



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10

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WATER
DIVISION

August 19, 2022

Mr. Gregory Mazer
Project Manager
U.S. Army Corps of Engineers, Alaska District
Fairbanks Field Office
Regulatory Division (1145)
CEPOA-RD
PO Box 35066
Fort Wainwright, Alaska 99703

Dear Mr. Mazer:

As I am sure you are aware, the U.S. Environmental Protection Agency has been reviewing Peak Gold LLC's proposal to develop the Manh Choh Mine to "produce gold from land owned by the Native Village of Tetlin utilizing open-pit mining methods and existing proven recovery processes."¹ The proposed work would impact 5.2 acres of waters of the United States to extract gold-laden ore, deposit waste rock, and develop the infrastructure necessary to operate the mine and haul the ore to Fort Knox.

On February 11, 2022, EPA provided comments pertaining to potential environmental impacts of the project in response to the U.S. Army Corps of Engineers (Corps) Public Notice (PN) POA-2013-00286 dated January 13, 2022.² This letter expressed concerns with impacts associated with development of the Manh Choh Mine, including compliance with the restrictions on discharge contained in the Clean Water Act Section 404(b)(1) Guidelines and provided related recommendations for the Corps' permitting process and forthcoming supporting NEPA analysis.

Since February, the Corps and the applicant have provided some additional information to EPA in response to our initial comment letter. On May 11, 2022, EPA received initial responses to our comments from the applicant, which included responses to concerns expressed by the U.S. Fish and Wildlife Service. EPA also received additional responses to our February comment letter from the applicant on June 30, 2022.³ In July, EPA requested additional information referenced in the June 30th responses and received the majority of these reports on August 4, 2022. In total, EPA has received 19 new technical reports and documents from the applicant since the closure of the PN comment period on February 11, 2022.

EPA is providing supplemental responses based on our review of the additional information provided. Specifically:

¹ U.S. Army Corps of Engineers, Alaska District. (2022, January 13). Public Notice POA-2013-00286. p.2.

² EPA letter to USACE regarding POA-2013-00286, February 11, 2022.

³ Kinross. June 30, 2022. Peak Gold, LLC Responses to US EPA Region 10 February 11, 2022, Comment Letter to USACE Public Notice POA-2013-00286. 74 pp.

- Additional measures should be applied to minimize impacts to the aquatic ecosystem and downgradient waters of the United States. Adaptive management should be required if contamination is observed in downgradient waters.
- The proposal to haul ore over 250 miles to facilities in Fort Knox, AK has the potential to contribute additional air quality concerns in the Fairbanks PM_{2.5} Nonattainment Area;

Please see the attached information, which includes recommendations for how to offset these impacts. This information may be relevant in development of your NEPA documents and permitting decision process.

Thank you for considering our recommendations in support of the Corps permit decision. If you have questions about our review, please contact me at jensen.amy@epa.gov or have your staff contact Kelly McDonald at 907-271-1208 or by email at mcdonald.kelly@epa.gov.

Sincerely,

**AMY
JENSEN**

Digitally signed by AMY
JENSEN
Date: 2022.08.19
15:24:58 -0700

Amy Jensen
Regional Wetland Coordinator

Enclosure

cc: Mr. Robert Henszey, US Fish and Wildlife Service,
Ms. Louise Smith, US Fish and Wildlife Service,

Enclosure

Synthesis of Key Findings from Review of Additional Documents

Regarding the Proposed Man Choh Mine

The following summarizes the key findings of the U.S. Environmental Protection Agency following review of documents provided by Kinross regarding Peak Gold LLC's proposal to produce gold from land owned by the Native Village of Tetlin in Alaska utilizing open-pit mining methods and existing proven recovery processes.

I. Key Findings from EPA's Review of Additional Information

A. Water Resource Impacts

The Clean Water Act Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material are the substantive environmental criteria used to evaluate proposed discharges of dredged or fill material.⁴ The Guidelines require the Corps to make written factual determinations of the potential short-term or long-term effects of a proposed discharge on the physical, chemical, and biological components of the aquatic environment and "[s]uch factual determinations shall be used in § 230.12 in making findings of compliance or non-compliance with the restrictions in § 230.10."⁵

Based on EPA's review of several materials received from the applicant, specifically the Peak Gold Response,⁶ Hydrogeological Report,⁷ Water Management Plan,⁸ Waste Rock Management Plan,⁹ and the Reclamation and Closure Report,¹⁰ we remain concerned that Manh Choh Mine Project as proposed has the potential to adversely impact additional waters of the United States (WOTUS) downgradient of the mine site over time. More specifically, EPA is concerned that perennial streams in the project vicinity would be subject to increased transport of dissolved arsenic during and after mining activities due to the proposed plans for water and waste rock management. Allowing for the discharge of polluted, contact water to groundwater has the potential to cause or contribute to water quality exceedances in downgradient WOTUS that already have recorded water quality exceedances on multiple occasions.

