



January 4, 2023

Mr. Dayne Doucet
Consolidated Mining Permit Lead
Oregon Department of Geology and Mineral Industries
Mineral Land Regulation & Reclamation
229 Broadalbin St SW
Albany, Oregon 97321

**RE: Submittal of Documents in Response to Specific Comments in October 20, 2022,
Comments for the Consolidated Permit Application, Grassy Mountain Mine Project**

Dear Mr. Doucet:

This letter accompanies the submittal of the documents listed below in response to comments pertaining to the October 20, 2022, Comments for the Consolidated Permit Application.

- SRK Consulting (SRK). 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.
The SRK 2022 report helps address comments 90, 96, 165, and 167. It is also relevant to “Resolved” or “Integral” comments 56, 58, 70, 71, and 72.
- Lorax Environmental Services (Lorax). 2022. *Grassy Mountain Gold and Silver Project, Numerical Hydrogeologic Assessment*. Project No. A651-1. October 21.
The Lorax 2022 report helps address comment 241. It is also relevant to “Resolved” comments 102, 106, 107, 185, 186, 187, 191, 201, and 205.

Document submittal records for both reports are attached with corresponding comment numbers. Please see the “Revised Response to Comments (Jan 2023)” information for your consideration.

Please contact me at (775) 625-3600, glen@paramountnevada.com if you have questions or need clarification.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Glen van Treek', is written over a faint, larger signature.

Glen van Treek
President
Calico Resources USA Corp./Paramount Gold Nevada Corp.
(775) 625-3600
glen@paramountnevada.com

Att: Document Submittal Records

Attachment
Document Submittal Records

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

The CRF Geochem report helps address comments 90, 96, 165, and 167. It is also relevant to “Resolved” or **INTEGRAL** comments 56, 58, 70, 71, and 72 (not presented here).

Comment Number: 90	Category: 2	Status: D (Preliminary Not Resolved)
Comment: Baseline Geochemistry Section 7.4 Cemented Rock Fill (CRF) – as determined by the geochemical testing results at section 000.000, a majority of the waste rock has potential to generate acid and leach metals. This section of the Geochemistry Baseline report proposes that 5% cement be added to waste rock to be used as backfill in the mine. However, Calico specifies 7% cement in CRF in 3.3.5.1 of the Consolidated Permit Application. There is no apparent resolution of this conflict and no geochemical assessment of it. Indeed, there does not seem to be any geochemical characterization of CRF as proposed. These conflicts cloud the assessment of existing conditions. This section also states that CRF made from waste rock would be placed only in locations above the water table. How will pH in the underground workings (inclusive of material in situ and all backfill materials) be best managed to prevent acid generation and the mobilization of metals? In Section 3.3.5 of the Consolidated Application it is stated that waste rock would be used as backfill “to extent possible”. In Section 4.6.2 of the Consolidated Application it is stated that “all 0.2 million tons of waste rock” would be added to the TSF. These contradictions need to be resolved – the proposed volumetric range of the TSF is 1.76 to 3.2 million tons, and the TSF volume is dedicated to the Grassy Mountain project. Does reconciling of the above mean that there is a total of 200,000 tons, only, of waste rock? Due to the potential for acid generation and leaching of metals, none of the waste rock should be placed in underground workings. These conflicts cloud the assessment of existing conditions. Proposed Resolution: (a) Determine if 5% or 7% cement will be added to waste rock, and make consistent in the CPA and the BDR. (b) Explain how pH in the underground workings will be best managed to prevent acid generation and the mobilization of metals. (c) Clarify how waste rock will be disposed of, and make consistent throughout the CPA.		
Initial Response (Dec 2021): See response to comment 56.		

