

# Inside 'belly of the beast' — Redding's toxic hellhole

Iron Mountain's runoff polluted rivers for century

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REDDING — A strange chemical smell lingered in the stifling heat as a group of environmental scientists groped in the darkness through one of the most polluted places on Earth.

The Iron Mountain Mine, outside of Redding, is a hellish pit where acid water sloshes against your boots, greenish bacterial slime gurgles out of the walls, and stalactites and stalagmites of acid salt, copper and iron jut out like rusty daggers.

"You don't want to splash this stuff," said Rick Sugarek, the U.S. Environmental Protection Agency's project manager for the Iron Mountain Su-



Jared Blumenfeld, regional EPA administrator, walks out onto toxic, rust-colored soil from the abandoned copper mine.

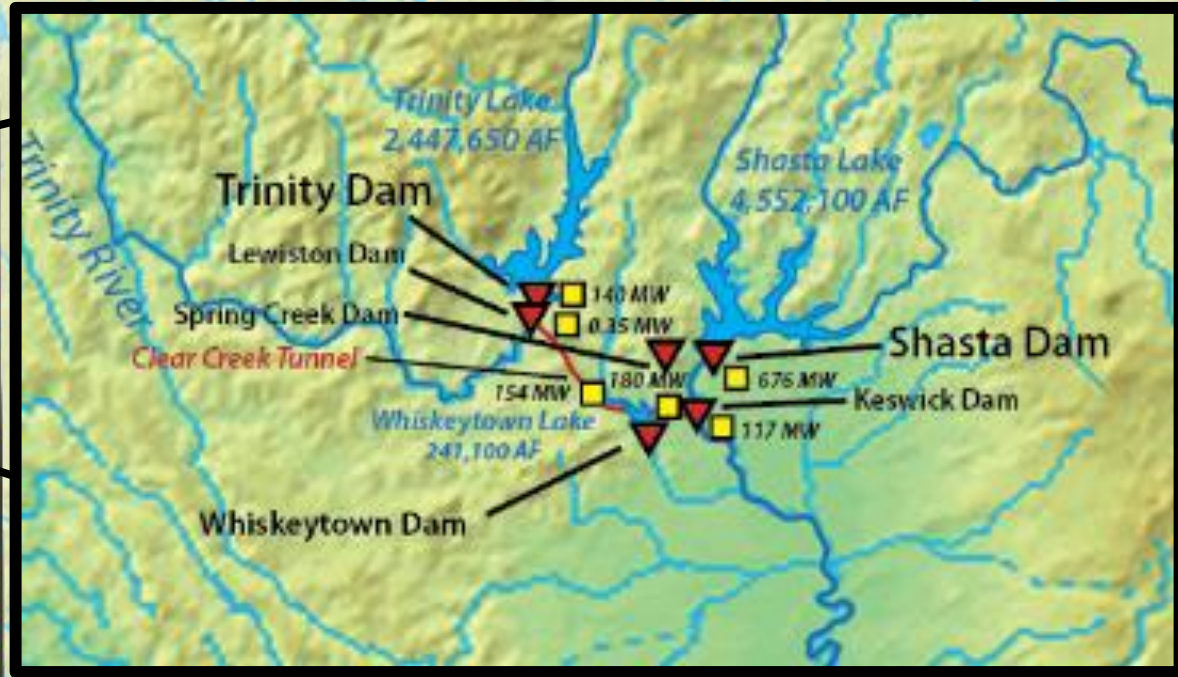
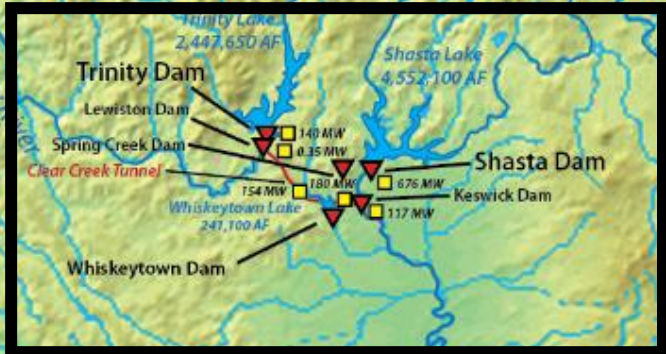
perfund site. "This is the concentrated stuff."