According to the Hydrogeological Report, several creeks located downgradient from the mining activities are supported by groundwater flow discharging from the bedrock water table, such as Hillside Creek and Tors Creek.¹¹ The baseline monitoring in these streams indicates that several water quality parameters exceed the state water quality standards on occasion. For example, Tors Creek, which drains east to Tetlin Lake, and Hillside Creek, which drains west to Tok River, have recorded levels of pH, alkalinity, arsenic, aluminum, lead, and manganese in exceedance of ADEC water quality standards due

⁴ 40 CFR § 230.10; 40 CFR § 230.12.

⁵ 40 CFR § 230.11.

⁶ Kinross. June 30, 2022. Peak Gold, LLC Responses to US EPA Region 10 February 11, 2022, Comment Letter to USACE Public Notice POA-2013-00286. 74 pp.

⁷ Piteau Associates. 2021. Manh Choh Project Hydrogeological Characterization and Groundwater Modeling Summary Report, Prepared for Peak Gold, LLC.

⁸ Piteau Associates. 2021. Manh Choh Project Water Management Plan. Prepared for Peak Gold, LLC.

⁹ SRK Consulting. 2021. Manh Choh Project. Waste Rock Management Plan. Prepared for Peak Gold, LLC.

¹⁰ SRK Consulting. 2021. Manh Choh Project Reclamation and Closure Plan. Prepared for Peak Gold, LLC.

¹¹ "The near-surface groundwater elevation limits recharge and thus most groundwater and precipitation that does not evaporate will discharge as surface water flow." Source: Hydrogeological Report. p.17.

to existing interactions between groundwater, the ore body, and the discharge of that groundwater into these streams.¹² The Guidelines at 230.10(b)(2) specify that no discharge of dredged or fill material shall be permitted if it causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable water quality standard, thus the proximity of these downgradient waters to the proposed mining infrastructure prompt the need for accurate baseline water quality characterization and monitoring over time.

Accurate baseline information is critical to understand how the project is impacting water quality over the long term. In our review of the available baseline information, we have identified some inconsistencies in the water sampling data from Tors Creek and Hillside Creek that was used in project planning phases.¹³ The supplied baseline surface water quality data includes data that is indicated by a table note to be erroneous due to instrument malfunction.¹⁴ Furthermore, at Hillside Creek on July 28, 2021 (i.e., which is not a date indicated in footnotes that contains erroneous results), a surface water sample was collected that resulted in a 11.9 mg/L dissolved iron content with a pH of 7.68.¹⁵ Given the fact that iron solubility in natural water is determined heavily by pH and that iron begins to precipitate out of solution around neutral pH,¹⁶ this reading also appears to be erroneous and not an accurate reading of the baseline parameters. This reading and others call into question the quality assurance and quality control (QAQC) used in the existing water quality monitoring data. EPA encourages the continuation of water quality monitoring in Tors and Hillside Creeks prior to beginning mining activities with sufficient QAQC in an effort to accurately characterize baseline water quality conditions. EPA supports the monitoring proposed by the applicant and recommends that this water quality monitoring should continue during operations and after mining has ended.

EPA has concerns about the level of uncertainty associated with the hydrologic modelling provided by the applicant and the disclosed potential for metal and arsenic pollution from the project. Specifically, EPA is concerned assumptions used in the modeling may have led to modeling results that underestimate the potential for groundwater contamination. For example, the assumption that all precipitation would runoff surficially and not infiltrate the waste rock piles during operations appears unfounded given the annual precipitations rates and patterns, that waste rock areas will not be covered, and that broken waste rock is highly permeable, even if the crystalline rocks themselves are not. Even if precipitation infiltration of the proposed waste rock piles is minimal during operations, portions of the waste rock backfilled into the pits will be in contact with groundwater.

Additionally, the arsenic adsorption model prepared for this project may not accurately represent the geologic setting of the mine site. The arsenic adsorption model described in the Hydrogeological Report uses a sorption coefficient for a soil/water partition and is not applicable to groundwater movement through bedrock.^{17,18} While we acknowledge that the modelers attempted to account for this point by scaling for surface area in fractured limestone, this model is objectionable for evaluating the attenuation of arsenic in bedrock that is primarily quartz muscovite schist. As such, EPA does not have confidence that the provided arsenic transport model results accurately represent the likelihood for groundwater contamination by arsenic from waste rock from the proposed mining activities.

