

July 21, 2023

Division of Reclamation, Mining and Safety
1313 Sherman St., Rm. 215
Denver, CO 80203
Telephone: 303.866.3567

RE: Response to June 16, 2023 Inspection Report

Mr. Hays:

Thank you for your visit last week. As requested in your inspection report, I will address the design of the portal, bulkhead, piping work and completion date. After your inspection, I was able to muck out the adit, hang the pipework and light the area for better photos. Those photos have been attached to this letter.

Portal Design

The Idaho Bureau of Mines and Geology Bulletin B-21, *Timbering and Support for Underground Workings for Small Mines*, was used as a basis of the timbering support. The ground pressure of the timbered portal increases with depth of cover, therefore the design increases the support the further underground the timbering is located. Two 20-foot shipping containers were used as the first layer of lagging and support. Shipping containers are not designed for burial. The container is made of Corten steel and is rust resistant. This allows for a relatively tight and strong first layer of lagging but requires additional support. The ends of the containers are designed to carry very heavy loads, but the wall and roof panels are not. An additional layer of lagging was added to the interior of the container. $\frac{3}{4}$ " thick treated marine grade plywood was screwed to the interior of the container. 6"x6" timbers were then erected inside that lagging in a traditional post and beam configuration. Timber set spacing is at 4 feet on center. The first container utilizes only the 6"x6" post and beam with 7 foot span. The second container doubles the posts and closes in the span to 4 feet. 3"x14" timbers are then added to create a box beam. This far exceeds the requirements from B-21. I am seeing beam deflections of $\frac{1}{4}$ " to $\frac{1}{2}$ " in the first container, which only has 6"x6" post and beam. I will be adding 3"x14" timbers to those timber sets to stiffen them as well. Timbering should be complete by September.

Bulkhead

At this time, no bulkhead is planned. At most a low wall, less than 4 feet in height will be erected outby of the winze shown in the photos. This will add to the storage volume by 50,000-100,000 gallons. The pressure at the foot of the wall will only be ~2 psi, therefore 4-6" thick cast in place concrete will be more than sufficient. Plumbing will be cast in place on the wall. Standard fire cistern designs utilize 6" diameter schedule 80 pipe for the connection. In addition to that fitting, 1-2" diameter pipe will also be cast into the short wall.

Pipework

As seen in the photos, two pipes are currently hung in the adit. A $\frac{3}{4}$ " line and power is run to a small sump pump which is hanging in the winze. This was the initial pump utilized to test the well. The pump will remain as a backup, but has been replaced by a 1 $\frac{1}{4}$ " jet pump. The jet pump is

located in the second container. It is rated at 10 gallons per minute. A pump test on the winze was performed on July 3rd, 2023. The test ran for one hour. Pumping rate was checked utilizing a stopwatch and 5-gallon bucket. 600 gallons were pumped from the winze. The top of the winze was then measured for draw down. 51 cubic feet (380 gallons) of draw down was measured. The resulting recharge rate is 220 gallons per hour or 3.7 gallons per minute. The intent is to finalize the installation and apply for a well permit from DWR. A preliminary well permit has been filed and will be completed utilizing this data. Once the well permit is completed a copy will be sent to the DRMS.

Reclamation

Unfortunately, the spring window for seeding was missed this year. Seeding will occur in October and cover all disturbed areas that will not remain for the landowner to utilize (roads, and pads). The seed mix and seeding rate in the original application will be used.

Regards,



Benjamin H. Miller, PhD
Principal Consultant/Partner

AusIMM Chartered Mining Professional (312991)
Quarry Manager Certificate (892-006132)
Qualified Person under 43.101
Qualified Person under SEC Security Act of 1933

Attachments: Annotated Photos



Winze location showing $\frac{3}{4}$ " and $1\frac{1}{4}$ " Piping



Fork in the adit



Second container with narrower timber span. Jet pump shown in photo.



First container. Additional timbering to be added to create a box beam.