The water — so acidic it could dissolve fabrics and burn skin — lapped against the rubber boots of the scientists, toxic-substance specialists,

geologists and EPA officials who slopped in the dark toward the source of the toxic stew that created what experts describe as the "world's worst water."

*Toxic continues on A15*

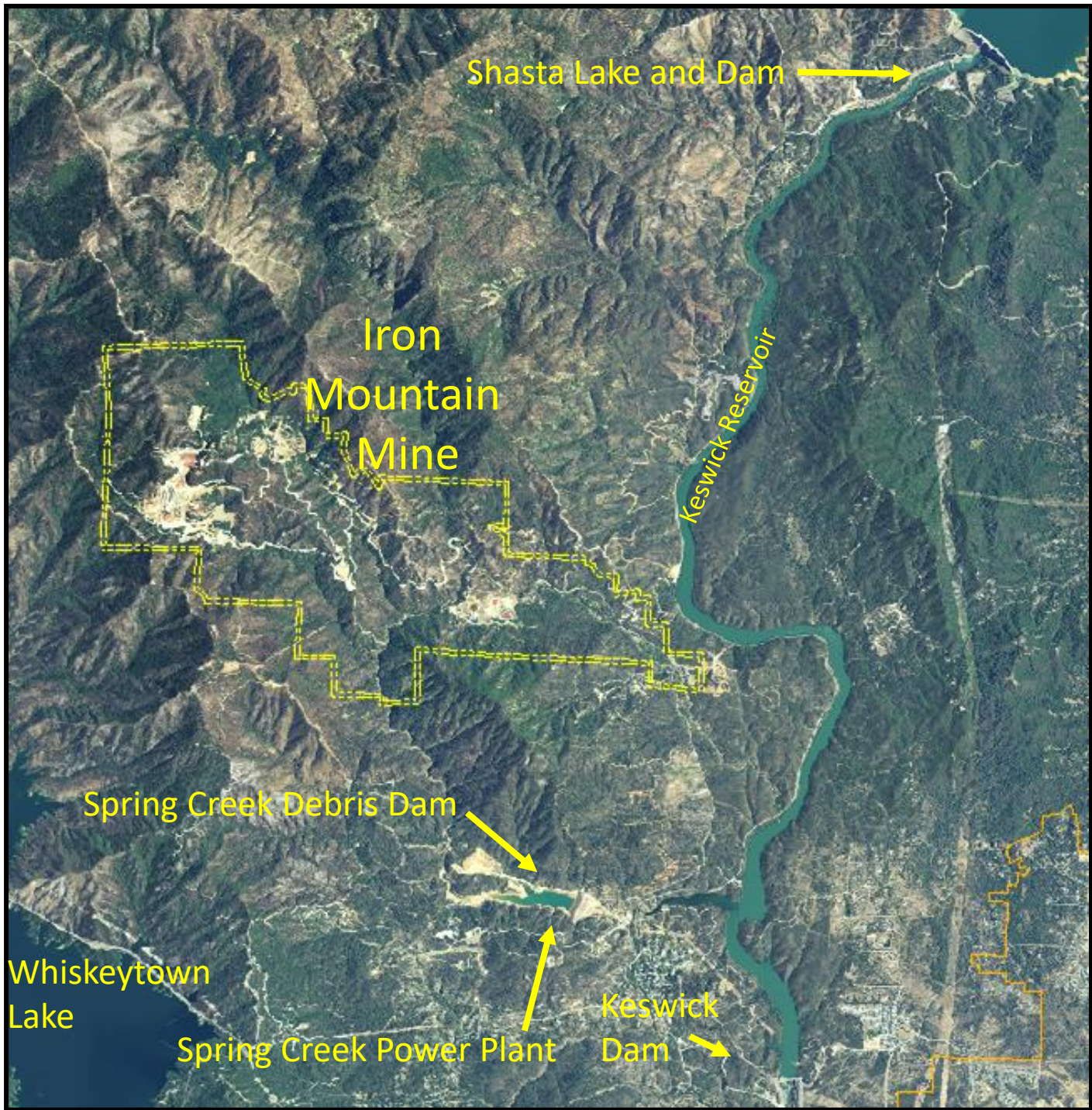




**Abbreviations:**  
MW = Megawatts  
AF = Acre-feet



# Location

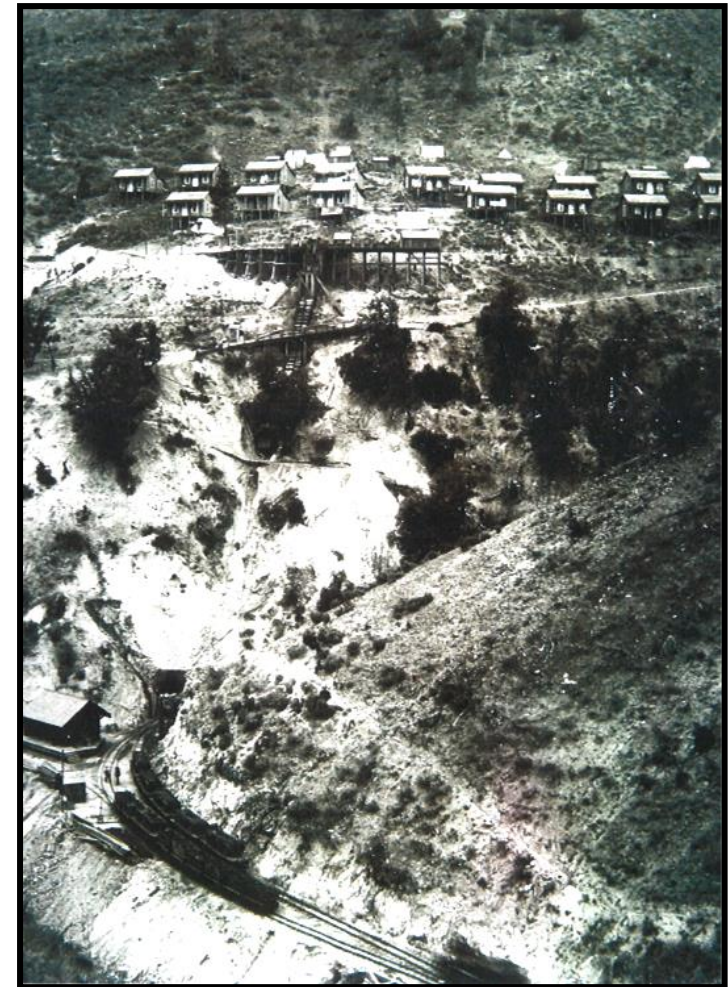


City of Redding



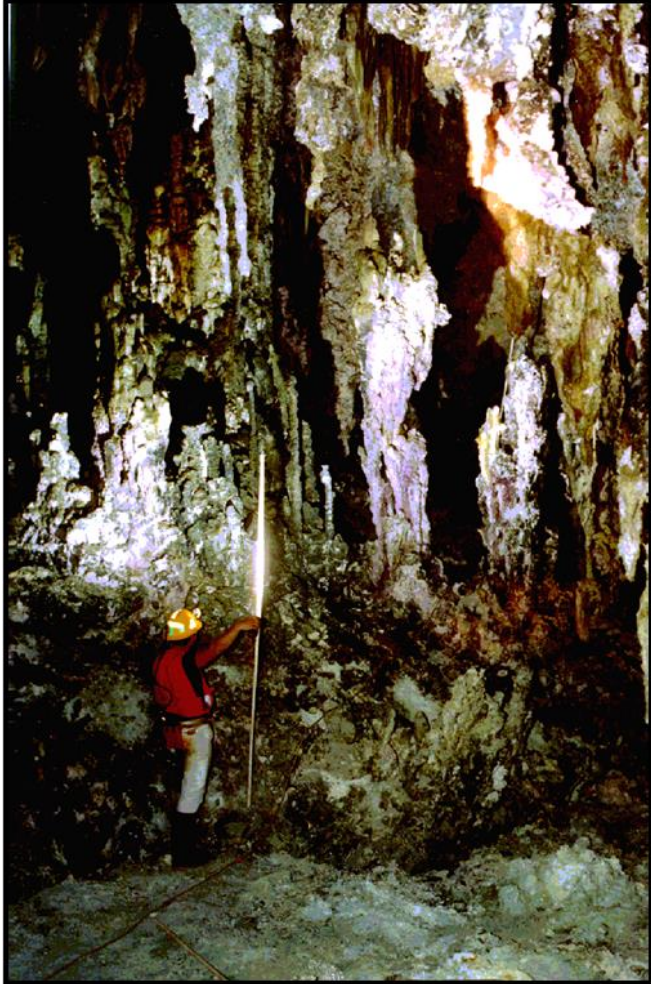
# History

1860's	Ore found
1880's	Mining started at a large scale
1898 - 1904	Hillside denuding from smelters became a legal issue
