Weathering processes, oxide mineralogy, and trace-element adsorption at Davis Pyrite Mine, Rowe, Massachusetts

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Davis Mine
Pyrite extracted from 1886 until 1910
Collapsed because of poor mining practices

Davis Mine in northwestern Massachusetts was once the largest operating pyrite mine in the state. It is located in the Berkshire Mountains of western Massachusetts.

Geology of Davis Mine
• Sulfide mineralization primarily Fe-Cu-Zn, low Pb and As.
• Scattered sulfide ore bodies along NE-SW trend.
• Related to volcanic island arc in Iapetus Ocean.

Regardless of the distance from the mine shaft, the major iron mineral found in the effluent stream sediment is goethite.

Some Conclusions
• Despite the range of colors seen in the surface sediment samples, the overall mineralogy shows little variation.
• Goethite is the persistent and dominant mineral species throughout the course of the effluent stream.
• Upstream, sediment size is very fine grained; downstream, there is a coarsening of grains with an influx of silicate minerals due to increased erosion of adjacent tailing piles.
• Mineral species seen in subsurface sediment analyses, such as schwertmannite or jarosite, are generally absent in the stream sediments.
• The color differences seen may be a function of variations in the degree of hydration experienced by the sediment.
• Any change in the deposition or adsorption of metal cations does not appear to be a function of changes in the oxide mineralogy.

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