GRASSY MOUNTAIN MINE PROJECT

Ecological Risk Assessment for Proposed Tailings Storage Facility

Prepared for:

Calico Resources USA Corp.

August 2023

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Prepared for:
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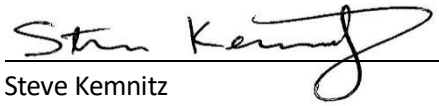

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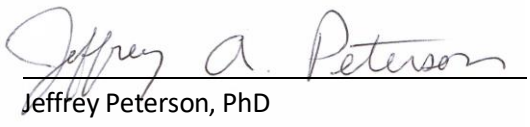

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ACRONYMS

Calico	Calico Resources USA Corp.
CSM	Conceptual Site Model
CPA	Consolidated Permit Application
DEQ	Department of Environmental Quality
EPC	Exposure Point Concentration
ESL	ecological screening level
ERA	Ecological Risk Assessment
HI	hazard index
HQ	hazard quotient
LANL	Los Alamos National Laboratory
mg/L	milligrams per liter
OAR	Oregon Administrative Rule
Project	Grassy Mountain Mine Project
SLR	SLR International Corporation
T&E	threatened or endangered
TRV	toxicity reference value
TSF	Tailings Storage Facility
TWRSF	Temporary Waste Rock Storage Facility
USEPA	United States Environmental Protection Agency
WAD	Weak Acid Dissociable

1. INTRODUCTION

SLR International Corporation (SLR) has prepared this Ecological Risk Assessment (ERA) on behalf of Calico Resources USA Corp. (Calico) for the proposed Grassy Mountain Mine Project (Project) in Oregon. Calico proposes to construct an underground mine and precious metal processing facilities at a site in eastern Oregon, approximately 22 miles south-southwest of Vale, Oregon. In addition to the underground mine, the proposed mining and processing operation will include a conventional Mill, Tailings Storage Facility (TSF), Temporary Waste Rock Storage Facility (TWRSF), as well as other support facilities.

The TSF will contain supernatant that has partitioned from the tailings slurry from the processing plant and overlies the finely ground ore solids (i.e., the tailings). The supernatant water contains residual inorganic chemicals from processing the ore. Although fencing and other types of barriers will be used to prevent wildlife (birds and mammals) from contacting water in the TSF, this ERA assumes that wildlife may consume supernatant over an extended period of time. This ERA characterizes potential risks that chemicals in supernatant may pose to wildlife. Results of the ERA will be used to guide potential ecological risk management actions.

1.1 TAILINGS STORAGE FACILITY

Calico proposes to extract ore and waste rock from an underground mine using conventional mining techniques (e.g., drilling, blasting, mucking, loading, and hauling). Mined ore will be transported, stockpiled, crushed, and then leached in a carbon-in-leach processing plant. Leached tailings will be pumped as a slurry to the TSF. Material in the TSF will be allowed to settle, and the supernatant solution in the pond will be recovered and recycled back to the Mill circuit for processing more ore. The proposed TSF is designed to have zero discharge. It will have geomembrane-lined primary and secondary containment, along with a leachate collection system and a leak detection systems.

There is also a Reclaim Pond associated with the TSF. The Reclaim Pond is also a double-lined containment facility. The Reclaim Pond collects water that drains from the leachate collection system in the TSF, and from the TSF leak detection system and the TWRSF (also a double-lined containment facility, although it does not store water). The leachate collection system is a layer of drain rock and piping between the underlying liner system and the overlying tailings mass that is designed to minimize the hydraulic head on the liner system. Reclaim Pond water is estimated to have approximately the same chemistry as supernatant pond water, and water that collects in the pond is recycled to the Mill like the supernatant water. The volume of water in the Reclaim Pond is much smaller than the volume of the supernatant pond.

