

**Iron Mountain Mine
Redding, California
Region 9
CAD980498612**

Site Exposure Potential

Iron Mountain Mine is 14.5 km northwest of Redding, California in the foothills of the Trinity Mountains, in the northwest Sacramento Valley (Figure 1). Iron Mountain Mine is the southernmost mine in the West Shasta Mining District, an area of silver, gold, copper, zinc, and iron pyrite mines. Open pit and subterranean mining activities were performed at Iron Mountain Mine from the late 1800s to 1963. Acid mine drainage is produced at the site as water passes through the sulfide ores and discharges through mine portals and seeps. Secondary sources of acid mine drainage result from runoff through and over waste rock piles, tailings piles, and other surface areas. In addition to acid, mine drainage at Iron Mountain contains high concentrations of copper, zinc, and cadmium (CDM 1987).

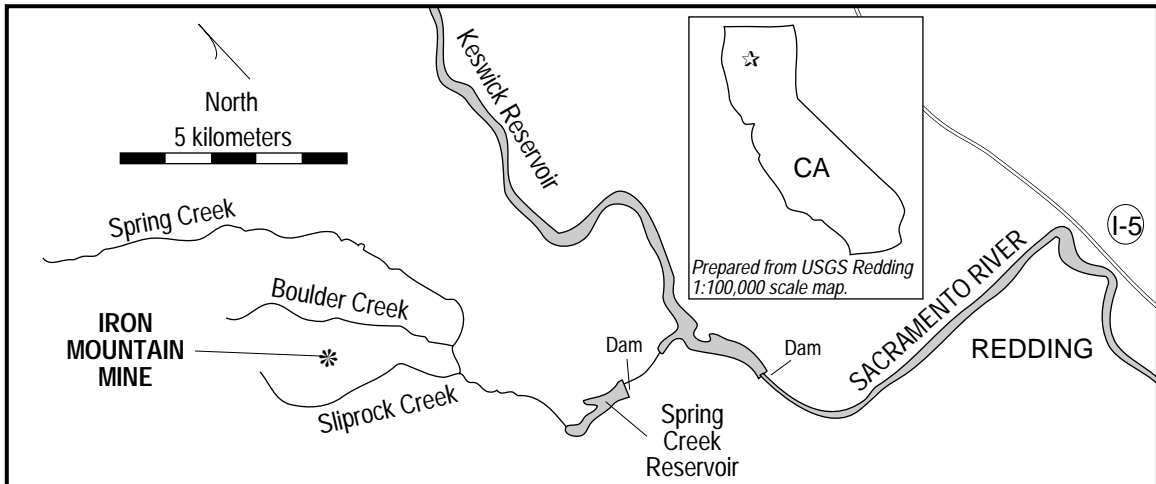


Figure 1. The Iron Mountain Mine site in Redding, California.

The rugged region is steeply sloped, with narrow valleys and long ridges. The site is on the southern and eastern slopes of Iron Mountain and consists of underground and open-pit mines, waste-rock dumps, tailings piles, roads, and several buildings. Boulder Creek and Sliprock Creek form the eastern and western borders of the site. From the site, these streams flow southeast for 3 km before discharging into Spring Creek. Spring Creek flows southeast for 7 km until it enters Spring Creek Reservoir. Immediately below the Spring Creek Dam, the creek enters Keswick Reservoir, an impoundment of the Sacramento River (CDM 1987). The Sacramento River enters San Francisco Bay 360 km below the Keswick Reservoir.

Contaminant migration pathways to NOAA trust resources is primarily via surface water flow to Spring Creek. During periods of heavy winter rains, high volumes of runoff are produced from the Spring Creek watershed. This coincides with high production of acid mine drainage from the mine. The drainage is released through the Spring Creek Reservoir dam into the Keswick Reservoir and the Sacramento River (CDM 1987).

Site-Related Contamination

The contaminants of concern to NOAA are the trace metals copper, cadmium, and zinc, which have been detected in Sliprock Creek, Boulder Creek, and Spring Creek in concentrations that exceeded chronic AWQC by up to 3,700 times. Acidities below chronic AWQC have also been documented in the watershed (Table 1) (EPA 1986a; CDM 1987).

Table 1. Maximum concentrations of selected contaminants at the Iron Mountain Mine site (CDM 1987); AWQC for the protection of freshwater aquatic life (EPA 1986a); concentrations in µg/l.

Contaminant	Sliprock	Boulder	Spring	Spring Creek	Keswick	AWQC	
	Creek	Creek	Creek	Reservoir	Reservoir	Acute	Chronic
cadmium	73	19	1,320	980	5.5	3.9*	1.1*
copper	27,100	3,520	21,000	45,000	95	18*	12*
zinc	18,500	302,000	172,000	126,000	500	120*	110*
pH	2.9	2.25	3.2	3.7	8.5	N/A	6.5-9
* Hardness-dependent (based on 100 mg/l CaCO ₃);				N/A: Not available			

NOAA Trust Habitats and Species in Site Vicinity

The closest aquatic habitat supporting NOAA trust resources is the Sacramento River below the Keswick Dam. Below the dam, the river ranges from 120 to 180 meters wide and averages three meters deep. The substrate consists of gravel, cobble, and bedrock. The water quality of the Sacramento River below the dam is generally good (Helley 1989).

Chinook salmon, steelhead trout, and their habitats are the NOAA trust resources potentially impacted by the Iron Mountain site. Four races of chinook salmon use the Sacramento River and its tributaries: the fall, late fall, winter, and spring runs. Each run is a genetically distinct stock that migrates into the river and reproduces within specific time periods and locations. Salmon at various life stages are found in the river during every month of the year. The spawning population of chinook salmon in the Sacramento River has declined steadily since the 1950s: the population was estimated to be 408,000 fish in 1953, while only 27,000 were estimated to be present in 1983. Numerous fish kills associated with drainage from Iron Mountain Mine have been documented on the Sacramento River (EPA 1986b). In 1969, the most recent fish kill, an estimated 200,000 adult salmon were killed (CDM 1987).

Under the Endangered Species Act of 1973, the NOAA National Marine Fisheries Service is currently reviewing the status of Sacramento River winter-run chinook to determine whether listing it as a threatened species is warranted (CDM 1987). Recreational fishery of winter-run chinook salmon in the Sacramento River below the Keswick Dam is closed to protect the species (Helley 1989).

Restoration of anadromous fish runs above the Keswick Dam has been considered, but was abandoned due to contamination from the Iron Mountain Mine (Helley 1989).

Response Category: Superfund Lead

Current Stage of Site Action: RI/FS activities are continuing at the site. A Record of Decision for interim Remedial Action was signed October 3, 1986; a cap at the site is being implemented and creek diversion is currently under design.

EPA Site Manager

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References

CDM. 1987. Draft Final Report Iron Mountain Mine Endangerment Assessment. December 4, 1987. San Francisco: U.S. Environmental Protection Agency, Region 9.

EPA. 1986a. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-86-001.

EPA. 1986b. Record of Decision - Iron Mountain Mine, Redding, CA. San Francisco: U.S. Environmental Protection Agency, Region 9.

Helley, T., fishery biologist, California Department of Fish and Game, Napa, California, personal communication, January 13, 1989.