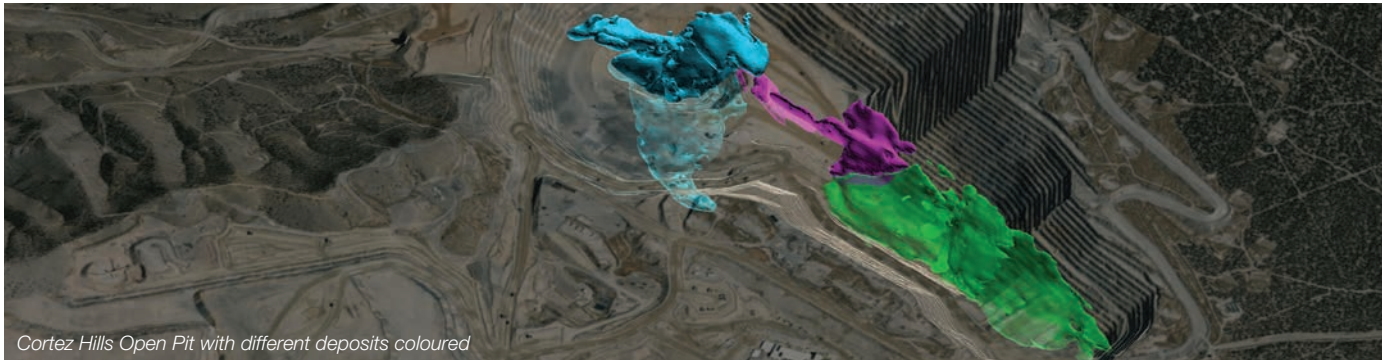


Grade control in open pit gold mine

Maptek™ Vulcan™ is used for grade control in a bulk mineable Carlin-type gold system at Cortez Hills Mine in Nevada.



Cortez Hills Open Pit with different deposits coloured

Located on the Battle Mountain-Eureka Trend, the Cortez Hills Mine (operated by Barrick Gold) is a uniquely mineralised Carlin-type deposit. Carlin-type deposits are sediment hosted, disseminated gold systems associated with arsenic and thallium. Typically, these structurally complex deposits are located along range-front faults and are silicified; alteration at Cortez is decalcification.

Cortez Hills has several related, but geometrically distinct orebodies being mined via both open pit and underground operations. Within the open pit operation, there are three distinct areas of mineralisation in one pit; continuous mining occurs across the deposit boundaries. Each deposit has its own structural orientation (attitude) and thus requires specific estimation parameters for ore routing.

Cortez is a historic silver mining district dating back to the 1860s. Gold mining in the district began in the 1960s on a small scale and in the 1990s moved into large scale, bulk gold mining with Placer Dome. Barrick acquired Cortez in 2006.

Since around 2009 Cortez Hills has used Maptek™ Vulcan™ for daily grade control processes. In 2016 the Ore Control group upgraded from Vulcan 9 to Vulcan 10 and began seeing immediate results in block outs.

Cortez Hills Open Pit engineers and geologists import blasthole samples from the acQuire database interface into Vulcan by blast pattern name. Each pattern has a unique ID and contains around 75-120 off-set drillholes. Once imported, blastholes are compared to a preset grade control classification using a grade control scheme file.

The loaded blastholes are colour coded into pre-designated bins based on grade and other criteria. The blasthole grades are then estimated into a block model which ultimately helps determine final block outs for mining.

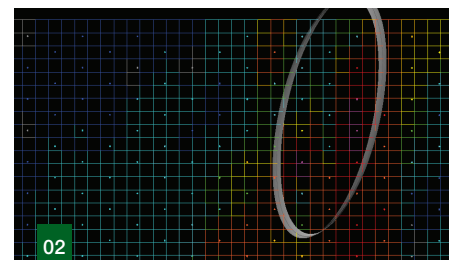
Cortez Hills Open Pit contains three deposits in one pit, each with a unique search orientation. Blasthole samples falling within a specific region are flagged by the ore reserve model and then estimated along the pre-defined attitude for that region.

These models allow for geologically precise ore cuts used for routing material into grade bins.

The ability to use multiple structural orientations in a single pit to determine grade delineation is vital to limiting dilution and maximising ore potential.



01



02

01 Ellipsoids represent search orientations for each deposit

02 Plan view of grade control model where each dot represents a drillhole and each block represents destination based on search orientation

Mine to mill reconciliations have improved since the implementation of distinct regions. Cortez Hills is looking forward to continuing to improve reconciliations with the upcoming grade control optimiser currently being developed by Maptek.

Thanks to
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Cortez Hills Open Pit