Tailings slurry from the carbon-in-leach processing plant will be treated for cyanide destruction prior to being pumped to the TSF. Chemicals that will be added to tailings to degrade cyanide will include lime, copper sulfate, and sodium metabisulfate. The TSF will allow for the natural degradation of remaining cyanide through exposure to ultraviolet sunlight and natural microbiota that metabolize cyanide.

Concentrations of weak acid dissociable (WAD) cyanide in tailings from the circuit will be reduced from approximately 200 milligrams per liter (mg/L) to a target level of less than 15 mg/L, which is below the

not-to-exceed regulatory limit of 30 mg/L. The tailings will be treated such that residual WAD cyanide concentration in the liquid component of Project tailings comply with relevant Oregon Administrative Rules (OARs) (Ausenco, 2022, 2023).

Laboratory testing has demonstrated that the detoxification process can achieve a level of 1 mg/L or less. However, it is typically not possible or practicable for the operations-scale process to achieve the same levels of performance as what can be achieved in the laboratory. Therefore, during startup, the cyanide detoxification circuit will be optimized to establish if there is a practicable level for discharge to the tailings pond that is less than 15 mg/L. Operational monitoring described in the *Tailings Chemical Monitoring Plan* (Calico, 2023; CPA Appendix D2) describes the initial startup monitoring and optimization of cyanide treatment for the tailings and also for maintaining levels of cyanide in the supernatant pond that are protective of wildlife including birds and bats that may use the supernatant pond as a source of drinking water so the WAD cyanide level is 1 mg/L or less.

1.2 SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT

To promote efficiency, ERAs are typically performed in a tiered manner (DEQ, 2001). Tiered evaluations start with a conservative, relatively simple screening level assessment. If the results of the screening assessment identify potential concerns, then a more detailed, realistic, and complex higher-tiered evaluation can be performed as needed.

This screening assessment is an initial tier that characterizes potential risks by comparing chemical concentrations in water with conservative screening-level values. Specifically, chemical concentrations in supernatant water are compared to risk-based screening levels protective of birds and mammals that may have long-term exposure to water through drinking. If concentrations are below screening levels, it can be inferred with high confidence that chemicals are unlikely to cause unacceptable risks to birds or mammals. Alternatively, chemicals present in the environment at concentrations above screening levels are likely to require additional evaluation.

1.3 REPORT ORGANIZATION

This ERA is organized as follows:

- Section 2 presents the exposure assessment describing the process by which ecological receptors may be exposed to chemicals in the environment. This section includes the Conceptual Site Model (CSM) describing ecological (wildlife) exposure scenarios and Exposure Point Concentrations (EPCs), which are conservative estimates of the chemical concentrations in water that wildlife may contact.
- Section 3 presents the screening-level risk evaluation. This section includes a description of risk-based screening levels protective of wildlife, risk characterization methods, and screening-level risk results.
- Section 4 presents an evaluation of important uncertainties in the ERA.
- Section 5 presents ERA conclusions.

2. EXPOSURE ASSESSMENT

The exposure assessment describes the process by which ecological receptors may contact chemicals in the environment. The exposure assessment includes a CSM that identifies the ecological receptors that may contact an environmental medium and the pathways by which chemicals may enter the body of a receptor. Other aspects of the exposure assessment include estimates of concentrations or doses that a receptor may experience, chemical contact rates (e.g., drinking water ingestion rates), exposure frequency and duration, and other factors that influence the amount of chemical an organism may uptake. The CSM and estimates of the concentrations that receptors may contact in supernatant water are described below.

2.1 CONCEPTUAL SITE MODEL

The CSM describes potential chemical sources, release mechanisms, environmental transport processes, exposure routes, and receptors. According to United States Environmental Protection Agency (USEPA) risk assessment guidance (USEPA, 1989), a complete exposure pathway consists of four necessary elements: (1) a source and mechanism of chemical release to the environment, (2) an environmental retention or transport medium for a released chemical, (3) a point of potential contact with the impacted medium (referred to as the exposure point), and (4) an exposure route (e.g., water ingestion) at the exposure point. If any of these four components are not present, then a potential exposure pathway is considered incomplete and is not evaluated further. If all four components are present, a pathway is considered potentially complete.

