Iron Mountain Mine Superfund Site

U.S. Environmental Protection Agency $ Region 9 $ San Francisco, CA $ June 2009

EPA Accelerating Cleanup Efforts at Iron Mountain Mine Site Supporting Local Economy with Recovery Act Funds

EPA is beginning construction of treatment systems, pipelines and a contaminated sediment disposal cell near the Spring Creek Arm of Keswick Reservoir ("Spring Creek Arm"). These structures will support the cleanup of three large contaminated piles of sediments that are located at the bottom of the Spring Creek Arm (see map in Figure 1).

This fact sheet describes the work that EPA intends to perform this summer, and informs about potential noise, traffic and other project related impacts on area residents and local visitors.

Project Overview

The Spring Creek Arm sediments contain high levels of copper and zinc, which settled out of the contaminated storm water runoff from the Iron Mountain Mine Superfund site. The sediment does not have any bottom-dwelling organisms and does not support plant life because the high levels of metals are harmful to aquatic life. The contaminated sediments do not currently affect water quality in Keswick Reservoir or downstream. However, if mobilized, the sediments can make the water highly toxic. This can happen if the sediments are stirred up and carried down stream during a very large storm event (storms of such magnitude occur approximately every 25-50 years).

The goal of the cleanup is to remove these contaminated sediments to protect the down stream Sacramento River ecosystem, a valuable commercial fishery and critical habitat for several endangered species, including the Winter Run Chinook Salmon and Steelhead Trout.

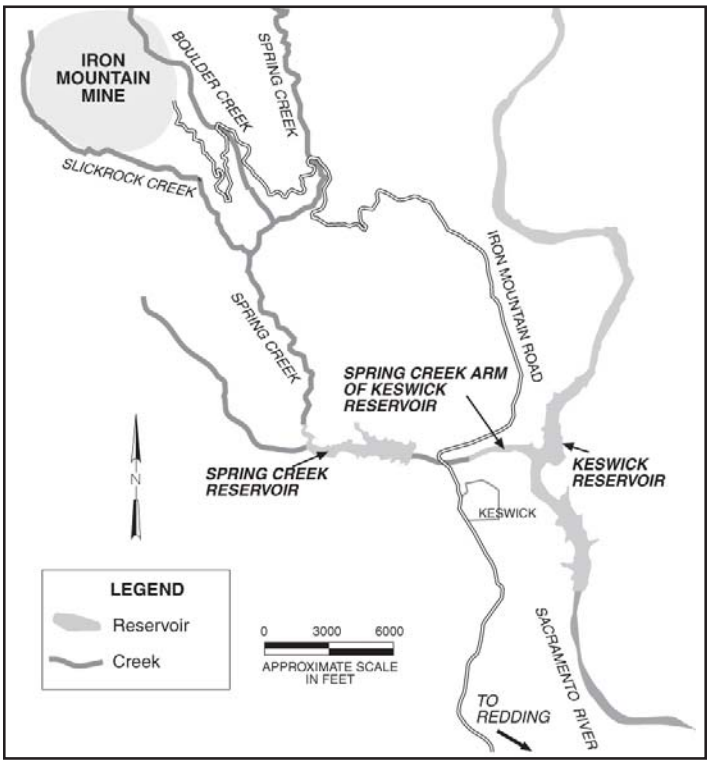

Figure 1: Location of Iron Mountain Mine Superfund Site

Economic benefits of the project

EPA has received $20.7 million in funding from the American Recovery and Reinvestment Act (ARRA). This funding is allowing EPA to accelerate the sediment cleanup project, reducing the expected cleanup project duration from 36 months to 18 months. The ARRA funding will also create additional jobs, employing 200 to 300 workers for the construction of the project support systems between May and September 2009.

Removing the sediments will allow powerhouses at Shasta and Spring Creek dams to produce an additional 200,000 megawatt hours of peak power each year. The additional peak power could be worth up to $6 million per year.

Site History

The Iron Mountain Mine Superfund site (Site) is an inactive iron, silver, gold, copper, zinc and pyrite mine located approximately nine miles northwest of Redding, California. Historic mining activity fractured the mountain, exposing the mine to rain, surface water and oxygen. The main problem at the Site is the discharge of acid mine drainage (AMD) from underground mines and from area wide sources impacted by mining operations. AMD forms when water running through the fractured mountain, or through contaminated mine waste, becomes very acidic and picks up high levels of toxic heavy metals. Before EPA began cleanup work on the Site, the mine was the largest discharger of heavy metals to surface water in the nation. The AMD would flow into the Sacramento River, threatening its water quality and ecosystem. The Sacramento River is the most important salmon spawning ground in California, habitat for several endangered species, and a valuable commercial fishery. It also provides drinking water for more than 70,000 people in northern California.