¹² Hydrogeological Report. Table B-2, p.108, Table B-11b, p. 120.

¹³ Hydrogeological Report. Appendix B, Table B-2, p.108, Table B-11b, p. 120.

¹⁴ Hydrogeological Report. Appendix B, Table B-3, p. 109.

¹⁵ Hydrogeological Report. Appendix B, Table B-11b, p. 120.

¹⁶ USGS. Chemistry of Iron in Natural Water, Geological Survey Water-Supply paper 1459. 1962. 268 pp.

¹⁷ Allison, J. D., & Allison, T. L. 2005. Partition coefficients for metals in surface water, soil, and waste. Rep. EPA/600/R-05, 74.

¹⁸ Hydrogeological Report. p. 33.

Compliance with the Guidelines at 230.10(d) requires projects to incorporate appropriate and practicable steps to minimize impacts to the aquatic ecosystem. In accordance with 230.10(d), EPA believes additional practicable mitigation measures should be applied to the project to minimize the potential degradation of water quality from secondary impacts of the project. Specifically, we are providing recommendations on measures for site preparation and reclamation work to ensure secondary impacts are minimized to downgradient WOTUS.

The project includes subaqueous disposal of PAG waste rock within the South Pit. According to the Reclamation and Closure Report,¹⁹ after reclamation, the South Pit is proposed to be left as a depression that can collect more water than under current, natural conditions. EPA recommends the South Pit be fully backfilled, mounded and capped as proposed for the North Pit. Fully backfilling the South Pit will restore the original site contours to the maximum extent practicable and will minimize the size and footprint of the post-closure Main Waste Rock Dump. It will also more fully encapsulate the PAG waste rock and provide greater protection from environmental weathering. Reducing the infiltration of water into the pit will also minimize the potential for the project to increase the seasonal groundwater fluctuations beyond the natural conditions.

EPA is concerned about infiltration through waste rock in the waste rock dumps both during and after mine closure. EPA believes it is practicable to reduce the potential for water to infiltrate beneath the proposed waste rock dumps by establishing low-permeability foundations of compacted fine-grained materials during site preparation. The foundations should be established after clearing, removing overburden/organics, and leveling the waste rock dump sites. The foundations should be graded or crowned to direct site precipitation laterally to the perimeter ditches. The post-closure Main Waste Rock Dump should also be contoured and capped to promote runoff and minimize infiltration into the waste rock as proposed for the North Pit.

The proposed management of contact water also presents opportunities for infiltration or the spread of contaminants. EPA recommends that opportunities for contact water in the perimeter ditches to pond and infiltrate should be minimized by maintaining consistent flow lines and gradient within the ditches. The applicant should avoid excavating or establishing the proposed holding ponds within jurisdictional waters, including wetlands. Contact water and treated effluent should not be used for dust control unless sampling indicates it would not alter the chemistry of potential receiving waters (e.g., wetlands adjacent to mine facilities or the road that could receive runoff or fugitive dust). Brine from the water treatment plant and filter wash water should generally not be used for dust suppression, as it can elevate the concentration of metal salts in adjacent surface waters. Brine from the water treatment plant and filter wash water could potentially be used for dust suppression or material compaction at the waste rock dumps. Obviously, point source discharges into jurisdictional waters would require APDES authorization pursuant to CWA Section 402.

Even with these additional minimization measures, there is still some potential for adverse impacts to downgradient WOTUS from pit seepage and groundwater altered by contact with PAG waste rock. EPA recommends that the Corps require as a condition of the permit that the applicant develop an adaptive management plan that identifies how seepage from the pits will be collected for treatment if the groundwater or surface water monitoring indicates that groundwater chemistry has been altered by the contact water. A specific concern is that contact water from the South Pit will move downgradient and emerge in the drainages flowing to Hillside Creek. There appears to be less risk that the chemistry of

¹⁹ Reclamation and Closure Report. Figure 10.

groundwater within the North Pit will be altered by contact water and that seepage will impact Tors Creek; however, the adaptive management plan should address the potential need to capture seepage from both pits.