Chemical sources include the parent ore materials from which metals leach into water, along with chemicals in the treatments that promote leaching from ore materials. Although many of the chemicals leached to water are recovered during processing, some are present in the material discharged to the TSF. These are the chemicals that ultimately reside in the supernatant within the TSF, which is the retention medium.

The TSF and Reclaim Pond will be engineered features designed to temporarily manage materials used in proposed mining operations. When mining operations end, these features will be appropriately decommissioned. By design, the TSF and Reclaim Pond will not be operated in a manner that would promote the establishment of natural or semi-natural aquatic ecosystems. For example, the TSF and Reclaim Pond will be intensively managed and frequently disturbed. Tailings will be regularly discharged into the TSF, and water from the supernatant pool and other areas of the TSF will be regularly extracted via pumping and delivered back to the Process Plant for reuse. These regular disturbances to media within the engineered TSF are likely to preclude development of a semi-natural aquatic system.

The TSF and Reclaim Pond will not be connected to natural surface waters, and fish or other wholly aquatic organisms will not be able to colonize these features through water. Although it is possible that the volant life stage of invertebrates with a separate aquatic life stage (e.g., mosquitos) could fly into the pond, due to frequent disturbance and other factors, the TSF is unlikely to represent good breeding habitat for aquatic insects. Similarly, seeds of aquatic plants could potentially migrate into the TSF, but again,

disturbances to media within the TSF are likely to prevent the establishment of a semi-natural aquatic plant community.

The TSF (including the Reclaim Pond located at the toe of the TSF embankment) will be located within an enclosure with fencing 8 feet in height and armoring extending 18 inches above and below the ground surface to exclude wildlife, including burrowing mammals (MB&G, 2023). Despite these wildlife exclusion features, this CSM assumes that local birds and mammals will be able to access the TSF. Appendix E of the *Wildlife Resources Baseline Report* (EMS, 2020; CPA Appendix B22) lists the wildlife observed during field studies near the site. This list includes 62 birds, 26 mammals, 11 reptiles, and 1 amphibian. It is assumed that birds such as the horned lark (*Eremophila alpestris*) or western meadowlark (*Sturnella neglecta*), and local small mammals such as the western deer mouse (*Peromyscus sonoriensis*) or Belding's ground squirrel (*Urocitellus beldingi*), may access the TSF. Furthermore, it is assumed that birds and mammals may use supernatant in the TSF as a source of drinking water and have chronic (long-term) exposure to chemicals in water through ingestion. Although it is likely that wildlife drinking supernatant would also have dermal contact with water, this exposure route is considered insignificant relative to water ingestion. It should be noted that DEQ ERA guidance (DEQ, 2001) and guidance from other institutions (LANL, 2023) do not report models that estimate dermal uptake of chemicals in water by wildlife. Similarly, potential inhalation exposure to chemicals that volatilize from water into overlying air is considered insignificant relative to drinking exposures. The TSF and Reclaim Pond are unlikely to support significant populations of aquatic plants and invertebrates. As a result, birds and mammals that may drink from the TSF are not expected to forage on aquatic organisms from these features, and dietary exposure to chemicals is expected to be minimal.

2.2 EXPOSURE POINT CONCENTRATIONS

Ecological receptors do not constrain exposure to activities to a single sample location, and instead move over the environment and are likely to be exposed at a variety of locations within an exposure unit. The EPC is an estimate of the average chemical concentration in an environmental medium that a receptor may contact on a long-term basis (USEPA, 1989). In this case, the EPC represents the average concentration of a chemical in water throughout the TSF that wildlife may contact on a chronic basis (e.g., over 6 months). With the exception of total cyanide, the EPC for each chemical was set at the maximum estimated concentration in supernatant reported in the SRK (2021) tailings geochemical modeling report.

