



Burleson Consulting Inc.

950 Glenn Drive Suite 245
Folsom, California 95630

Phone (916) 984-4651

Fax (916) 984-8261

October 11, 2011

Mohammad Javanbakht
Criswell Radovan LLC 1336 Oak
Avenue # D Saint Helena, CA
94574-1924

Subject: Approach to Addressing Valley Mine Features at Aetna Springs, Napa County, California

Dear Mr. Javanbakht:

Pursuant to our discussions, Burleson Consulting, Inc. (Burleson) has prepared the attached description of Valley Mine Features to support Aetna Spring's application to Napa County for Conditional Use Permit Major Modification. The approach outlined in this report is based upon visual inspection of the Valley Mine area with you on September 8, 2011.

If you have any questions, please contact me at (916) 984-4651, Extension 11 or Ms. Nadia Burleson at (916) 984-4651, Extension 15.

Sincerely,

Gregory J. Reller, PG
Senior Geologist

Attachment

AETNA SPRINGS RETREAT USE PERMIT: APPROACH TO ADDRESSING VALLEY MINE FEATURES

Introduction. Aetna Springs Retreat is preparing an application for Conditional Use Permit Major Modification. The applicant's plans for the site consist of rehabilitating existing buildings, and improving the creek setback area by moving several of the buildings out of the setback area where possible.

Aetna Springs Retreat is located about one-quarter mile east of the Aetna Mercury Mine. The current project includes two features that appear to be related to mining activity at the historical Valley Mine. These features are located in close proximity to the Soda Fountain Building. The features comprise an open shaft and nearby depression, waste rock, and a depression south of the Soda Fountain Building. The project will address these mine related-features so that public safety is protected. A pit east of and adjacent to the Soda Fountain Building contains a ceramic pipe and appears to be a ground failure related to piping of fine sediments and is not considered to be mine related. This pit is shown in yellow on Figure 1.

The Valley Mine features are shown on Figure 1. Mining history at the Valley Mine is summarized in the following section.

Mining History. The retreat is located at the southeast end of the East Mayacmas Mercury District, which includes portions of Napa and Lake Counties. Review of mining journals and maps identified the following information about the Valley Mine.

The Valley Mine is located on retreat property and reportedly consisted of a 100-foot-deep mine shaft and 700 to 800 feet of lateral tunnels. Cinnabar, the principal ore mineral containing mercury, was discovered at the Valley Mine in 1854. This occurrence was the first report of cinnabar in the area. Mining occurred sporadically at the Valley Mine through 1890, when a small quantity of mercury was produced (CDM 1946). Mining stopped in 1890 because hot water and gases were entering the underground workings (CDM 1946). Mineral water from the shaft was reportedly piped to the historical Aetna Spring Resort at the mine site (CDM 1946). The Defense Minerals Exploration Administration conducted exploration trenching at the mine in 1957 in an attempt to locate additional ore (U.S. Bureau of Mines 1965).

Valley Mine-related features present are the Valley Shaft and waste rock, a depression northeast of the Valley Shaft, and a depression south of the Soda Fountain Building. Each of these features will be addressed by the project.

One open mine shaft (Valley Shaft) is present at the Valley Mine. The open shaft is approximately 15 feet across at the collar and is surrounded by a wire fence. A depression located 30 feet northeast of the larger shaft might be a second shaft that has collapsed or was backfilled. The depression is covered with vegetation and does not have a perimeter fence. A mine shaft was shown at the Soda Fountain on a survey document. A shallow depression is coincident with the location shown as a mine shaft on the survey document. Both of these depressions will be evaluated to determine if they are mine openings.

A waste rock pile is also present at the Valley Shaft. The pile is adjacent to the open shaft. The surface of the pile is covered with vegetation. The pile extends south from the top of the stone wall, to the edge of the path south of creek.

Project Components. The following actions which have been incorporated into the project will be taken to protect future site visitors from mine-related features:

- **Limited excavation will be performed at the depression northeast of the open shaft to determine if the depression is a mine shaft.**

Limited excavation will consist of exploratory trenching using a small excavator or extended backhoe to remove soil at the center and edge of the depression. The goal is to evaluate the contents and edge of the depression to determine if the depression is a shaft, or the result of borrowing material for use elsewhere. Excavated material will be carefully stockpiled to prevent loss to the creek, and will be used to backfill the excavation. Site restoration will consist of erosion controls such as spreading straw and installing straw wattles at the downslope edge of the excavated area. If any of this activity occurs within the stream setback area, erosion control measures in the creek restoration plan will be followed.

