CALIFORNIA Water Boards

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San Francisco Bay Regional Water Quality Control Board

Updated Fact Sheet
Remediation and Creek Restoration at Leona Heights Sulfur Mine
McDonell Avenue, Oakland, California
March 2013

Purpose

This Fact Sheet was prepared by staff at the Regional Water Quality Control Board, San Francisco Bay Region ("Water Board") to inform the public of regulatory actions planned to improve environmental quality at a closed mine site. The following describes the nature and location of the site, and the need for the proposed site remediation and restoration project.

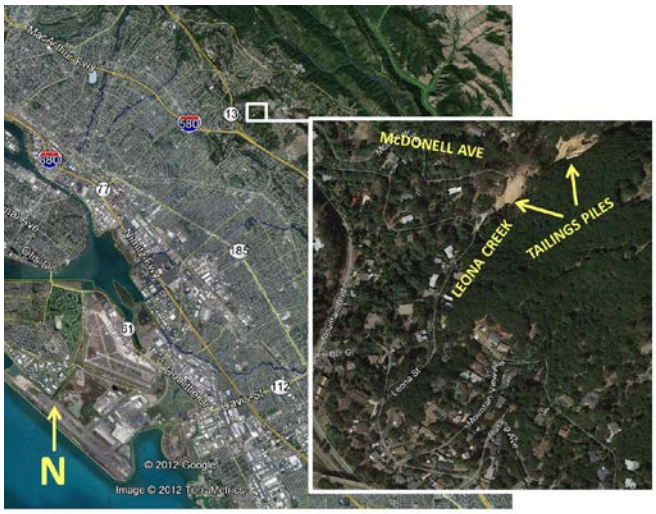
Background & Site History

The Leona Heights Sulfur Mine is a long-closed pyrite mine located in the Oakland Hills between Merritt College and Mills College, about 0.5 mile northeast from the intersection of Highway 13 and Interstate 580. The mine is located at the end of McDonnell Avenue.

The mine was operated from about 1900 through the 1920s to extract pyrite (iron sulfide) from the volcanic bedrock for production of sulfuric acid. A large volume of mine waste rock and tailings (rock remaining after removal of valuable ore) left behind from mine operations partially fills a steep ravine through which a small creek flows. Though no longer in operation, the mine is not abandoned; State laws define abandoned mines as having no assignable responsible party, whereas this mine has several, including the current property owner and other previous owners.

Environmental Problems at the Site

Mine tailings at the site contain elevated concentrations of sulfur and arsenic, as well as metals such as iron, lead, and copper. The tailings piles are more porous than the native bedrock, which allows water to migrate easily through the material. Contact between water and the sulfur-rich tailings dissolves sulfur, forming sulfuric acid. A groundwater-fed creek near the middle of the site is the primary source of water, but the problem is worsened in the rainy season when stormwater runoff flows over and through these tailings piles before entering the creek. Discharge of acidic water from the tailings, known as acid mine drainage, is indicated at the site by the characteristic yellow coloration in the streambed. Creek sampling has shown acidic conditions, with the pH sometimes dropping below 3. The low pH increases the solubility (dissolvability) of metals present in the tailings, resulting in high metals concentrations in the creek. Water quality in the creek is impacted visually and chemically for a considerable distance downstream from the site.



Site Location Map

Remediation and Creek Restoration Plans
The Water Board issued a Cleanup and Abatement Order in 1998 to require the responsible parties address the acid mine drainage and improve water quality at the site. The owner submitted a Corrective Action Plan to minimize contact between water and the tailings pile. The plan includes re-grading and stabilizing the tailings piles, installing sub-drains to convey groundwater along the interface between the tailings and bedrock, and covering the re-graded surface with an impermeable cap and vegetative cover. The plan also includes reconfiguring the surface drainage pattern to route the creek around the perimeter of the capped tailings pile, and restoring a more natural stream channel.

These actions will improve water quality by minimizing infiltration of water into the tailings and reducing the amount of contact between water and sulfur in the tailings piles, thereby reducing the formation of acid.

Project Status
The responsible parties have not initiated construction or obtained the regulatory permits required to complete the work. Water Board staff therefore have drafted an Amendment to the Cleanup and Abatement Order to clearly specify the tasks needed to complete the project. The Amendment specifies requirements for restoration of the creek, as well as monitoring and maintenance activities associated with site remediation and creek restoration. Water Board staff also intend to institute a Time Schedule Order which specifies the completion schedule and imposes maximum penalties for noncompliance.

Public Input and Schedule
The Tentative (Draft) Cleanup and Abatement Order Amendment and associated Tentative Time Schedule Order are included in this package. Water Board staff is accepting written comments on the Tentative Orders until **April 5, 2013**. We will incorporate or address comments prior to a public hearing on **May 8, 2013** in which the San Francisco Bay Regional Water Quality Control Board will consider adoption of the Tentative Orders. The public is welcome at this meeting and will have the opportunity to speak directly to the Board. (Please see the attached transmittal letter for details). If adopted, the site remediation and restoration work is required to be performed in 2013.

Stream Channel Formed in Tailings Pile

Regulatory Information
The Water Board is the lead agency responsible for overseeing remediation at the site. Certain aspects of the project are regulated by the City of Oakland, U.S. Army Corps of Engineers, US Fish and Wildlife, and the California Department of Fish & Wildlife (formerly Fish and Game). If you have questions regarding the site or these Tentative Orders, please contact:

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