SRK (2021) used a geochemical model to estimate concentrations of chemicals in supernatant of the TSF They modeled concentrations expected under wet, dry, and average conditions during three different phases of mining operations. The geochemical model used by SRK considered the effects of evaporation and precipitation on supernatant pond water chemistry. SRK (2021) performed a sensitivity analysis on the geochemical model where certain assumptions used in the base model were relaxed, and they found few significant effects on estimated supernatant chemical concentrations. Supernatant chemical concentration estimates in Table 4-1 of SRK (2021) were used in this ERA. To be conservative, the maximum estimated concentration during any season or mining operation phase was used as the EPC for a chemical.

As mentioned previously, tailings are treated to degrade cyanide before they are pumped to the TSF. The geochemical model uses input data for tailings water quality that is based on testing results from a

metallurgical laboratory to develop the cyanide detoxification process. The cyanide levels achieved by detoxification in laboratory testing are unlikely to be realized in full-scale processes during operations. However, the initial target treatment level for discharges to the TSF is 15 mg/L with a commitment to optimize treatment to the lowest practicable level achievable (less than 15 mg/L) during startup of operations.

Further, because the detoxification test results represent tailings water that is discharged into the TSF, these results do not account for degradation of cyanide by sunlight and microbial action that occurs in the supernatant pond. The geochemical model developed by SRK is not capable of simulating the degradation of cyanide by sunlight and microbial action. Therefore, the EPC for cyanide used in this screening risk assessment is an average concentration of 1 mg/L that was selected as a practicably and reasonably achievable level for the processes and conditions present at the Grassy Mountain Mine based on professional experience and data from other mines.

During the startup period, the processes and water management procedures will be optimized to achieve an average cyanide concentration that is protective of wildlife, as described in Section 1.1 above.

3. SCREENING-LEVEL ECOLOGICAL RISK EVALUATION

This screening-level ERA compares EPCs representing the maximum estimated chemical concentrations in supernatant water (with the exception of cyanide, which was set at 1 mg/L as described above) to risk-based screening levels protective of birds and mammals. If the EPC for a chemical is below a conservative screening level, it can be inferred that exposure to the chemical in water is unlikely to cause unacceptable risks to ecological receptors. Ecological screening levels and screening-level risk estimates are described below.

3.1 RISK-BASED SCREENING LEVELS

Ecological screening levels (ESLs) developed by Los Alamos National Laboratory (LANL, 2023) to protect of bird and mammal populations exposed to chemicals in water through ingestion were used in this screening-level risk evaluation. The ESLs were calculated assuming that birds and mammals have a reasonable maximum exposure (i.e., high exposure but not unreasonable) to chemicals in water through drinking. Data from chronic toxicity studies (i.e., exposure encompassing the majority of the test organism's lifespan or a critical life stage) where effects on test organism mortality, reproduction, or growth were measured are used to develop the toxicity reference values (TRVs) used in ESL derivations (LANL, 2023).

LANL (2023) developed ecological screening values for indicator species representative of three common bird and mammal feeding guilds: herbivores, invertivores, and carnivores. Indicator species were relatively small-bodied members of a guild. Small-bodied birds and mammals have relatively high food and water ingestion rates (when normalized by body mass), and screening values for indicator species are intended to be protective of other members of the guild. The bird ESL selected was the lowest of the drinking water values developed by LANL (2023) based on low-effect levels. In all cases, the lowest ESL was for the violet-green swallow (*Tachycineta thalassina*) indicator species, which is a relatively small-bodied aerial insectivore. Similarly, the selected mammal ESL was the lowest LANL (2023) drinking water value for mammal indicator species, and in all cases it was the value for the montane shrew (*Sorex monticolus*). The montane shrew is a small-bodied invertivore. Although some of the indicator species evaluated by LANL (2023) are unlikely to be present near the TSF (e.g., Mexican spotted owl), they have similar body sizes, behaviors, and exposure conditions to birds or mammals observed near the site that may contact supernatant water in the TSF (see Appendix E of EMS, 2020). ESLs for the bird and mammal indicator species evaluated by LANL (2023) represent conservative, but relevant, ecological screening values for species that may be present near the TSF.