Iron Mountain Mine was placed on the list of the nation's most hazardous waste sites, known as the Superfund National Priorities List, in September 1983. Since that time EPA has studied the sources of the AMD, and has carried out several emergency response and long-term cleanup actions to reduce the AMD entering the Sacramento River ecosystem. EPA collects AMD from all of the underground mines and the area wide sources in Slickrock Creek, and treats the AMD in a lime neutralization treatment plant. After completing the Slickrock Creek Retention Reservoir in 2004 to collect AMD discharges from the Slickrock Creek watershed for treatment, EPA now prevents 98 percent of metals from the entire mine property from entering the Sacramento River.

The Sediment Cleanup Project

Now that EPA's cleanup activities have been successful at controlling the metal discharges from Iron Mountain Mine, EPA can clean up the Spring Creek Arm contaminated sediments that were deposited during the 50 years prior to EPA's cleanup actions. EPA expects that dredging the contaminated sediments will eliminate the last major threat that contamination from the Iron Mountain Mine poses to human health and the environment.

Construction of the cleanup project infrastructure for treating, transporting and disposing of the contaminated sediments began in May 2009 and will continue through September 2009. The infrastructure consists of a pipeline, three pump stations, a water treatment plant and the disposal cell.

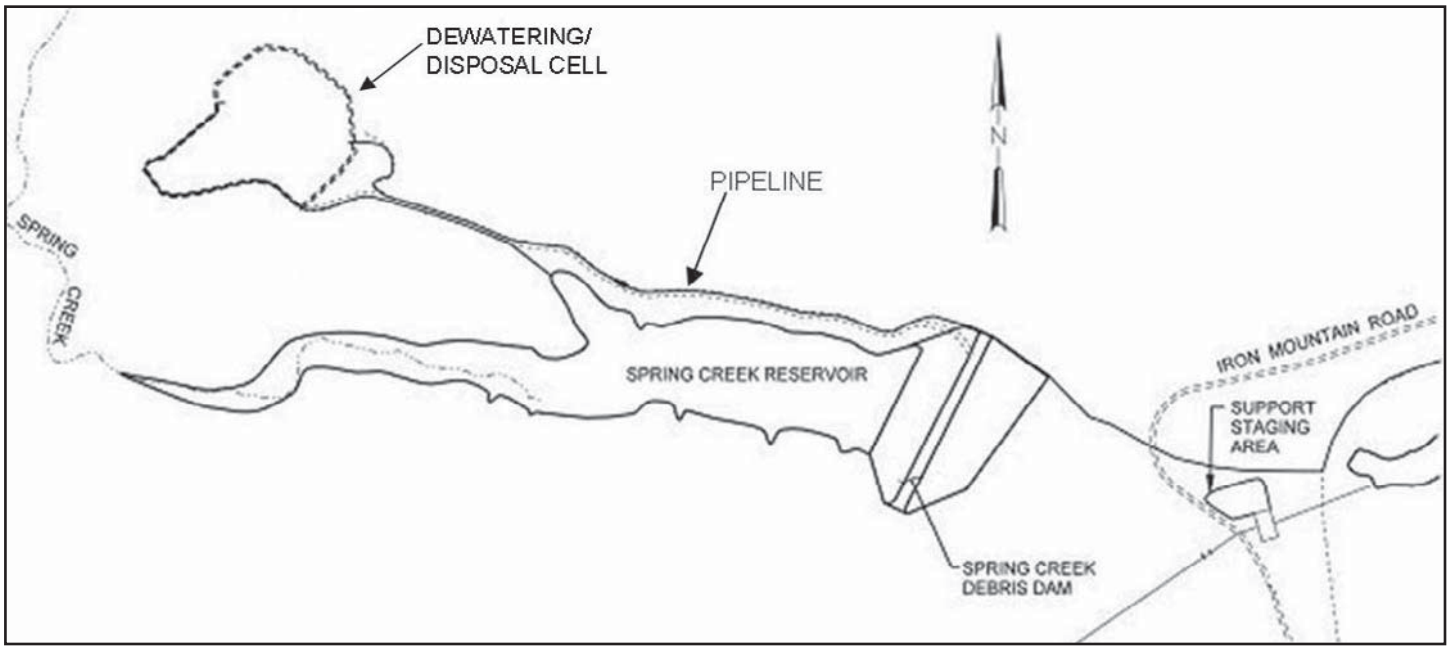

Figure 2: Structures to support the sediment removal

Timeline for work to be conducted

2009								2010				
May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Construction of disposal cell, pumps, pipelines and other support structures				Dredging prep work	Dredging						Dredging, weather permitting	

This summer EPA will select a dredging contractor to conduct the sediment removal operations. The dredging contractor is expected to move its dredging equipment to the Spring Creek Arm project area in September 2009. The contractor will dredge contaminated sediments from the Spring Creek Arm in October-November 2009 and April-May 2010.