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 90	Category: 2	Status: D (Preliminary Not Resolved)
TRT Response (Oct 2022): Adequate. DEQ has affirmed, and the TRT accepted, the Geochemistry Baseline Data Report as meeting the requirements of the 2017 Environmental Baseline Data Work Plans. Not adequate. The Cemented Rock Fill plan design and details are not complete and its content cannot be reviewed in its current form (section 2.6.2.4). From the CPA text DEQ notes that the CRF purpose as expressed is to provide stability for the production drifts by blending Portland cement with all of the waste rock generated. The CRF plan section 2.6.2.4 makes no reference to how the CRF design will prevent Acid Rock Drainage by providing acid neutralizing potential confirmed by monitoring data.		
Preliminary Response to Comment (Nov 2022): The referenced section of the CPA (Section 2.6.2.4) describes how there is additional testing being performed to determine the geochemical characteristics of CRF made with waste rock. The results of the additional testing will be used to establish backfill plans to mitigate potential impacts (e.g., generation of acid in the underground). The text goes on to describe measures that may be included in the backfill plan such as not using waste rock in CRF, or placing CRF made with waste rock above or below the predicted post-closure phreatic surface. The measures described in the text explain how the CRF design will prevent Acid Rock Drainage. Further, the testing program has been completed and a report of results has been prepared. The results indicate that CRF made with waste rock and 5% to 7% binder (cement and/or fly ash) is very strongly net neutralizing so will not generate acidic leachate. Further, the binder in the CRF (made with either basalt or waste rock) provides a substantial amount of neutralization capacity and will reduce the potential for acidic groundwater in the mine area. Because the measures described in the CPA are effective for preventing CRF made with waste rock from generating acid, the comment is addressed. The report of results will be submitted to the TRT for review.		
Agency Comments (Jan 2023): N/A		

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 90

Category: 2

Status: D (Preliminary Not Resolved)

Revised Response to Comment (Jan 2023): Additional geochemical characterization testing has been performed to determine the geochemical characteristics of CRF. The testing program and results are described in detail in *Grassy Mountain Cemented Rock Fill Characterization Report*, which will be included as an appendix to the next revision of the CPA. Briefly, the testing program included preparing a variety of samples representative of CRF using waste rock, basalt, and binder material (Portland Cement and Fly Ash), and then subjecting the samples to a number of geochemical characterization tests, including ABA, mineralogical analysis, whole rock metals analysis, and two specialized leaching tests. The binder content of CRF ranged from 5% to 7%.

The results of geochemical characterization of the CRF can be summarized as follows:

- All the CRF samples have significant buffering capacity due to the addition of the binder material. Based on the test results, the CRF is not expected to generate acid.
- Cementation of the waste rock results in overall lower metal releases under higher pH conditions (in comparison to testing results of waste rock with no binders).
- There are no appreciable differences in the results for the types of binders or the amount mixed in:
 - Fly ash is comparable to cement, and
 - Additional binder does not change the results in terms of potential for acid generation and/or metal leaching.
- The concentrations of several constituents (i.e., arsenic, chloride, fluoride, mercury, and sulfate) are lower in leachate than in the lixiviant (groundwater from the site), indicating the potential for attenuation of some naturally-occurring constituents in groundwater due to interaction with CRF.
- Very low metal/sulfate was released from the CRF in the leach tests involving intact cemented aggregate (some of the leach tests are performed on crushed CRF).

The reduction in the mobility of soluble constituents in the CRF occurs for several reasons:

- The hydraulic conductivity and exposed surface area of the material is greatly diminished due to the solidification process.
- The alkaline nature of the binders reduces solubility of most metals.
- Some metals become less soluble due to their inclusion in the mineral structure of the calcium silicate hydrate gels resulting from cementation.
- The mobility of most trace constituents in water contacting CRF will be controlled by diffusion rather than solubility reactions.

Overall, based on the results of the CRF characterization program, the CRF made with basalt or waste rock does not show a significant potential to degrade groundwater quality, with most constituents leached at very low levels for all tests, and will be used to establish backfill plans to mitigate potential impacts, if necessary.