The Oregon cleanup rules specify the protection of individual organisms of species listed as threatened or endangered (T&E) under state or federal laws established to protect T&E species (e.g., Endangered Species Acts). For species not listed as T&E species, populations, not necessarily each individual, must be protected. None of the Oregon bird or mammal species listed as threatened or endangered (https://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp) are likely to be present near the site. As a result, the LANL (2023) ESLs based on low-effect levels protective of bird and mammal populations were used as ecological screening values.

3.2 RISK CHARACTERIZATION APPROACH

As mentioned above, this ERA assumes that wildlife (birds and mammals) may have long-term exposure to the maximum estimated chemical concentrations in supernatant water via drinking. For each chemical, a hazard quotient (HQ) is calculated as follows for both birds and mammals:

$$HQ = \frac{EPC}{RBC}$$

The hazard index (HI), an estimate of the cumulative risks associated with exposure to multiple chemicals, is estimated as the sum of chemical-specific HQs for both birds and mammals. This cumulative risk estimate conservatively assumes that the toxicity of all chemicals are additive. The HI is estimated as follows:

$$HI = \sum HQ$$

The DEQ acceptable risk level for ecological receptors in an HI<1.

3.3 RESULTS

Table 1 presents ESLs, EPCs, HQs, and HIs for both birds and mammals that may be exposed to supernatant water in the TSF. The largest HQ is for birds exposed to total cyanide (HQ=0.6), and this HQ is over an order of magnitude higher than the next highest HQ. As a result, chemicals other than cyanide are unlikely to pose unacceptable risks to wildlife. Using a total cyanide EPC of 1 mg/L, the HIs for birds (0.7) and mammals (0.2) are less than the target acceptable risk level of one. Based on results of this screening-level ecological risk evaluation, chemicals in supernatant water are not expected to pose unacceptable risks to wildlife.

4. UNCERTAINTY EVALUATION

Uncertainty is inherent in many aspects of risk assessment, especially the assessment of risks to multiple ecological risk receptors with varying behaviors and sensitivities. A semi-quantitative approach for evaluating uncertainty is described below. The approach involves listing identifiable uncertainties associated with the parameters used to calculate risks, then gauging both the magnitude and direction of potential bias (i.e., over- or underestimation of actual risk) for each type of uncertainty.

Risk estimates are calculated by combining site data, assumptions about how ecological receptors may be exposed to chemicals, and toxicity data. The primary uncertainties in this risk assessment can be grouped into the following main categories:

- Exposure assessment
- Toxicity assessment
- Combinations of sources of uncertainty

In general, when substantial uncertainty was associated with a variable used in modeling or risk estimation, conservative approximations that err on the side of risk overestimation were employed in this ERA. As a result, risks are likely to be overestimated. The uncertainties in each of the above categories are discussed in greater detail below.

4.1 EXPOSURE ASSESSMENT

The exposure assessment includes a number of assumptions with varying degrees of uncertainty. Uncertainties can arise from the types of ecological receptors evaluated, chemical intake assumptions, and the concentrations of chemicals in water.

This ERA focused on evaluating potential risks to birds and mammals. It is possible that some other organisms such as amphibians, reptiles, invertebrates, and perhaps some plants can contact water in the TSF. There will be no pathways by which fish and other wholly aquatic organisms can colonize the pond. Screening levels protective of wildlife are better developed than those protective of amphibians, reptiles, and aquatic plants, and uncertainties in risk estimates for birds and mammals are typically lower than those for other types of ecological receptors. The lack of a formal evaluation of risks for some organisms will result in an underestimation of some ecological risks.

