Expect...

# Wharf Mine, SD

*AVK S891 PE Wafer Type Butterfly Valves*

COEUR WHARF®

AVK S891 PE WAFER TYPE BUTTERFLY VALVES

PICTURES

## AVK S891 PE Wafer Type Butterfly Valves

by Mikel Jaimerena

### The Project

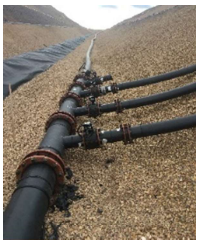
The Wharf mine is an open pit, heap leach operation located in the Northern Black Hills of South Dakota, acquired by Coeur in February 2015. The challenges they face include long periods of freezing temperatures, rugged terrain, and unique needs for temporary piping solutions for their operations. The current set of projects was approved and successfully installed throughout 2017.

### The specifications

Because of its superior resistance to caustic chemicals, HDPE pipe is used to transport cyanide through the mine. Another main requirement is that the whole system must be able to be disassembled, once the job has been finalized in one area, and reassembled in a new area. For these two reasons, a wafer-type, HDPE bodied valve and HDPE flange adapters with carbon steel backing rings, were selected instead of a metal valve or fusible HDPE valve. The purpose of these valves in the pipeline is to control the flow and isolate/shut-off sections of the system with zero leakage allowed.

Larger (up to 12") Series 891 Butterfly Valves are opened completely once the solution is flowing through the line. If the line is not being used, the valve is kept in the closed position. Smaller, branch valves (4") are operated on a weekly basis to facilitate planned maintenance on the system.

The pressure used along the pipeline is maximum of 200 PSI, required to pump the cyanide fluid uphill.



The Series 891 valves can withstand an extreme range in temperature, which is necessary as the pipeline is installed above ground and temperatures range from -20˚F in winter to 100˚F in summer.

***"We like this valve better over other solutions we tried in the past because the disc on this valve opens up completely inside so there is no need to bevel the HDPE flanges."***

Dave Emery – Process Project General Foreman at Coeur Wharf

## Heap Leaching

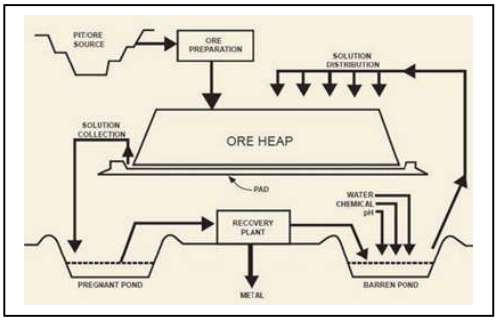
Heap leaching (HL) is the process to extract precious metals like gold, silver, copper, and uranium from their ore by placing them on a pad (a base) in a heap and sprinkling a leaching solvent, such as cyanide or acids, over the heap. This process dissolves the metals, which collect at the bottom of the pad and are moved on for further processing. This methodology is mostly used for low-grade ores, and the basic processing steps involve crushing and sometime grinding.

HL is a flexible and constantly developing mineral processing and extraction technology that is gaining popularity and recognition for existing miners and developers. HL has solid advantages over traditional metallurgical methods, where economically feasible options have become limited.

The mined ore is crushed into tiny chunks and heaped to an impermeable plastic or clay lined leach pad, where it may be irrigated with a leach solution to dissolve the valuable metals. Sprinklers, or frequently drip irrigation, are used to minimize evaporation. The solution then percolates through the heap and leaches out the precious metal. This can take many weeks. The leach solution containing the dissolved metals is then accumulated.

The stages for heap leaching can be described as:

1. Ground Preparation and pad construction: Here the soil on a slightly sloping ground is compacted and covered by an impermeable pad (can be made of plastic).
2. Ore stacking: Then the crushed ore is stacked in the form of big heaps. The number of fines is decreased as low as possible to improve permeability.
3. Then a leaching agent such as cyanide or acid is sprayed over the heap.
4. As the reagent passes through the heap; the valuable metals get dissolved in it.
5. The solution containing metal is drained from the heap and collected in a pond and the solution is sent for subsequent process for metal recovery.




*Zyle, D. J.A., et al. "Introduction to Evaluation, Design and Operation of Precious Metal Heap Leaching Projects," pp. 122-145, (1988).*