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 96	Category: 3	Status: B (Not Resolved)
Comment: Assumptions that cement will encapsulate the potentially toxic and acidic waste rock. The cement in the CRF may buffer acidic nature of rock, but there should be explicit analysis of this in a “pH, Waste Rock and Tailings Facility Management Plan” to guarantee, not assume that Acid Generation is effectively mitigated. This Plan must also consider and incorporate pertinent DEQ Solid Waste Program requirements relative to CRF and basalt aggregate rock fill (RF) and CRF as backfill at all levels of the mine. Proposed Resolution: Provide a pH, Waste Rock and Tailings Facility Management Plan, including an analysis on how effectively cement would encapsulate the potentially toxic and acidic waste rock. Incorporate pertinent DEQ Solid Waste Program requirements relative to CRF and basalt aggregate rock fill (RF) and CRF as backfill at all levels of the mine		
Initial Response (Dec 2021): Related to comment 56 (about testing cemented waste rock) and 48 (about managing high pH of treated tailings). Geochemical baseline study results have been used in the engineering of the mine to develop management strategies that are proven effective for acid generating mine wastes. Monitoring and adaptive management plans will further inform during operations. See response to comment 56.		
TRT Response (Oct 2022): Not adequate. The Cemented Rock Fill plan design and details are not complete and its regulatory responsiveness and purpose cannot be assessed in its current form (section 2.6.2.4). The application cites that additional [CRF] testing is being performed to determine the geochemical characteristics of CRF made with waste rock. No backfill plan is contained to evaluate CRF efficacy to mitigate potential impacts of acid rock drainage and the mobilization of metals. From the CPA text DEQ notes that the CRF purpose as expressed is to provide stability for the production drifts by blending Portland cement with all of the waste rock generated. This is an operation purpose statement, but does not adequately address core regulatory requirements. DEQ notes the generalized and preliminary statement of a Portland cement addition, in CRF, of between 5 and 7%. Proposed Resolution: Develop a Backfill Plan that is sufficiently prescriptive to prevent any Acid Rock Drainage, in the short term and especially the long term. Provide details on monitoring specifications and technologies adequate to assure such mitigation at all levels of the mine. In addition, provide a detailed description of how pH conditions at depth will be managed to prevent any metals mobilization attributable to mining operations.		
Preliminary Response to Comment (Nov 2022): 1) Category 3 comment; 2) Geochemical tests on CRF are complete and the report of results will be submitted to the TRT for review; 3) The results of		

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Comment Number: 96	Category: 3	Status: B (Not Resolved)
the CRF testing indicate that the CRF made with waste rock has so much net neutralization potential that monitoring is unnecessary (i.e., CRF made with the goal of providing structural stability in the underground will not generate acid).		
Agency Comments (Jan 2023): Check comment 48 inorganic leaching potential & TSF stability issues. (Comment #90 -assigned to Stantec may also address this).		
Revised Response to Comment (Jan 2023): See the revised response to Comment 90.		

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 165	Category: 1	Status: D (Preliminary Not Resolved)
Comment: Backfill Plant issues. Section 3.3.5.1 states the following: “A plant to produce the CRF will be built as part of the Project infrastructure. The backfill plant will be located near the underground mine portal and will produce the CRF. No test work has been done for CRF at this time, so a standard mix with seven percent cement will be used pending further study. Section 2.5 states that “an estimated mix of five percent cement will be added to neutralize the waste rock material.” Proposed Resolution: The Applicant should at a minimum include details concerning the further testing that will occur to determine the mixture needed to eliminate acid generation and metals leaching from the CRF and impacting the environment. The Applicant should provide at a minimum the conceptual design and operation of the Backfill Plant. The current CPA does not include any information concerning this facility. The Applicant should be consistent in the cement mix percentage in the CPA and explain the existing contradiction in the cement percentages. The Applicant should provide the information and justification for the assumed cement mix percentage.		
Initial Response (Dec 2021): The CPA will [be] revised to be consistent with the current plans and data regarding the CRF. See subsections in 3.1.2 of the CPA.		
TRT Response (Oct 2022): See comment 90.		

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 165	Category: 1	Status: D (Preliminary Not Resolved)
Preliminary Response to Comment (Nov 2022): The original Category 1 comment requests further details concerning additional testing for geochemical characterization of the CRF. Section 2.6.2.4 of the CPA describes how there is additional testing being performed to determine the geochemical characteristics of CRF made with waste rock. The results of the additional testing will be used to establish backfill plans to mitigate potential impacts (e.g., generation of acid in the underground). The text goes on to describe measures that may be included in the backfill plan such as not using waste rock in CRF, or placing CRF made with waste rock above or below the predicted post-closure phreatic surface. The measures described in the text explain how the CRF design will prevent Acid Rock Drainage. Further, the testing program has been completed and a report of results has been prepared. The results indicate that CRF made with waste rock and 5% to 7% binder (cement and/or fly ash) is very strongly net neutralizing so will not generate acidic leachate. Further, the binder in the CRF (made with either basalt or waste rock) provides a substantial amount of neutralization capacity and will reduce the potential for acidic groundwater in the mine area. The report of results will be submitted to the TRT for review. The original Category 1 comment also requests further details concerning the conceptual design and operation of the Backfill Plant. Section 3.2.2.5 describes the backfill plant and operations. The original Category 1 comment also requests consistency in references to the amount of cement being used in the CRF. The binder (cement plus fly ash) is consistently presented as 5% to 7%. The reference to 3% to 5% cement is made with reference to a dependence on the amount of fly ash. The information presented in the CRF addresses the proposed resolutions in the original Category 1 comment. The original Category 1 comment also requests support on the selection of the percentage of cement being used. Section 3.2.2.5 of the CPA references laboratory tests that were conducted to define CRF strength and also presents the CRF mix design.		
Agency Comments (Jan 2023): N/A		
Revised Response to Comment (Jan 2023): See the revised response to Comment 90.		

