



January 30, 2020

Mr. Mike Schaffner
Cripple Creek & Victor Gold Mining Company
P.O. Box 191
Victor, CO 80860

**Re: Project, Permit No. M-1980-244;
Technical Revision (TR-120) Preliminary Adequacy Review**

Dear Mr. Schaffner:

The Division of Reclamation, Mining and Safety (DRMS) received a request for a Technical Revision (TR-120) addressing the following:

Process Fluid Injection Program Expansion

The submittal was called complete for the purpose of filing on January 24, 2020. The **decision date for TR-120 is February 24, 2020**. Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, **it will be your responsibility to request an extension of the review period**. If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division may deny this Technical Revision.

The following comments are based on the DRMS review of the request for TR-120:

- 1) Figure 1: There are 151 VLF 1 well locations identified with blue circles and 9 Hydro-Jex well locations identified with green circles. Given the total number of 160 wells, it would be very useful if some issue with one or more of these wells developed to have an identifier for each in order to determine the location of a particular well. Based on the site visit on January 28, 2020, the DRMS understands the original nine Hydro-Jex wells are identified as HJ-1 through HJ-9 from north to south. Please resubmit Figure 1 with a unique identifier on each of the 160 wells.
- 2) Well usage constraint clarification: The majority of the TR-120 submittal is a resubmittal of information submitted with TR-57. There are three recommendations (reference p. 8 of the December 17, 2009 letter from Amec to Timm Comer) dealing with crest offsets; injection depths; and injection pressure and monitoring. In addition, section 4, "VLF Operational Balances" of the "Hydro-Jex Project Monitoring Program" from CC&V to the DRMS, dated March 11, 2010 suggests injection flow rates will not exceed the pumping capacity of the high volume solution collection pumps in any PSSA being treated. No numerical values are provided for any of these parameters, other than the minimum 20-foot offset from the crest (for injection depths less than 100 feet BGS), half overburden pressure limits for injections in



the upper 70 feet of a well. Furthermore, injection well HJ-8 was measured to be 19 feet from the crest during the aforementioned site visit, thereby limiting its use to injection at depths greater than 100 feet. Site personnel also indicated the injection wells are screened over a large interval, but the injection interval is limited to a five-foot section using inflatable packers. As such, it appears there is considerable variability in the operation of these injection wells with only vague references to safe pressure and flow limits. Site personnel described how HJ-8 was injecting at a depth of 115 feet and was limited to the lesser of 1600 gpm or about 115 psi in order to meet the recommended guidelines set forth in TR-57. In order to provide clarity on the operation limitations of each of the 160 wells, please provide the following:

- a. Tabular or formulaic method to estimate overburden pressure,
- b. Method used to control injection interval,
- c. Means of monitoring slope movement (e.g., visual monitoring, instrument monitoring) and the frequency of each,
- d. Trigger/minimum movement, or other criteria observed that would dictate termination of fluid injection.

And, for each well:

- e. Well depth and full screen interval (in feet bgs),
 - f. Depth from bottom of well to top of liner,
 - g. Well offset from bench crest,
 - h. PSSA phase to which the well contributes and PSSA phase pump capacity.
- 3) Well construction details: Please provide a typical well construction detail, or details if there are significant differences between wells, or construction logs (if available). The provided information should include perforation size and spacing, casing material and diameter.
 - 4) Monitoring reporting: Please provide a monitor reporting frequency and duration to demonstrate continued safe operation of the 160 VLF 1 injection wells.
 - 5) Reclamation: No reclamation is proposed for the 160 well heads. The DRMs acknowledges no reclamation was required for the nine pilot project wells approved under TR-57. The approved post mine land use is rangeland. The Hydro-Jex well head observed during the January 28, 2020 inspection is on the order of five feet above the bench surface and measured to be 19 feet from the crest. Please describe how the continued presence of the existing 160 well heads after reclamation is consistent with the approved post mine land use.

If you have any questions or need further information, please contact me at (303)866-3567 x8169.

Sincerely,



Timothy A. Cazier, P.E.
Environmental Protection Specialist

ec: Michael Cunningham, DRMS
Elliott Russell, DRMS
Patrick Lennberg, DRMS
Brock Bowles, DRMS

DRMS file
Justin Raglin, CC&V
Katie Blake, CC&V