The LANL (2023) screening levels were developed assuming birds and mammals are only exposed to chemicals in water through drinking. Other potential exposure routes that were not quantitatively evaluated include dermal exposure to chemicals in water and inhalation of vapors in outdoor air. Dietary exposure to chemicals that accumulate in the tissues of aquatic organisms is relevant for most natural surface water features, but the TSF is unlikely to support populations of aquatic plants and invertebrates that would represent a significant food resource for wildlife. Also, cyanide (the chemical with the greatest potential to pose unacceptable risks) does not bioaccumulate in aquatic systems (ATSDR, 2006). Therefore, potential dietary exposures are expected to be insignificant. Exposure routes other than drinking are expected to contribute a minor amount of exposure relative to drinking exposures. Omission

of exposure routes such as potential dermal exposure to chemicals in water can lead to underestimation of risks.

The EPCs used in risk estimates are intended to represent the average concentrations of chemicals in water of the TSF that an organism may experience on a long-term basis. With the exception of cyanide, geochemical modeling was used to estimate EPCs. Although there is uncertainty in estimated EPCs based on the geochemical model, most EPCs were well below relevant ESLs. Potential errors in modeling EPCs are not expected to have a significant effect on risk estimates and can lead to either overestimation or underestimation of risks. The EPC for cyanide is based on an initial evaluation of practicable technologies to reduce cyanide in the TSF. There is considerable uncertainty in the cyanide EPC and risks will be underestimated if treatment technologies do not achieve the estimated target EPC of 1 mg/L total cyanide over long-term bird exposure durations (e.g., over six months).

LANL (2023) developed ESLs for indicator species selected to represent various guilds of birds and mammals with similar potential exposures. An attempt was made to select an indicator species that is likely to have higher potential exposures relative to other members in the guild (typically small-bodied animals). Assumed chemical intake rates (e.g., drinking rates normalized by body weight) for indicator species are likely to be conservative and will generally overestimate risks to other bird and mammal guild members that drink from the TSF. Similarly, the assumed exposure duration (i.e., exposure encompassing the majority of the test organism's lifespan) is likely to overestimate actual exposure durations.

4.2 TOXICITY ASSESSMENT

The availability and quality of toxicological data used to develop TRVs is an important source of uncertainty in ecological risk estimates. Extrapolation of toxicological data from short-term studies to estimate effects of long-term exposures, and from high dose exposures to estimate low dose effects are all important sources of uncertainty. Conservative multipliers known as uncertainty factors are used to account for uncertainties associated with the above types of dose extrapolations. Uncertainty factors are typically biased to prevent underestimating potential toxicity. For the cyanide bird TRV (primary ecological risk driver), LANL (2023) extrapolated a chronic low-effect TRV from an acute study that reported the oral dose causing 50% mortality in American kestrels (*Falco sparverius*). The resultant bird ESLs are likely to overestimate potential cyanide toxicity. For example, the lowest bird ESL used in this screening-level ERA of 1.6 mg/L is over an order of magnitude lower than bird screening levels based on empirical observations of bird mortality in TSFs with varying cyanide concentrations (Donato et al., 2007).

4.3 COMBINATIONS OF SOURCES OF UNCERTAINTY

Many of the uncertainties from the sources discussed above are compounded in the derivation of a single risk estimate. In many cases, bias is used to manage uncertainty by selecting exposure factor values and TRVs that are likely to overestimate exposures and toxicity. Multiple conservative exposure/toxicity assumptions are combined resulting risk estimates that are almost certain to overestimate actual risks, but the degree of risk overestimation is unknown.

5. CONCLUSION

Based on the results of this conservative screening-level risk evaluation, chemicals in supernatant water of the TSF are not expected to pose unacceptable risks to wildlife. Given the conservative nature of this risk assessment, additional more detailed and accurate ecological risk evaluations do not appear to be warranted.