Document Submittal: Cemented Rock Fill Characterization Report 2022-10.pdf

Reference: SRK Consulting. 2022. *Grassy Mountain Cemented Rock Fill Characterization Report*. October.

Comment Number: 167	Category: 2	Status: D (Preliminary Not Resolved)
Comment: Acid generating waste rock must be stored in a lined cell. Cemented rock fill (CRF) is subject to cracking and degradation through erosion, therefore is not a viable option for backfilling in the mine shafts. [340-043-0140] Section 3.3.5 of the consolidated application states that waste rock will be used to backfill the mine to “extent possible.” Section 4.6.2 of the same application states “All 0.2 million tons of waste rock will be removed from the waste rock storage area and placed on the TSF.” Most of the waste rock from the mine is expected to be acid generating and should be placed in a secure surface location and not be used as mine backfill. Proposed Resolution: Correct conflicting statements in consolidated Application. Prepare Tailings and Waste rock management plan during permitting phase.		
Initial Response (Dec 2021): The Temporary Waste Rock Storage Facility is a lined cell. The design of the liner system and leachate controls is the same as the TSF. Geochemical testing of CRF made with waste rock is underway and will help to determine if waste rock CRF can be used as mine backfill in an environmentally safe manner. The cement used to make CRF provides considerable neutralization potential, so it is anticipated that waste rock CRF would be net-neutralizing (i.e., non acid generating).		
TRT Response (Oct 2022): See 90.		
Preliminary Response to Comment (Nov 2022): The original Category 2 comment requests resolution of conflicting statements regarding waste rock management and CRF in the CPA. This has been completed. The original comment also requests development of a tailings and waste rock management plan during the permitting phase. This appears to be a Category 3 or 4 issue. Also see the response to comment 90.		
Agency Comments (Jan 2023): N/A		
Revised Response to Comment (Jan 2023): See the revised response to Comment 90.		

Document Submittal: Lorax Numerical Hydrogeologic Assessment 2022-10.pdf

Reference: Lorax Environmental Services. 2022. *Grassy Mountain Gold and Silver Project, Numerical Hydrogeologic Assessment*. Project No. A651-1. October 21.

The Lorax GW modeling report helps address comment 241. It is also relevant to “Resolved” comments 102, 106, 107, 185, 186, 187, 191, 201, and 205 (not presented here).

Comment Number: 241	Category: 3	Status: B (Not Resolved)
Comment: Comment: In estimates provided for well to well interference, early-time transmissivity numbers were used.		
Proposed Resolution: Proposed Resolution: While early-time transmissivity values are appropriate for assessing aquifer properties, they may not be appropriate for this situation. Since affected wells appear to exist within the same compartment, with the same negative boundaries, considering extended pumping durations, the late-time transmissivity should be used in this analysis.		
Initial Response (Dec 2021): Noted. Further refinement of the well field design will be necessary as the project water demands are further refined and additional testing and data are generated. Needs to be addressed in a revision to the Well Field Design Report (SPF, July 2019) (during permitting)		
TRT Response (Oct 2022): Unchanged at this point. Update in final report?		
Preliminary Response to Comment (Nov 2022): There is no disagreement on the comment or proposed resolution. The wellfield design is a plan that has been developed with all the information currently available. Given the heterogeneity and complexity of the aquifer, it is anticipated that the plans will change during implementation (i.e., alternative well locations and designs may be needed). This cannot be known until wells are installed as planned.		
Agency Comments (Jan 2023): I look forward to reviewing any further wellfield design plans and working with the applicant on monitoring well design and locations.		
Revised Response to Comment (Jan 2023): Calico commissioned Lorax Environmental Services to develop a more comprehensive, calibrated groundwater flow model using all the hydrogeologic data that has been gathered through 2021. The model was used to further evaluate the potential effects of the mine on groundwater conditions in the area, including drawdown of the aquifer in the vicinity of the proposed production wellfield and near the underground mine. The recovery of the aquifer after closure is also evaluated. The projections are based on updated estimates of water usage for mining. A description of the model, its calibration, and the results of projections and sensitivity analyses are presented in Lorax Environmental Services 2022. The results of this model supersede all previous groundwater modeling results.		