report their ground and surface water use to Alaska Water Use Date System (AKWUDS) http://dnr.alaska.gov/akwuds.

Criteria to Evaluate Alternatives:

1) The potential for a catastrophic event that could damage a significant amount of EFH habitat in Berners Bay or Lynn Canal. This would include the tailing facilities' ability to withstand a major rock or snow avalanche, increased intensity of rainfall, a very large earthquake, or inadequate long-term maintenance.
2) How dispersed versus concentrated are the environmental impacts and how this will affect EFH.
3) The EIS must analyze not only the total acreage but also the functional loss of impacted wetlands when evaluating the environmentally preferred alternative. This should not be the sole criteria in determining the environmentally preferred alternative.
4) Do a robust environmental evaluation of all alternatives, including the "no-action" alternative, including an analysis of the risks of tailings going into Berners Bay and harming eulachon spawning.

NMFS anticipates the USFS will share a draft EFH Assessment with us when you distribute the Draft EIS. Please follow the Essential Fish Habitat Consultation Guidance (NMFS 2018) and use Alaska EFH web application (NMFS 2019a) and Alaska Shorezone (NMFS 2019b) as you develop the EFH Assessment. After receiving your draft EFH Assessment, we will provide you draft EFH Conservation Recommendations pursuant to Section 305(b) of MSA. Depending on the Record of Decision, your EFH Assessment and our EFH Conservation Recommendations may suffice or may need to be altered. The USFS will need to consult with the NMFS Alaska Region Protected Resource Division regarding compliance with the Endangered Species Act and with the Office of Protected Resources in Silver Spring, MD, regarding compliance under the Marine Mammal Protection Act.

Should you have any further questions, please contact Sean Eagan at sean.eagan@noaa.gov or 907-586-7345, or Gretchen Harrington at gretchen.harrington@noaa.gov or 907-586-7824.

Sincerely,

for Dr. James W. Balsiger
Administrator, Alaska Region

Cc:
Kate Kanouse, ADF&G, kate.kanouse@alaska.gov
Greg Albretch, ADF&G, greg.albrecht@alaska.gov
Kevin Foley, USFWS, kevin_foley@fws.gov
Mark Jen, EPA, Jen.Mark@epa.gov
Chris Carpeneti, DNR, chris.carpeneti@alaska.gov
Matthew Reece, USFS, matthew.a.reece@usda.gov

References

Alaska Department of Fish and Game. 1994. Catalog of Waters important for spawning, rearing or migration of anadromous fishes. Available from https://www.adfg.alaska.gov/sf/SARR/AWC/.

Albrecht, G. 2018. Fish and fish habitat investigation at Kensington Gold Mine. Technical Report 17-02. Alaska Department of Fish and Game.

Armstrong, B., M. Osborn. 2016. Eulachon (Hooligan). *In* Ecological Atlas of Southeast Alaska. Audubon Alaska.

Armstrong, M., Petter, R., and Petter, C. 2019. Why have so many tailings dams failed in recent years? Resources Policy 63: 101412.

Bowker, L.N., and Chambers, D.M. 2015. The risk, public liability, & economics of tailings storage facility failures. Earthwork Act: 1-56.

Chambers, D. 2019. Personal communication. 10/25/2019.

Flannery, B.G., Spangler, R.E., Norcross, B.L., Lewis, C.J., and Wenburg, J.K. 2013. Microsatellite Analysis of Population Structure in Alaska Eulachon with Application to Mixed-Stock Analysis. Transactions of the American Fisheries Society 142(4): 1036-1048. doi:10.1080/00028487.2013.790841.

Hatam, I., Petticrew, E., French, T., Owens, P., Laval, B., and Baldwin, S. 2019. The bacterial community of Quesnel Lake sediments impacted by a catastrophic mine tailings spill differ in composition from those at undisturbed locations–two years post-spill. Scientific reports **9**(1): 2705.

Golder_Associates. 2017. Kensington Mine - Jualin Decline Phase 3 Hydrogeological Testing Program.

International_Arctic_Research_Center. 2019. Scenarios Network for Alaska & Arctic Planning Available from https://www.snap.uaf.edu/ [accessed 10/31/2019].

NMFS. 2018. Essential Fish Habitat Consultation Guidance Available from https://repository.library.noaa.gov/view/noaa/4187

NMFS. 2019a. Alaska EFH Web Application. Available from https://www.fisheries.noaa.gov/resource/map/alaska-essential-fish-habitat-efh-mapper.

NMFS. 2019b. Alaska Shorezone. Available from https://www.fisheries.noaa.gov/alaska/habitat-conservation/alaska-shorezone

Santamarina, J.C., Torres-Cruz, L.A., and Bachus, R.C. 2019. Why coal ash and tailings dam disasters occur. Science 364(6440): 526-528.

USFS. 1992. Kensington Gold Project Final Environmental Impact Statement. U.S Department of Agriculture.

USFS. 2018. Plan of Operations Amendment 1 for Kensington Mine. U.S Department of Agriculture.