Water board monitoring Leviathan Mine activity

By Harold Singer

The Water Board's Leviathan Mine treatment contractor began this year's acid mine drainage (AMD) treatment activities on July 9. This followed the late-June sludge disposal activities for about 600 tons of sludge from the previous year's treatment activities.

Three ponds at the Alpine County site collect AMD from a former mine tunnel (the Adit) and from an underdrain system in the former mine pit. The ponds were constructed in 1984 by the Water Board as part of a pollution abatement project at the site. The ponds capture these two AMD sources that otherwise would discharge to Leviathan Creek.

Significant mining activities that started in about 1952 by the Anaconda Company exposed the pyrite and other sulfide minerals in the rocks at the site to water and air. AMD is formed by the oxidation of these minerals, resulting in the production of hydrogen ions, and ultimately sulfuric acid. This acid solubilizes iron and other metals in the rock.

The resultant AMD is very acidic (typical pH of about 2) and contains arsenic, cadmium, copper, aluminum, nickel, iron, and other metals at concentrations that are deleterious to water quality and that would adversely affect aquatic organisms. The Water Board's capture and treatment of the AMD results in removal of most of the metals, neutralization of the acidity, and discharge of water that meets the established U.S. Environmental Protection Agency's (USEPA) discharge criteria.

As of mid-August, the Water Board's treatment contractor had treated and discharged about 5.8 million gallons of AMD from the ponds. Water Board staff estimate that a total of about

7.5 million gallons of AMD will be treated this year, making it the third highest volume treated since the Water Board began treatment in 1999. The variation in amount of AMD generated in any year is directly proportional to the amount of precipitation.

Higher precipitation years result in greater groundwater flows into the adit and underdrain system. All of the AMD in the ponds is treated during the summer in order to maximize the pond volume available for AMD capture through the fall, winter and spring, when access to the site is limited and treatment is not readily available.

Water Board staff provide oversight of the treatment contractor through the treatment season. Oversight activities include checking plant operations, treatment quality, sludge production, and effluent quality. Effluent discharge monitoring is conducted twice weekly by Water Board staff through sampling and laboratory analysis. Stream monitoring is conducted monthly at numerous sampling sites by Water Board staff. All treatment and monitoring activities are conducted in conformance with the USEPA's orders to the Water Board and Annual Workplans approved by the USEPA.

A couple of significant staffing changes have occurred on the project this past month. Laurie Scribe, an environmental scientist who has worked on the project for ten years, transferred to the TMDL and Basin Planning Unit to expand her Water Board experience.

Scribe managed all the Water Board's monitoring activities, laboratory contracts, and much of the supply and equipment purchasing for the project, as well as providing support for other Leviathan project activities. Her presence on the project will be missed. Scribe has trained Lisa Scoralle, an engineering geologist, to take over the monitoring and related activities.

Also, Chein Kao, the Leviathan Mine Unit supervisor, retired at the end of July, after two and a half years with the Water Board and many years at the Department of Toxic Substances Control. Due to the current state budget situation, we will not be able to fill that supervisory position for some time. Chuck Curtis, division manager for the the Cleanup and Enforcement Division of Lahontan, will be in charge in the interim.

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