

PRECIPITATING IRON MINERALS AT LOW PH: A NEW CONSIDERATION IN PASSIVE TECHNOLOGY¹

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Abstract: Low-pH (≤ 3.5) drainage with dissolved ferrous and ferric iron is often unfeasible to treat with organic media due to required space, costs, and maintenance of passive components that remove iron solids at circumneutral pH. Precipitation of minerals at low pH, such as, jarosite [$\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6$] in solid solution with hydronium jarosite [$(\text{H}_3\text{O})\text{Fe}_3(\text{SO}_4)_2(\text{OH})_6$], not only decreases iron and sulfate in solution but also generates less acidity and sludge (by volume) when compared to amorphous solids formed at circumneutral pH. Components designed for alkalinity generation and settling of solids, to be installed after precipitation of these minerals, therefore, require less space and maintenance.

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