Project Phases

On-site Construction

When

May-August 2009

Where

Spring Creek Debris Dam, Spring Creek Power Plant and the Spring Creek Reservoir (see Figure 2).

Details

In May 2009 construction workers began building pipelines, pump stations, treatment plants, and a contaminated sediment disposal cell. These project systems will support the dredging of contaminated sediments presently located within the Spring Creek Arm of Keswick Reservoir.

Community impacts

- Traffic along Iron Mountain Road will increase.
- Residents may hear levels of construction noise that are typically associated with heavy equipment operation. EPA will take measures to minimize the noise.
- The Spring Creek Power House and the surrounding area will have 24-hour-a-day lighting during a portion of the construction.
- EPA will take measures to control dust during construction.

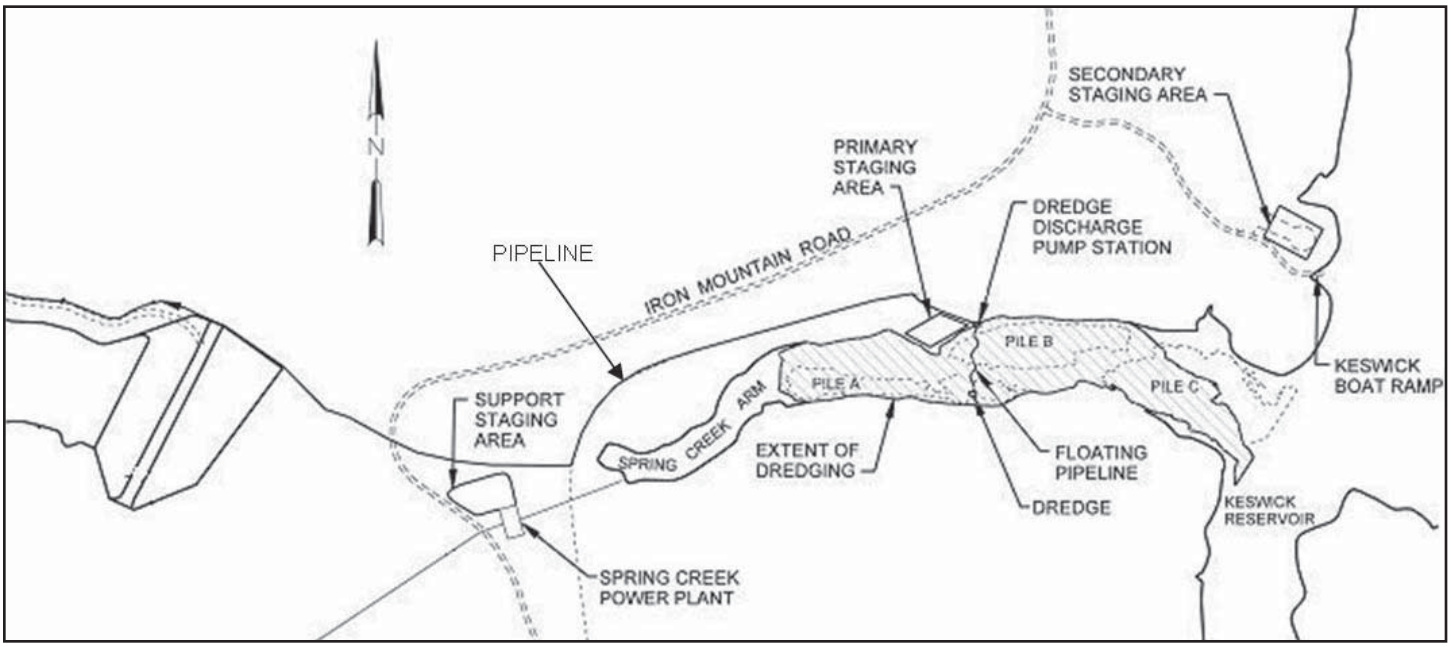

Figure 3: Dredging activities in the Spring Creek Arm

Dredging Preparatory Work

When

September 2009

Where

Within the Spring Creek Arm of Keswick Reservoir (see Figure 3).

Details

EPA contractors will install and test dredging equipment, test the water treatment plant, pipeline and disposal cell and train operations personnel.

Community impacts

The boat ramp at Keswick Reservoir will be closed to the public due to its use as a staging area during startup and dredging.

