SURFACE & GROUNDWATER QUANTITY

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When the DEIS was released by the U.S. Forest Service in August of 2020, our company was called Midas Gold. Since then, we have changed our name to better reflect our values and our project. Today, we are proud to be Perpetua Resources.

CURRENT CONDITIONS

- Primary surface water streams in the study area include: the East Fork of the South Fork of the Salmon River (EFSFSR), Rabbit Creek, Meadow Creek, East Fork Meadow Creek (also known as Blowout Creek), Garnet Creek, Fiddle Creek, Midnight Creek, Hennessy Creek, West End Creek and Sugar Creek. The Yellow Pine pit (YPP) lake is a man-made water body resulting from historic mining activity.
- Primary aquifer systems are a discontinuous shallow alluvial aquifer consisting of Quaternary unconsolidated deposits and a deeper bedrock system. Groundwater flow is primarily in the alluvial aquifer and in the thinner unconsolidated material on hillslopes.

MINE IMPACTS/PROTECTIVE MEASURES

- **Alternative 1:** Temporary reductions in Meadow Creek baseflows downstream of the Hangar Flats pit and pit lake are simulated to occur in the mine operations period beginning in mine year (MY) 7 and persist into the post closure period for a limited duration. Meadow Creek flows return to No Action conditions when the alluvial aquifer system recovers within seven years post-operations (MY 19). During Hangar Flats pit dewatering, the average monthly low flow (averaging period: MY 7 though MY 10) in Meadow Creek is reduced to 2.1 cubic feet per second (cfs) from 3.8 cfs, and the stream is simulated to be dry in some low flow months within the first 3 years after mining ceases. Meadow Creek flow reductions continue through the project area to the project terminus. The simulated Hangar Flats pit lake filling is completed by the end of MY 19, and Meadow Creek then flows through the lake. The West End pit lake is simulated to have a lake level that fluctuates through time and would spill to West End Creek only during extended wet periods. Additional detail is in Section 4.8.2.1.1.1.
- Groundwater levels in the alluvial and bedrock aquifers are impacted during operations and during the closure period resulting from pit dewatering, pit lake development and decreased groundwater recharge within the tailings storage facility (TSF)/development rock storage

SURFACE & GROUNDWATER QUANTITY

facility (DRSF) footprint. Groundwater levels in the alluvial aquifer system are simulated to recover within approximately seven years after mine dewatering activities stop. Groundwater levels in the bedrock are also simulated to recover, except in the vicinity of the pit lakes, because the lakes are at a lower level than the existing land surface to which the surrounding bedrock will discharge. Groundwater level decline of more than 10 feet occurs in some areas within and around the TSF/DRSFs during operations and post closure. However, the overall volumes of water moving through the groundwater and surface water systems are expected to recover during the post-closure period, with the exception of additional water loss by evaporation from pit lake surfaces. Additional detail is in Section 4.8.2.1.2.

- **Alternative 2:** Impacted surface water and groundwater is consistent with Alternative 1, with the impact magnitude and duration reduced in Alternative 2. Impacted Meadow Creek flows can be more than two times higher than Alternative 1 in average monthly low flow downstream of Hangar Flats pit during the mining period, and Meadow Creek is simulated to maintain flow at all times in the post-operations period. Streamflow and the alluvial aquifer are simulated to recover within 2.5 years after pit dewatering is complete in Alternative 2, whereas this recovery was simulated to require 7 years in Alternative 1. In Alternative 2, the required Hangar Flats dewatering rate is reduced by 25 percent, and less water is diverted to the rapid infiltration basins (RIBs) compared to Alternative 1. Groundwater levels in the area previously overlain by the West End DRSF are not simulated to incur declines resulting from the DRSF. Additional detail is in Section 4.8.2.2.1.1.
- **Alternative 3:** EFSFSR streamflow is simulated to be slightly reduced compared to Alternative 2. Previously non-impacted groundwater in the EFSFSR above the Meadow Creek confluence would incur groundwater level decline concomitant to impacts in Meadow Creek. Hangar Flats pit dewatering rate and the rate of water infiltrating the RIBs is greater than Alternatives 1 and 2.
- **Alternative 4:** Impacts similar to Alternative 1.
- **Alternative 5:** No Mine Impacts.

RECLAMATION/RESTORATION/MITIGATION

- **Alternative 1:** Mitigation measures taken to reduce impacts in Alternative 1 are the Meadow Creek liner extending from the TSF/DRSF diversion to the downgradient end of the Hangar Flats pit (total distance of approximately 5,660 feet), discharge of excess pit dewatering water to RIBs

SURFACE & GROUNDWATER QUANTITY

to increase groundwater levels and promote stream gain from groundwater in the area of the Meadow Creek and EFSFSR confluence and the backfill of YPP and restoration of the EFSFSR over the backfill.

- **Alternative 2:** Multiple mitigation measures were adopted in Alternative 2 to further reduce impacts. Depletions in Meadow Creek streamflow, and the time required to recover, during operations and into post closure were addressed by extending the Meadow Creek liner downstream by another 1,050 feet, continuing to utilize RIBs into early post-closure and routing Meadow Creek around Hangar Flats pit lake. Additionally, the time required to fill Hangar Flats pit lake and therefore restore hydrologic equilibrium was reduced by partially back filling the pit and "peak shaving" Meadow Creek runoff flow to the pit. The extended Meadow Creek stream liner reduced the required dewatering rate. The elimination of the West End DRSF prevents groundwater decline resulting from the presence of the DRSF.
- **Alternative 3:** Mitigation measures are similar to Alternative 1.
- **Alternative 4:** Mitigation measures are similar to Alternative 1.
- **Alternative 5:** No mitigation measures taken.

NET CHANGE

- **Alternative 1:** The primary simulated long-term change to the surface water and groundwater systems is limited to the presence of the pit lakes with evaporative losses from the lake surfaces that represent a fraction of the overall hydrologic budget.
- **Alternative 2:** Impacted waters are consistent with Alternative 1, with impact magnitude and duration reduced by additional mitigation measures.
- **Alternative 3**: Impacts similar to Alternative 1.
- **Alternative 4:** Impacts similar to Alternative 1.
- **Alternative 5:** No mine Impacts.