

Solution Mining Research Institute; Fall 2004 Technical Meeting  
Berlin, Germany

**THE HISTORY AND PERFORMANCE OF VERTICAL WELL  
SOLUTION MINING OF NAHCOLITE (NaHCO<sub>3</sub>) IN  
THE PICEANCE BASIN, NORTHWESTERN COLORADO, USA**

Max Ramey

American Soda, L.L.P., Rifle, Colorado, USA

Michael Hardy

Agapito Associates, Inc., Grand Junction, Colorado, USA

**Abstract**

American Soda, L.L.P. (American Soda), developed a solution mine plan for recovery of nahcolite from the vast resource in the Piceance Creek Basin using vertical wells and injection of high-temperature, pressurized water. The wellfield included 26 solution mining wells, which provided a nahcolite brine to the processing facility. The American Soda solution mining method utilizes dual, 7-inch casings cemented within a single, 19-inch borehole with 4½-inch casings being utilized as tubings within each 7-inch casing. The method injects 350°–420°F water to thermo-mechanically fracture the nahcolitic oil shale and dissolve the nahcolite. A nitrogen gas cap is maintained on the top of the solution mining cavity to limit vertical growth. The solution cavities have a productive height of approximately 500 ft. During the 3.75 years of commercial operation, American Soda mined approximately 2.6 millions tons of nahcolite with the wells producing between 75,000–150,000 tons each with cavern diameters of up to 200 ft.

©2022 – Solution Mining Institute  
Full Paper is Available in the  
SMRI  
Library([www.solutionmining.org](http://www.solutionmining.org))