Mine Waste Technology Program
Cortez Gold Mine Project in Nevada

The Mine Waste Technology Program (MWTP) is funded by the U.S. Environmental Protection Agency's (EPA) National Risk Management Research Laboratory and jointly administered by the EPA and the U.S. Department of Energy. Projects performed by MSE Technology Applications, Inc. support the Program's mission. In accomplishing this mission, the Program conducts technology demonstrations at a pilot-scale in the field. MSE is currently implementing 18 projects under the Program.

The mission of the Mine Waste Technology Program is to provide sustainable engineering solutions to national environmental issues resulting from the past practices of mining and smelting metallic ores.

Mine Waste Technology Program, Project 46 – *Cyanide Heap Biological Detoxification, Phase II*, is being implemented at the Cortez Gold Mine in northeastern Nevada using the Gold Acres Heap. This project is a collaborative effort with Placer Dome Inc., who has provided financial support and in-kind services. Placer Dome, Inc., an international mining company, owns 60% of the Cortez Gold Mine through a joint venture with Kennecott Exploration Ltd.

The project is the second phase of a large-scale column study, which focused on biological detoxification of cyanide heap material and was conducted at McClelland Laboratories in Sparks, Nevada. During the first phase of the project several biological technologies were compared to the conventional method of heap detoxification. The conventional method of detoxification consists of rinsing the spent heap leach pad with fresh or treated water until regulatory standards for the solids and heap rinse solutions are achieved. Several pore volumes of water are typically required to detoxify the heap, which lengthens the treatment process. In addition, metals continue to be present in the heap effluent after cyanide detoxification, which can prevent heap closure. Consequently, large quantities of solution are generated which require treatment increasing the overall treatment costs. Biological heap detoxification is a process that uses bacteria to detoxify a spent heap leach pad by destroying cyanide, nitrates and sulfates and removing metals.

Aerial view of Gold Acres Heap Leach Pad showing test area

Whitlock and Associates developed the biological technology chosen for this project. The demonstration was initiated in September 2004, and monitoring of the technology will continue through September 2005. During the Phase I column study, Whitlock's technology was proven to decrease cyanide and other constituents to below regulatory limits in a shorter time than other biological technologies. By decreasing the cyanide and other constituents in the heap in a shorter time frame, biological detoxification will become an attractive alternative for the EPA and the mining industry. This project has the potential to provide a cost effective, environmentally compatible technology for use at sites where heaps have been abandoned and the EPA is now responsible for site clean up.

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More information on the Mine Waste Technology Program is available on the EPA website: www.epa.gov/ORD/NRMRL/std/mtb/mwtphome.html