4.8.2.2a. GROUND WATER INFLOW, 2023 - 2027.

DERRINGER PIT

The QR seams were mined out in Derringer pit during the 1998-2002 permit term. Average mine inflows to Derringer pit, including the D pit well dewatering which continued into early 1998, varied from just over 1 to approximately 50 gpm during the period from 1997 through 2001. Additional dewatering needs in this pit are not anticipated during the 2023 – 2027 term.

ASHMORE AND HAWKEN PITS

Average mine drainage from the Ashmore pit varied from 0 to approximately 20 gpm from 1997-present. Similar discharge rates are anticipated for the current permit term (2023 – 2027). Hawken pit dewatering effectively ceased in 1997 with backfilling in this pit completed during the 1998 – 2002 permit term.

FLINTLOCK PIT

Groundwater inflows to Flintlock pit including dewatering well volumes as well as pit pumping volumes varied from 10 to approximately 30 gpm on average from 1997 to 2001. Dewatering well operations in F pit were discontinued in 1998. Flintlock Pit was completed and backfilled by the fall of 2012. With the addition of the N Pit Mining Area, directly north of the historic F pit spoils, additional dewatering well installations were placed in the north end spoils, directly south of the N Pit south end-wall area, to assist in ground control for this pit. Well pumping volumes have been minimal and are expected to remain such during the current permit term.

KIMBER AND LANCASTER PIT

Kimber Pit has been fully developed and no other mining activities will be conducted in this pit. Mining of the H, I, K, L, M, Q and R seams is planned for Lancaster Pit during the 2023 – 2027 permit term. Aquifer dewatering wells utilized in the backfilled G pit area have produced from 2 to 29 GPM during the period from 2002 to present. Inflows attributable to groundwater are expected to continue at a similar rate during the 2023 – 2027 permit term. To the extent possible, diversion ditches will be utilized to route water around open pit areas. Lancaster pit will be of the down dip orientation and is not expected to produce or retain any more water than prior pits of this design.

NIGHTHAWK PIT

Mining of the K, L, M and Q seams is planned for the N pit during the 2023 – 2027 permit term. Ground water inflow is expected to be similar to historic Flintlock Pit volumes.

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I AND J PITS

Initial boxcuts running west to east will be opened just north of the croplines for the F and G seams in I and J Pits, respectively. Pit water is expected to be encountered during the initial period of opening each pit. Once the initial sections of the boxcuts are opened, pit dewatering should be minimal while continuing highwall mining operations on the pit floor. The pit will be backfilled with material removed from the advancement of the pit and placed behind the highwall miner as it advances in sections along the highwall. The capture of surface runoff will be minimal as the pit progresses. Due to the nature of the permeability of the spoils materials and the location of the pits near the croplines of the 1st, 2nd and 3rd White sandstones, water drawdown should be minimal in both pits during and after mining operations in the area. During active mining, localized drawdowns in the 2nd and 3rd White sandstones may be large near the HWM entries due to the good connection with the F and G coal seams and may also be significant in the 1st White sandstone.

COLT PIT

An initial boxcut running west to east will be opened in order to access the L and Q seams. Pit water is expected during the initial period of opening the pit. The need for pit dewatering should decline substantially as highwall mining operations get underway. Drawdowns are not expected to be any more substantial than the minimal drawdowns experienced with historic Colt Pit mining.

DRAWDOWNS

Prediction of drawdown, which should occur based on the above estimates, would be several tens of feet near the down dip edge of HWM but should not extend out to one mile from the permit boundary due to the small transmissivities of these aquifers. Observed drawdowns have been less than these predictions. Actual observations of drawdowns are much more indicative of impacts. These low permeability aquifers have exhibited limited drawdowns in the immediate vicinity of the active pits. Further, drawdowns downgradient of the active mining areas typically recover much faster than expected because the increased permeability in the HWM area will readily transmit water to the downgradient end of the HWM entries.

Drawdowns at KLM well GP-2, roughly 2200 feet distant from the G Strike pit boxcut, had developed on the order of twenty feet, well within the approximate range of predicted behavior for aquifers in the area, however, water levels had risen to pre-mine maximums by 2001. They have slowly declined since, perhaps in response to drought or mining in the K Pit area, but not as low as the period when the G Strike pit area was mined. Drawdown recorded at QR well GP-1, some 1200 feet away from the boxcut, was observed at approximately 40 feet before GP-1 was disturbed by mining in early 2003.
Wells GC-1 and GC-2, completed in the HI and 3rd White Sandstone aquifers respectively, showed slight declines in water level when A Pit mining occurred within 1,000 feet directly upgradient from the wells during the early 2000's. Water levels in these wells have since recovered to premining levels.

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