B. Air Quality Impacts

In an effort to use existing ore processing infrastructure, the applicant proposes to transport extracted materials from the Manh Choh mine to the Fort Knox ore processing center using the Alaska highway system and other public roads. As EPA indicated in our February 11, 2022 comment letter, the PN did not mention the planned haul route or provide details for the transportation of ore being hauled to Fort Knox for processing. According to subsequent information received from the applicant, the general route the extracted materials would take via truck would travel via constructed gravels roads to Tetlin Village Road, then on Alaska Highway 2 to Delta Junction, where the trucks would likely take Richardson Highway to Fairbanks, and pass through Fox, AK to the Fort Knox Facility on Steese Highway. The route is approximately 250 miles long each way, and the proposed route would experience an increase in the annual average daily traffic (AADT) of 192 vehicles along this route.²⁰

Based on this new information, the proposed haul route would seemingly direct trucks through an airshed that has been formally designated by EPA as “Serious” Nonattainment for exceedances of the National Ambient Air Quality Standards (NAAQS).²¹ A portion of the Fairbanks North Star Borough, including the City of Fairbanks and the City of North Pole, was designated as a Nonattainment Area for Particulate Matter (PM_{2.5}) in December 2009 because these areas exceed the health based 24-hour PM_{2.5} NAAQS of 35 micrograms/cubic meter.²² According to Alaska Department of Environmental Conservation (ADEC), particulate pollution in this area is the result of local emissions from emissions from wood stoves, burning distillate oil, and industrial sources, as well as motor vehicles and trucks. PM_{2.5} is primarily a concern during the winter months (October through March) when extremely strong temperature inversions are frequent and human-caused air pollution impacts increase.

Emissions that originate from gasoline and diesel engines, primarily motor vehicles, contribute to these PM_{2.5} concentrations. The drastic increase in AADT resulting from this project is likely to have an adverse effect on the air quality in the nonattainment area.

EPA recommends that the Corps consider and disclose the air quality impacts that would result from the proposed use of heavy duty vehicles in the Fairbanks PM_{2.5} Nonattainment Area, particularly the effect on emission budgets for transportation planning and conformity purposes.

To help reduce the PM_{2.5} emissions from the heavy-duty trucks carrying ore through Fairbanks from the Manh Choh Mine to the Fort Knox ore processing facility, EPA suggests the applicant consider and identify mitigation measures. Implementing measures that ensure efficient vehicle performance and best practices for heavy-duty hauling will minimize air quality impacts. Examples include:

- 1) Only use heavy duty trucks with Tier 3 engines, preferably 2010 or newer. In addition to the Tier 3 engines, we recommend that the project verify that the engines in these trucks have fully functional emission reduction systems.
- 2) Ensure all trucks have a tarp deployed over the bed to “cover the load” and minimize material from blowing out the back of the truck.

²⁰ Peak Gold Response. p.29.

²¹ 40 CFR § 81.302.

²² See 86 FR 10511, 10511-12 (Feb. 22, 2021).

- 3) The project could supply the municipalities in the nonattainment area with a street sweeper capable of removing PM_{2.5} and smaller, and the municipalities would then operate this sweeper on the truck route to remove road dust, which decreases particulates raised by these trucks.

Further, EPA understands the applicant has proposed to cover the beds of trucks that will be transporting ore via Alaska public highways,²³ and it is not clear whether all roads used to haul ore are considered Alaska public highways and would be subject to this measure. EPA recommends applying this mitigating measure to the entire haul route as feasible.

While covering the truck beds will help reduce the amount of particulate matter generated by this proposed activity, particulate matter is also generated from the emissions of the truck engines, wearing of tires and brake pads, and traffic congestion. Thus EPA expects particulate matter would still increase in the Fairbanks PM_{2.5} nonattainment area as a result of the sheer volume of additional heavy duty trucks proposed to be operating to haul ore from the Manh Choh Mine to the ore processing facility in Fort Knox, as well as the potential for increased traffic congestion and subsequent vehicular emissions. Such impacts to air quality have the potential in the near term²⁴ to impact the Fairbanks North Star Borough's ability to build future transportation infrastructure projects if the area is not able to meet the State Implementation Plan developed by ADEC and approved by EPA. Over the long term, these truck emissions could impact the area's ability to meet the 24-hour PM_{2.5} NAAQS of 35 micrograms/cubic meter in a timely manner. EPA recommends that at a minimum, the Corps evaluate and disclose the potential impacts to air quality in the NEPA analysis for this project.

²³ Peak Gold Response. p. 30.

²⁴ The current transportation conformity approval for the Fairbanks NorthStar Borough expires January 19, 2023. If the motor vehicle emissions budget (MVEB) cannot be met by FAST Planning in the transportation conformity analysis currently underway, then the area enters a 12-month grace period on January 20, 2023. If the conformity analysis cannot be approved within that 12-month grace period, a lapse goes into effect. Such a lapse could lead to the delay or diversion of federal transportation dollars as well as triggering transportation planning issues.