

ITEM: 24

SUBJECT: Corona and Twin Peaks Mine – Consideration of a Remediation Plan under Chapter 5.7 of Division 7 of the Water Code

BOARD ACTION: *Approving an Initial Study, Adopting a Mitigated Negative Declaration, and Approving a Remediation Plan for the Corona and Twin Peaks Mine Remediation Project.*

BACKGROUND: The Corona and Twin Peaks Mines are inactive mercury mines located in the East Mayacmas Mercury Mining District of Napa County, about 7 miles northeast of Calistoga. Mining began at the Corona Mine in 1895 and it was worked intermittently until 1943. About 2 miles of underground adits and cross-cuts were developed and about 5,000 flasks of mercury produced. The Twin Peaks Mine was operated intermittently from 1902 until 1943 with about 4,200 feet of underground adits and cross-cuts developed and about 200 flasks of mercury produced. Mercury ore in the form of cinnabar was processed at both sites and treated in furnaces to produce elemental mercury.

Processed ore from the mercury furnaces and waste rock, which are defined as “mining waste” in Water Code section 13050, erodes from the Corona Mine and discharges into Kidd Creek. Mining waste from the Twin Peaks Mine erodes into Bateman Creek. The Corona Drain Tunnel drains acidic water containing elevated iron and nickel from the Corona Mine directly into Kidd Creek. Kidd Creek and Bateman Creek are tributary to James Creek, which is a tributary to Pope Creek that enters Lake Berryessa, a sport fishery and source of drinking water about 13 miles downstream from the Sites.

The remediation project is located on lands owned by the Corona and Twin Peaks Historical Association, LLC. The remediating agency is Tuleyome, Inc., a non-profit volunteer organization focused on protecting water quality. Tuleyome is neither an owner nor an operator of the mine sites and does not have control over the mine sites or any of the adits or tunnels. Tuleyome proposes to conduct the remediation project as a Good Samaritan cleanup project under Water Code sections 13397 through 13398.7. Implementation of the remediation plan would be at the direction of and upon approval by the landowner and the approval of the Central Valley Water Board.

The remediation project consists of further refinement of existing best management practices which include consolidation, revegetation and diversion of runoff away from existing mining waste features to reduce erosion and drainage. As part of the remediation plan, a pilot plant system will also be constructed and operated to evaluate an in-situ chemical dosing treatment method to reduce metals loadings from the Corona Drain Tunnel, which, if successful could become a long-term treatment.

The pilot plant system would include advancing a borehole into the mineralized zones below the Corona Mine, conducting a tracer study by releasing an environmentally benign tracer through the borehole into the mineralized zone to confirm connectivity between the borehole and the

Corona Drain Tunnel, and if successful, later dosing chemicals into the borehole to amend the subsurface chemical environment. The primary dosing chemicals under consideration are sodium hydroxide to neutralize acidic water, and ethanol to stimulate the growth of sulfate-reducing bacteria that generate hydrogen sulfide. Increasing pH and hydrogen sulfide will enhance precipitation and sequestration of nickel and iron in the Corona Drain Tunnel. Metal precipitates inside the tunnel will potentially decrease the volume of drainage water by coating the mineralized zone. Bacterial consumption of ethanol will consume oxygen within the subsurface, generating a reducing environment which could further inhibit the oxidation processes that generate acidity and dissolve metals. If the pilot plant system is successful, a permanent system would be installed in the Corona Drain Tunnel for long-term subsurface chemical dosing of the surface water, at the direction and with the approval of the landowner.

RECOMMENDATIONS: Adopt the Proposed Resolution
 Approve the Initial Study and Adopt the Mitigated Negative Declaration,
 Approve the Remediation Plan.

Mgmt. Review _____
Legal Review PEP

3/4 October 2013
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