1905	Keswick smelter shut down
1929-1942	Gossan open pit mining
1930's	Copper cementation plant built
1945	Shasta Dam completed
1950	Keswick Dam completed
1955-1962	Brick Flat Pit open pit mining
1963	All mining stopped
1963	Spring Creek Debris Dam completed
1964	Spring Creek Power Plant starts
1976	Water Board issues order abate SW pollution
1983	IMM on Superfund List
1989	AMD collection, treatment started, onsite capping, adit rehab, tailings removed
1994	Minnesota Flats Treatment Plant started SCDD Sizing Study completed
2004	Slickrock Creek Retention Reservoir online
2009	IMM Surface Water Quality Model updated
2010	SCAKR Dredging Project completed





# Acid Mine Drainage (AMD)



Richmond Ore Body



Impacts to Spring Creek  
(pH = 3)



# Acid Mine Drainage entering Surface Water

Spring Creek entering Keswick Reservoir





## Impact on the Environment

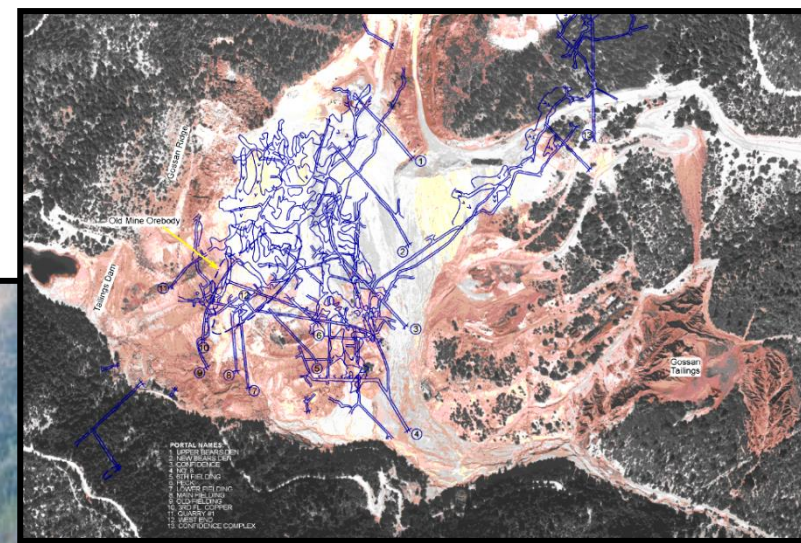
- Largest source of surface water pollution in US. Historic discharges into Sacramento River:
  - Approximately 6 tons metals per day
- 30 documented large-scale fish kills
  - Habitat for steelhead and four runs of Chinook Salmon (including endangered Winter Run Chinook Salmon)
- Site listed on National Priorities List (Superfund) in 1983 to address ecological risk