- **Limited excavation will be performed at the depression labeled as a mine shaft at the Soda Fountain.**

Limited excavation will consist of exploratory trenching using a small excavator or extended backhoe to remove soil at the center and edge of the depression. The goal is to evaluate the contents and edge of the depression to determine if the depression is a mine opening (tunnel, trench, shaft). Excavated material will be carefully stockpiled to prevent loss to the creek, and will be used to backfill the excavation. Site restoration will consist of erosion controls such as spreading straw and installing straw wattles at the downslope edge of the excavated area. If any of this activity occurs within the stream setback area, erosion control measures in the creek restoration plan will be followed.

- **If either depression is a mine opening that has not been properly secured, additional measures (such as a plug or backfill) will be implemented to protect against physical hazards.**

Shallow openings such as trenches and shafts less than about 50 feet deep can be backfilled using nearby rock from mining and/or imported fill. Deeper shafts are typically closed using an expanding foam plug that is then protected from damage using a soil cover. Based on inspection results, if either feature is determined to be a mine opening, an appropriate closure (backfill or foam plug) will be completed. Site restoration would include erosion controls such as installing straw wattles, and broadcasting an appropriate seed mix on the disturbed area. If any of this activity occurs within the stream setback area, erosion control measures in the creek restoration plan will be followed.

- **The open shaft at the Valley Mine will be inspected and secured by filling the opening with a polyurethane plug or backfilling it with soil to minimize physical hazards.**

Shallow openings such as trenches and shafts less than about 50 feet deep can be backfilled using nearby rock from mining and/or imported fill. Deeper shafts are typically closed using

an expanding foam plug that is then protected from damage using a soil cover. Visual inspection and a weighted tape will be used to assess the depth of the Valley Shaft and an appropriate closure (backfill or foam plug) will be completed. Site restoration would include erosion controls such as installing straw wattles, and broadcasting an appropriate seed mix on the disturbed area. If any of this activity occurs within the stream setback area, erosion control measures in the creek restoration plan will be followed.

- **The waste rock pile will be sampled before construction and analyzed to confirm that metal concentrations are below levels of concern to future users of the property.**

Waste rock at the Valley Shaft will be evaluated to determine whether it contains elevated levels of metals such as mercury, arsenic, chromium, and nickel. Therefore, a composite sample of the material at the waste rock pile will be collected and analyzed to confirm that metal concentrations are suitable for the intended future use of the area as a retreat and resort. In addition to metal concentrations, the leachability of metals and acid generating potential of the material will be tested. The area of the waste rock adjacent to the creek will also be inspected prior to construction to determine if erosion controls are necessary to stabilize the waste rock. If elevated metals are present, the waste rock will be removed and disposed of at an appropriately permitted off-site facility. Site restoration would include erosion controls such as installing straw wattles on slopes, stabilizing the stream bank, and broadcasting an appropriate seed mix on the disturbed area. If any of this activity occurs within the stream setback area, erosion control measures in the creek restoration plan will be followed.

Table 1 below provides the anticipated timeframe for the project components. The timeframes reflect the anticipated duration of on-site work. Project planning and mobilization would be performed in addition to the on-site work.

References Cited

California Division of Mines (CDM). 1946. California Journal of Mines and Geology. Volume 42. Number 2. Quicksilver Deposits of Eastern Mayacmas District, Lake and Napa Counties, California. Pages 231 to 286. April.

U.S. Bureau of Mines. 1965. Information Circular 8252: Mercury Potential of the United States.

Table 1. Valley Mine Project Time Frame

Task	Time Frame	Comments
Limited Excavation	Two work days	Includes site restoration.
Close Valley Shaft and other openings if present	Ten work days	Less time if Valley Shaft is the only opening to be closed.
Sample Waste Rock	Two work days	
Waste Rock Lab Analysis	Twenty work days	Routine laboratory turnaround time.
Draft Report of sampling results and contingent project components needed to address mine related features	Ten work days	Time starts upon receipt of laboratory analytical results.
Waste Rock Removal (contingent on detecting elevated metals)	Fifteen work days	Includes mobilization and site restoration
Report documenting project completion	Ten work days	Time starts upon receipt of laboratory analytical results.