Homestake Mining Company
Annual Report to the Lawrence County Commission
Conditional Use Permit Nos. 124 and 144
July 9, 2019

2018 Employment and Contributions

Year End Employment: 11 FTEs plus 1 FT contract employee and 1 PT contract employee

2018 Contributions: $15,000 including $12,600 monetary and $2,400 non-monetary (Homestake coins for charitable auctions, etc.)

Open Cut Review

Reclamation has been completed at the waste rock facilities

As of the end of 2018:

- Approx. 555 Acres Released
- Approx. 87 Remaining Affected Acres
- Reclamation complete on all affected acres

Complaints

No formal complaints were received in 2018

Technical Revisions

A Technical Revision was submitted on December 18, 2017 and approved on January 10, 2018 to modify Homestake's postclosure plan.

Operation and Maintenance Award

Homestake received the 2018 Operation and Maintenance Wastewater Treatment Award from DENR for:

- Outstanding operation of the wastewater treatment system; and,
- Environmental compliance with the state surface water discharge permit.

2018 Activities

- Installed new inclinometers at EWRDF
- Installed additional monitoring/pumping wells at East Ravine
- Refurbished Grizzly Gulch Seepage Collection Facility

Inclinometer Installations at EWRDF

- New inclinometers were installed at EWRDF in June 2018 to provide coverage in East Ravine, Gayville Gulch and Blacktail Gulch and help determine if the incremental survey monument displacements observed in 2016 and 2017 are a result of survey error/inaccuracy or are reflective of subsurface shear displacements
- New inclinometers installed at EWRDF include: ERAV I-1 on 5100 ft. bench in East Ravine, GAYV I-1 on 5000 ft. bench in Gayville Gulch and BLKTAL I-1 on 5000 ft. bench of Blacktail Gulch.

Additional Monitoring/Pumping Wells at East Ravine

- As reported in 2012, a small seep was previously identified in East Ravine downgradient of the railroad grade (Currently approx. 1 gpm)
- Even though the seep is very minor and has no measurable impact to Deadwood Creek, it didn't meet the applicable quality standards for Se, TDS or EC
- A hydrological study was completed
- The study concluded that the source is deeper below the collection system
- Only a minor portion of the seep flow is from the EWRDF
- Three wells were drilled to intercept source in 2012 and 2013 (GW-3, GW-4 and GW-5)
- Pumps were installed to divert water into the collection system
- Results showed significant decreases in TR-Se, TDS and EC and very low seep flows
- Still had occasional detectable Se levels
- Two additional pumping wells (GW-6 and GW-7) were drilled in 2017
- Pumps and piping from new wells to collection system were installed in 2017 and 2018
- Pumps were operational in 2018
- Continuing to evaluate effectiveness of system

Grizzly Gulch Seepage Collection Facility Refurbishment

- Due to iron buildup in the existing steel piping, stainless steel pump header was installed in seepage collection building to connect the three pumps used to pump seepage back to tailings impoundment
- Stainless steel is corrosion resistant and reduces iron buildup in pipes
- Stainless steel or HDPE plastic piping used
- MCC replaced with digital MCC

<u>2018 Monitoring</u>

Deadwood Creek Monitoring Results

- Blacktail Water Treatment Plant discharge consistently meets permitted effluent limits
- Instream water quality meets all standards for coldwater marginal fish life propagation waters.

Geotechnical Monitoring

- Open Cut East Block
  - Failed on 06/14 as predicted
  - Failure was on Homestake property within the pit boundaries
- Bobtail Gulch
  - From 1994 to 2008 showed shear movement
  - Buttress was installed in 2009 and 2010
  - Movement has slowed following installation of buttress and is expected to continue to slow.
  - Movement is primarily settlement and relaxation of the fill
- Blacktail, Gayville and East Ravine
  - As previously reported, readings of some monument surveys subsequent to October 2015 showed possible divergence from past monitoring trends
  - Homestake has employed multiple displacement monitoring techniques to better evaluate the EWRF and determine the cause of the apparent divergence. These include survey monuments, piezometers, inclinometers, visual inspections, drone surveys (new) and InSAR monitoring (new)
  - Piezometers – No significant buildup of water pressures in waste rock facility
  - Inclinometers – The new inclinometers installed in June 2018 have indicated only 0.1 inches of northward surficial movement with no shear displacement
  - Visual Inspections - Tension crack at 5100 bench in Gayville Gulch is the only surficial change observed. No significant change to crack within last year. Tension crack appears to be associated with topsoil slumping.
  - Drone Surveys – Drone surveys have been conducted since 2017. The surveys show no significant divergent movement from past monitoring trends.
  - InSAR Monitoring (Interferometric Synthetic Aperture Radar) conducted biannually.
    - InSAR technology (TRE Altamira) was employed by Homestake in 2019 to determine displacements using historical data back to 2007.
    - InSAR technology is used to extract very precise displacement measurements from satellite data (i.e. millimeter precision)
    - Results in much higher density of survey points
    - Monitored area includes the Open Cut, waste rock facilities and Grizzly Gulch Tailings Dam
  - InSAR Monitoring Results
    - Data for the Homestake Mine was evaluated for historic and current data.
    - Data indicates that Blacktail, Gayville and East Ravine are behaving as expected
    - No areas of concern were noted at the Open Cut, waste rock facilities or tailings dam
  - Additional ongoing work:
    - Homestake is continuing to monitor and evaluate the data from monument surveys, piezometers, inclinometers, visual surveys, drones and InSAR.

- Perform base station surveys before each biannual monitoring review to measure any movement of base stations
- Inspect benches and slopes bimonthly, as weather allows
- Visually monitor the tension crack at the crest of the 5100 bench in Gayville Gulch at least quarterly
- Monitor new inclinometers in Blacktail Gulch, Gayville Gulch and East Ravine quarterly
- Migrated to InSAR monitoring biannually

2019 Activities

- Complete transition to all stainless steel at GG seepage collection facility
- Continue Water Treatment Agreement with SDSTA
- Continue Water Treatment