

ASSESSMENT OF MICROBIAL ACTIVITY IN FIELD SITE SULFATE REDUCING BIOREACTORS¹

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Abstract: The purpose of this study is to evaluate the microbial activity in field site sulfate reducing bioreactors. Three separate systems were investigated, two of which are passive treatment systems located in 10-mile Creek Basin, Montana, which are designated Peerless Jenny King, Luttrell. The third system is the Leviathan bioreactor, which is an ethanol- fed, flow- through sulfate reducing reactor located near Markleeville, California. Batch cultures, or bioassays, were used to determine the effect of substrate addition, and microbial activity was assessed with the use of the measurement of overall microbial gas production , identification of the gas produced through GC analysis, and quantification of the organic acids produced as a result of microbial metabolism by HPLC. The microbial activity of the bioreactor samples was found vary with bioreactor design and spatial location.

Additional Key Words: microbial assessment, bioreactors, acid rock drainage

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