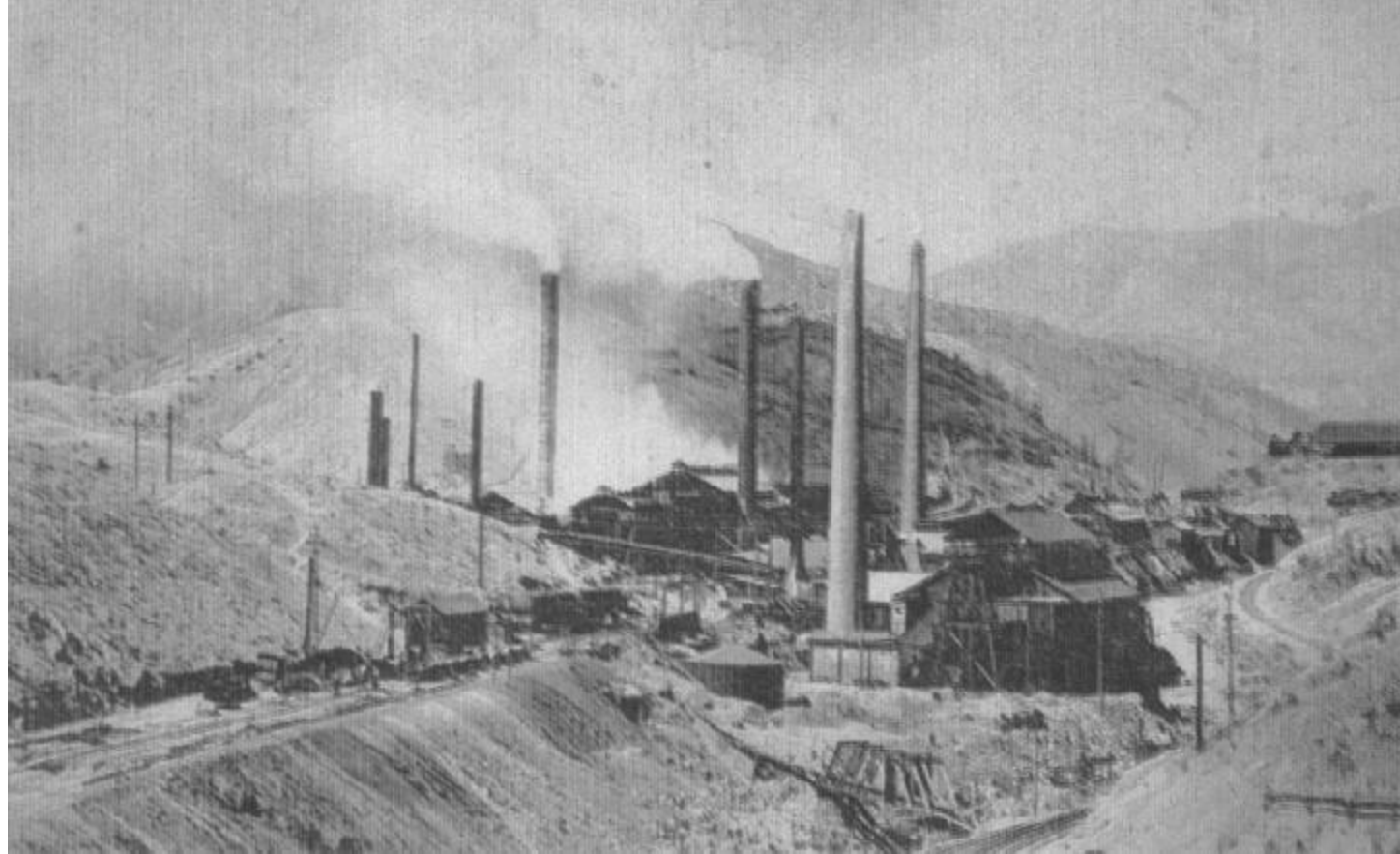




# Main Mine Area of Iron Mountain Mine

Adits in the  
mine workings







# Adit Rehab and AMD Collection

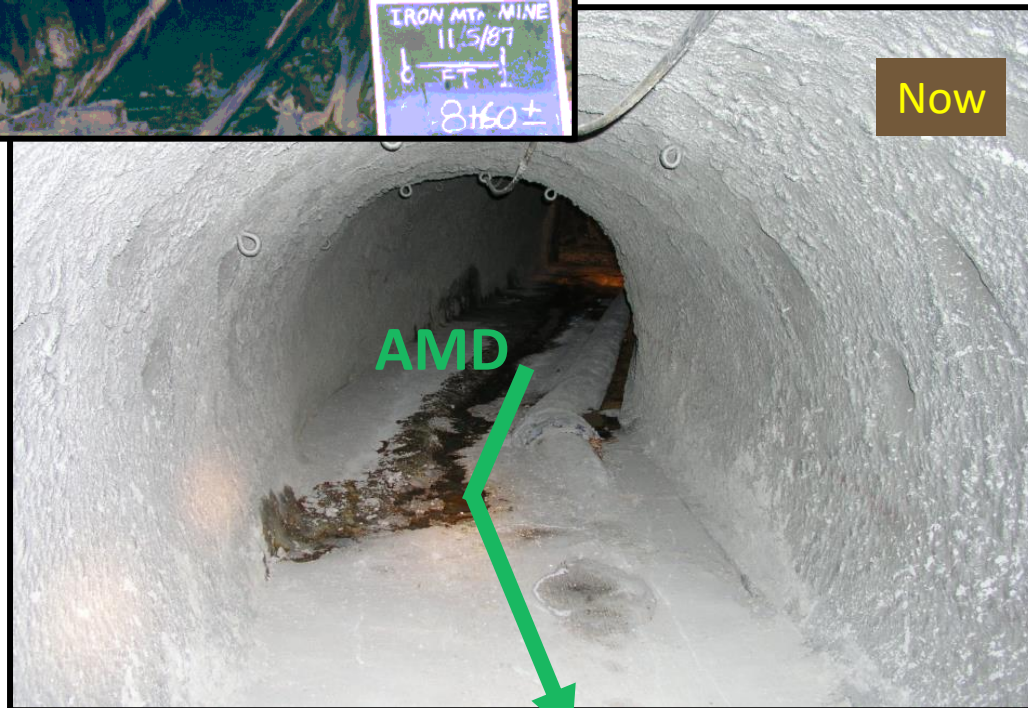
Then



Then



Now



Now





# AMD Collection

2004 Slickrock Creek  
Retention Reservoir

AMD

Photo:  
EPA Superfund  
25<sup>th</sup>  
Anniversary  
Winner

Minnesota Flats Treatment Plant  
Iron Mountain Mine  
Superfund 25th Anniversary Photo Project

Project:  
2006 Grand  
Award Winner  
American  
Council of  
Engineering  
Companies





# AMD Treatment and Disposal

Minnesota Flats Treatment Plant



# My Tenure as the Project Manager

- Regulatory Agreement with Responsible Parties
- American International Group (AIG) Involvement