Birds drinking supernatant pond water containing cyanide appears to represent the greatest potential risk to wildlife based on the results of this ERA. As outlined in Section 2 of this report, the EPC for cyanide (i.e., 1 mg/L) was developed based on professional experience and data from other mines that indicate this concentration is practicable and achievable for the conditions and processes at the Grassy Mountain Mine. Because of this particular uncertainty, however, an optimization procedure to attain the lowest practicable level of cyanide in the supernatant pond has been developed. The optimization procedure is described in t*he Tailings Chemical Monitoring Plan* (Calico, 2023; CPA Appendix D2), and is designed to rapidly establish and achieve cyanide concentrations that are protective of wildlife at the site.

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TABLE

Table 1
Ecological Screening Evaluation
Grassy Mountain Mine Project

Analyte	Ecological Screening Levels[1]		Predicted Supernatant Pond Concentration[2]	Hazard Quotient (HQ)	
	Birds (mg/L)	Mammals (mg/L)	Maximum (mg/L)	Bird HQ	Mammal HQ
Alkalinity	NE	NE	42.5	--	--
Aluminum	4,500	86	0.344	7.6E-05	4.0E-03
Antimony	NE	2.3	0.054	--	2.3E-02
Arsenic	52	5.6	0.217	4.2E-03	3.9E-02
Barium	760	8.8	0.038	5.0E-05	4.3E-03
Beryllium	NE	29	0.0005	--	1.7E-05
Boron	770	1,200	0.018	2.3E-05	1.5E-05
Cadmium	82	17	0.0006	7.3E-06	3.5E-05
Calcium	NE	NE	153	--	--
Chloride	NE	NE	7.59	--	--
Chromium (total)	71	630	0.002	2.8E-05	3.2E-06
Cobalt	2	2.2	0.099	5.0E-02	4.5E-02
Copper	130	33	2.40	1.8E-02	7.3E-02
Cyanide (total)[3]	1.6	3,000	1	6.3E-01	3.3E-04
Fluoride	500	210	0.295	5.9E-04	1.4E-03
Iron	NE	NE	0.0008	--	--
Lead	640	16	0.0007	1.1E-06	4.4E-05
Lithium	NE	NE	0.062	--	--
Magnesium	NE	NE	3.01	--	--
Manganese	24,000	700	0.918	3.8E-05	1.3E-03
Mercury (inorganic)	0.78	63	0.007	9.0E-03	1.1E-04
Molybdenum	NE	NE	0.049	--	--
Nickel	160	3	0.002	1.3E-05	6.7E-04
Nitrate	NE	NE	1.00	--	--
pH	NE	NE	8.00	--	--
Phosphorous	NE	NE	0.008	--	--
Potassium	NE	NE	21.8	--	--
Selenium	6.1	1.4	0.026	4.3E-03	1.9E-02
Silver	220	850	0.0003	1.4E-06	3.5E-07
Sodium	NE	NE	256	--	--
Strontium	NE	1,100	0.386	--	3.5E-04
Sulfate	NE	NE	883	--	--
Thallium	14	0.31	0.002	1.4E-04	6.5E-03
Tin	NE	NE	0.028	--	--
Uranium	3,200	67	0.008	2.5E-06	1.2E-04
Vanadium	45	18	0.001	2.2E-05	5.6E-05
Zinc	4,900	5,600	0.099	2.0E-05	1.8E-05
Hazard Index (HI)				7.1E-01	2.2E-01

Notes:

1 Lowest bird and mammal drinking water ecological screening levels (ESL) based on a low effect level.
From: Los Alamos National Laboratory ECORISK Database (Release 4.3). https://www.intellusnm.com/

2 With exception of cyanide, maximum estimated concentration in Table 4-1,
SRK Consulting, 2021, Technical Memorandum, Re: Ecological Risk Assessment:
Numerical Prediction of Tailings, Supernatant Pond and Reclaim Pond Chemistry
for the Grassy Mountain Project, December 7.

3 Total cyanide EPC is based on an intial evaluation of practicable technologies to manage cyanide.

NE = Not Established (i.e., no screening value)

HQ = Maximum Concentration/Screening Level

HI = Sum of chemical-specific HQs