



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8

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TECHNICAL MEMORANDUM

SUBJECT: Mine Site Work Category Determination for upcoming Red and Bonita Conveyance Improvements TCRA, Bonita Peak Mining District Superfund Site

FROM: Athena Jones, Remedial Project Manager

THROUGH: Christina Progross, Remedial Section B Manager
Kerry Guy, Removal Section Manager

TO: Site File

This memorandum is written in order to document the Mine Site Work Category Determination as required by the EPA Headquarters' memorandum (Woolford-Cheatham) dated April 4, 2017.

Overview

The Red and Bonita Mine is located within the Bonita Peak Mining District Superfund Site (Site), located near the town of Silverton, Colorado. The Red and Bonita Mine is on the east side of Cement Creek just upstream of the confluence with North Fork Cement Creek. It consists of a waste rock pile of approximately 6,000 cubic yards of largely coarse, pyritized, and altered country rock (EPA 2016). In addition, the Red and Bonita adit discharges water continuously and is a suspected/likely discharge location of the Bonita Peak Groundwater System (Operable Unit 3). The adit is open and intact, extending approximately 250 feet where it terminates at a concrete bulkhead. The Red and Bonita bulkhead was constructed in 2015 to control the adit drainage from the workings behind the bulkhead. An 8-inch steel bypass pipe penetrates the bulkhead and is fitted with a gate valve and pressure gauge.

The bulkhead design intent is to flood the mine workings, reduce outflow, and return the local water table closer to its pre-mining condition. It is part of a system of bulkheads within the Site. The 8-inch diameter pipe through the bulkhead has been kept open since construction, allowing the mine drainage (typically 270 gpm in 2018) to discharge out of the mine portal. In 2020, the valve was closed temporarily during the execution of a bulkhead test. The results of the test indicate that the bulkhead functions properly to impound mining influenced water (MIW).

Fluid Conceptual Site Model

Bulkheading was chosen by parties involved at that time, which dates back to at least 1987, to address discharge of mining-influenced water causing environmental damage (Deere and Ault 2020). The bulkheading procedure starts with identifying all mine openings that would be flooded and sealing them with bulkheads of sufficient pressure capacity. Bulkheading must proceed in a holistic way throughout a

hydrogeologic region, often across various mining properties to avoid unintentional impacts to other workings. As the mine pool behind a bulkhead fills, it must be monitored along with the surrounding area to identify seepage or unknown connected mine openings that begin to seep or flow. Additional bulkheads may have to be installed in other workings as the water table is pushed higher in elevation.

In response to increases in flows in 2011 due to bulkheading of the Sunnyside Mine and other area mines at the Site, EPA began investigation and completing remedial activities at the Red and Bonita Mine, including installation of a bulkhead in 2015. Testing of the Red and Bonita bulkhead was put on hold as a result of the mine water release of the Gold King Mine in 2015.

The Red and Bonita adit includes an engineered bulkhead as well as piping and valves which prevent an uncontrolled fluid release hazard. **In accordance with Attachment 1 of the previously referenced April 4, 2017 memorandum, this site should be categorized as a Category 1, as it is a “...[site] containing fluids with no or low fluid hazard.”**

Work Activities Plan

The Red and Bonita conveyance line carries MIW from the bulkhead to either Cement Creek or the Interim Water Treatment Plant (IWTP). The conveyance is made of 8 inch HDPE pipe with various new cleanouts for jetting the line that were installed in 2022. The HDPE conveyance currently enters a T which discharges flow uphill of an iron fen before passing into the Cement Creek. The alternative direction of this T leads to the IWTP. Work will reconfigure this conveyance line to move the T further downhill/away from the portal to prevent drainage from fanning out over the iron fen. During work, flow will be shut off to the conveyance line for approximately 1-5 days. Pressure in the system will be monitored throughout the work via a pressure transducer behind the bulkhead and a pressure gage on the conveyance line. Data from the transducer is streamed live to VIPER for RPMs and OSCs to also monitor from the office. If significant water is impounded in the mine and conveyance during any portion of this work, it will be directed to the IWTP prior to resuming normal flow into the Cement Creek.

The Red and Bonita maintenance activities includes the use of an engineered bulkhead as well as valve closures which will prevent an uncontrolled fluid release hazard. **In accordance with Attachment 1 of the previously referenced April 4, 2017 memorandum this work should be categorized as 1H, as the “Region has conducted studies or investigations and has determined that the fluid release hazard is extremely low or non-existent as a result of either engineered controls or by the configuration of the site’s physical features.”**

This mine site work category determination of “1H” for the Red and Bonita execution plan’s activities is consistent with discussions with EPA’s Abandoned Mine Lands team and with regards to the role of bulkheads as an engineering control.

References

- Red and Bonita Bulkhead Test Closure Final Report
<https://semspub.epa.gov/work/08/100010330.pdf>