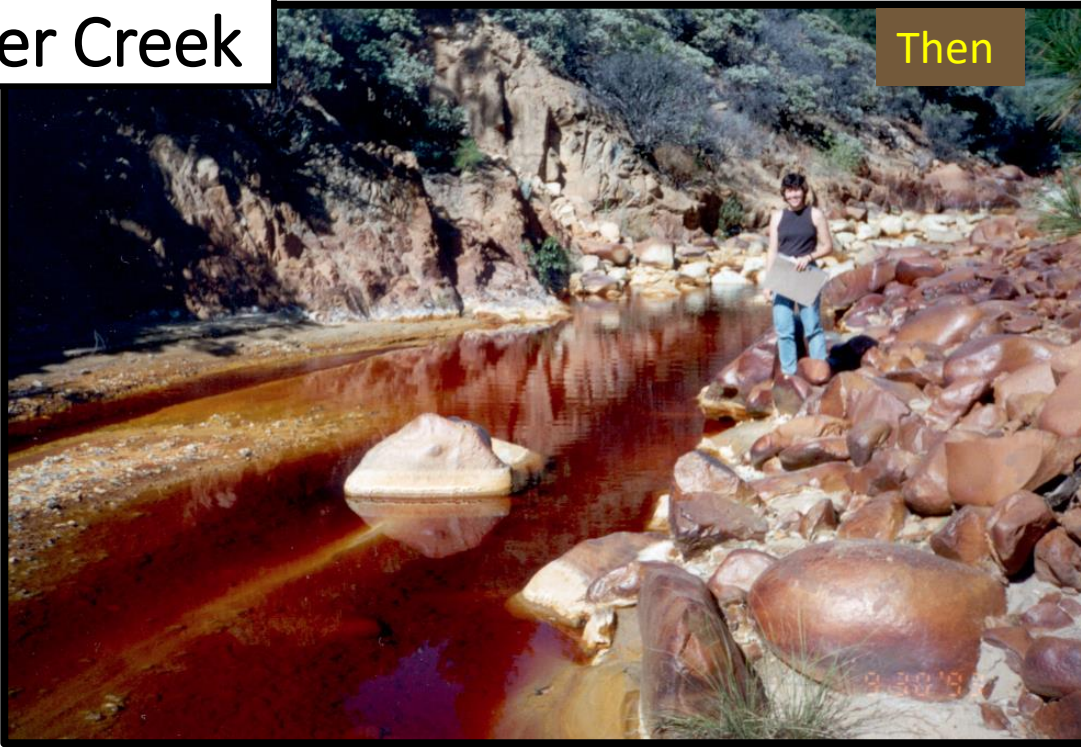
- Property Owner
- Staff Stories





# Boulder Creek

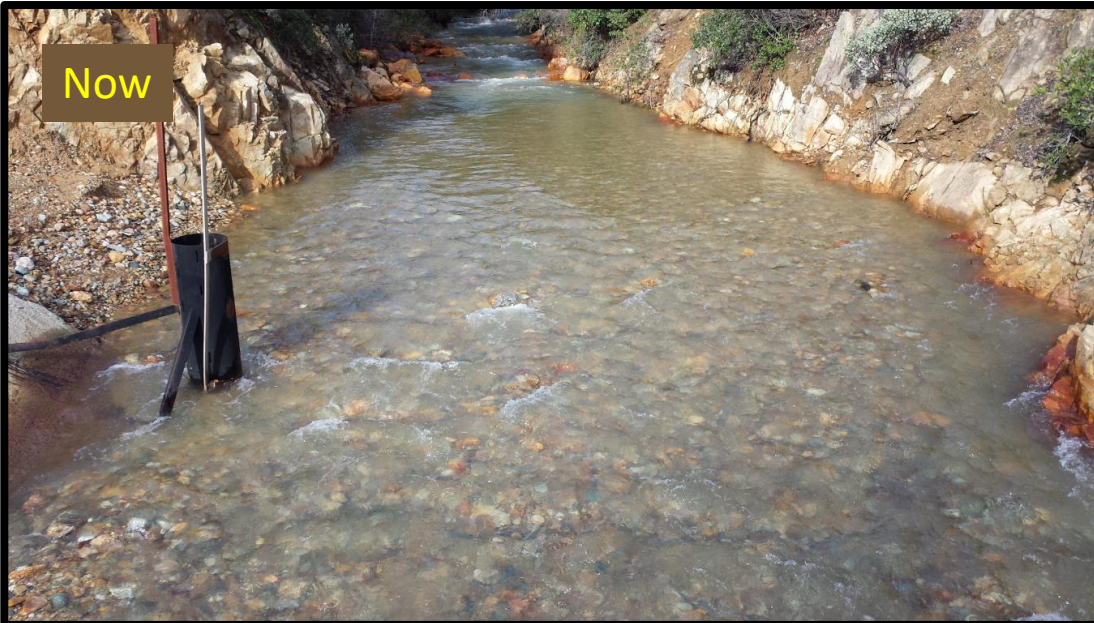
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Now



Now



Now

# Slickrock Creek

