

# ACID MINE DRAINAGE MITIGATION AT RIACHO DOS MACHADOS MINE, MINAS GERAIS, BRAZIL<sup>1</sup>

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**Abstract:** Riacho dos Machados, a CVRD open pit mine located in Minas Gerais state, Brazil, produced 4825kg of gold from 1989 to 1997. Gold was extracted from the oxide ore by heap leaching. In the last year of operation, some transition ore containing sulfides minerals (pyrite and arsenopyrite) was mined and stockpiled in the heap to ultimate gold recovery. In 1999, AMD was observed in the last heap leached ore and part of its reclaimed vegetation was damaged. Acid drainage also appeared in the material removed from a shaft opened for geological research on the sulfide ore. Knight Piesold was contracted in order to provide conceptual designs to mitigate or prevent acid mine drainage. Several activities were defined, as regrading the waste piles, relocating all sulfide waste, encapsulating it with 1.5m of clay material and implementing an extent drainage system to have the pit lake filled as fast as possible, what was very successful at increasing water pH. According to the last monitoring results, the system is under control, except for the remaining 5000m<sup>3</sup> water in the shaft (~1mg/L As).

**Additional Key Words:** gold mine, heap leach, acid drainage, arsenopyrite

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