

REMOVAL OF MANGANESE AND ZINC FROM MINING INFLUENCED WATERS¹

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Abstract: The water from the Palmerton Zinc Superfund Site averages 57 ppm manganese and 328 ppm zinc. Treatment objectives were to reduce the total concentration to below 1 ppm manganese and 1 ppm zinc using a calcium co-precipitation process. A bench-scale pulsed limestone bed reactor was used to saturate the mine water with calcium carbonate. Various process methods were tested in an attempt to precipitate the calcium carbonate and metals from the effluent of the pulsed limestone bed reactor. These methods included air stripping, using a limestone bed, and using a limestone channel. The most promising method for removing the metals from the water was the limestone channel, which reduced the concentrations to 33 ppm manganese and 7 ppm zinc. Using the same system on a synthetic spring water of circumneutral pH and concentrations of Mn and Zn of 50 mg/L, reduced the concentration of Mn and Zn to 2.0 and 1.0 mg/L respectively.

Additional Key Words: Manganese, zinc, pulsed limestone bed reactor, limestone channel

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