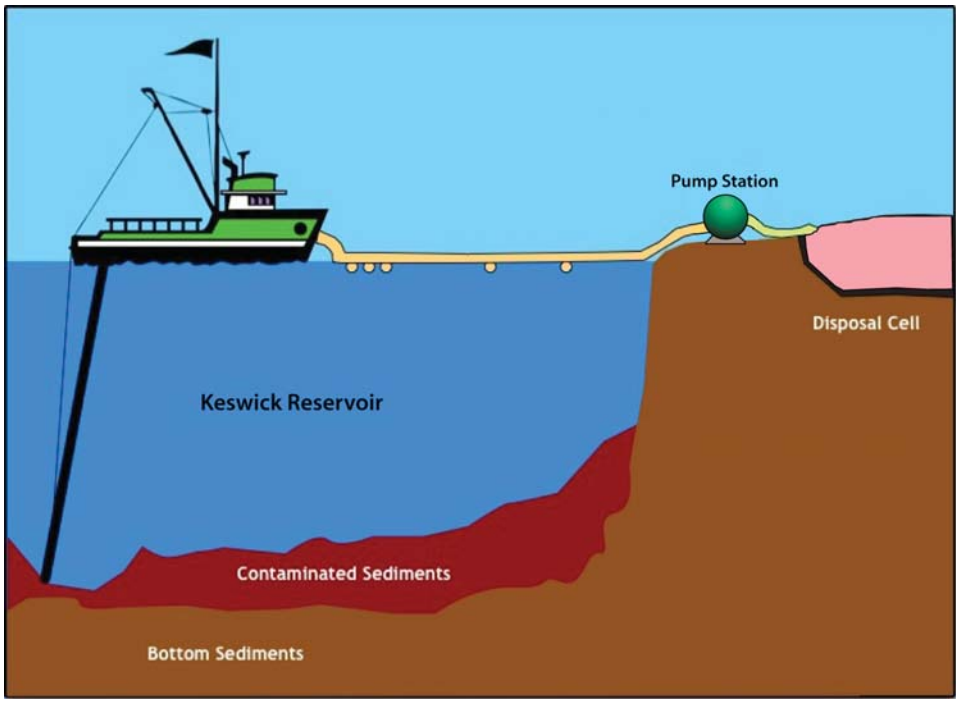

Figure 4: Sediments being dredged

What you may see during dredging

On occasion during the dredging operations, water in the Keswick Reservoir may become more turbid (murky) and turn slightly red in color. The potential red color is due to the stirring up of sediments containing high levels of iron during dredging. This increase in turbidity is not a threat to human health or the environment, and will be significantly less than what typically occurs during heavy winter rains.

Safety precautions during dredging

EPA will carefully control dredging operations, and will use a hydraulic dredge to assure that contaminated sediments are effectively contained and removed for disposal. Hydraulic dredges are used when very efficient containment of dredged sediments is needed.

In addition, the following controls will enable EPA to assure that safe conditions for aquatic wildlife and human health are maintained during sediment dredging operations:

- EPA will use a dredge curtain to contain the contaminated sediments if on occasion they are stirred up.
- EPA will also deploy a water monitoring system in Keswick Reservoir to detect any potential operational problems. The system will consist of devices located downstream of dredging operations that will continuously test for sediments that may become stirred up and suspended in the water during dredging. The monitoring system will warn field staff early, when suspended sediment concentrations are still significantly below toxic levels.

EPA has set water quality targets for several parameters to assure that the sediment cleanup project will not produce conditions that may be toxic to the Keswick Reservoir and Sacramento River ecosystems or to human health. If the monitoring system alerts EPA that a project water quality parameter is not being met, EPA will stop dredging operations and evaluate what needs to be done in order to proceed without further disturbance.

Dredging

When

October-November 2009 and April-May 2010

Where

Within Spring Creek Arm of Keswick Reservoir.

Details

EPA contractors will use a barge-mounted hydraulic dredge to remove the contaminated sediments. The dredge uses a large volume of water to pick up contaminated sediments (much like a vacuum cleaner uses air). The hydraulic dredge will remove contaminated sediments in thin lifts with precision controls. A dredge curtain will contain any sediment that is stirred up by the dredging operations. The contaminated sediments will be pumped from the bottom of the reservoir through a pipeline to a treatment plant and ultimately to a disposal cell located behind Spring Creek Reservoir (see Figure 4). The Spring Creek Power House will be turned off during dredging. California communities will continue to receive a sufficient amount of electricity because other power plants will be able to meet demand during the dredging. Dredging will take place when electricity demand is lowest.

Community impacts

- The Spring Creek Arm of Keswick Reservoir and the surrounding area will have 24-hour-a-day lighting during dredging operations.
- The boat ramp at Keswick Reservoir will be closed to the public.
- See text box on page 4 for more information.

Let us know what you think

If you have questions or concerns about the Iron Mountain Mine Superfund Site, please contact either of the people listed below:

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For more information

Visit EPA's website for this site:
www.epa.gov/region09/ironmountainmine

You can also learn more about the site at the information repositories located at:

Redding Library
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