COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Henderson Mine	**MINE/PROSPECTING ID#:** M-1977-342	**MINERAL:** Molybdenum	**COUNTY:** Clear Creek, Grand
INSPECTION TYPE: Monitoring	**INSPECTOR(S):** Peter S. Hays	**INSP. DATE:** September 27, 2018	**INSP. TIME:** 09:00
OPERATOR: Climax Molybdenum Company	**OPERATOR REPRESENTATIVE:** Geoff Niggeler, Aaron Hilshorst, Amber Parmet	**TYPE OF OPERATION:** 112d-3 - Designated Mining Operation	

REASON FOR INSPECTION: Normal I&E Program	**BOND CALCULATION TYPE:** None	**BOND AMOUNT:** $37,993,785.00
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None
WEATHER: Clear	**INSPECTOR'S SIGNATURE:** 	**SIGNATURE DATE:** September 28, 2018

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

(AR) RECORDS---------- Y	(FN) FINANCIAL WARRANTY-------- N	(RD) ROADS---------- Y
(HB) HYDROLOGIC BALANCE---------- N	(BG) BACKFILL & GRADING---------- N	(EX) EXPLOSIVES--------- N
(PW) PROCESSING WASTE/TAILING---- N	(SF) PROCESSING FACILITIES------- Y	(TS) TOPSOIL---------- Y
(MP) GENL MINE PLAN COMPLIANCE- Y	(FW) FISH & WILDLIFE---------- N	(RV) REVEGETATION---- N
(SM) SIGNS AND MARKERS---------- Y	(SP) STORM WATER MGT PLAN---- N	(RS) RECL PLAN/COMP-- N
(ES) OVERBURDEN/DEV. WASTE--------- N	(SC) EROSION/SEDIMENTATION--- N	(ST) STIPULATIONS------- N
(AT) ACID OR TOXIC MATERIALS------- N	(OD) OFF-SITE DAMAGE----------N	

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

OBSERVATIONS

The Henderson Mill site was inspected by Peter Hays and Stephanie Mitchell with the Division of Reclamation, Mining and Safety (Division/DRMS) as part of the Division's monitoring inspection program. Aaron Hilshorst, Miguel Hamarat, Amber Parmet and Geoff Niggeler with Climax Molybdenum - Henderson Operations (Henderson) were present during the inspection.

TR-30 - Seep Water Collection and Return System Improvements:
On September 20, 2018, the Division received a technical revision, TR-30, from Henderson for the Seep Water Collection and Return System Improvements below 1-Dam. W.W. Wheeler and Associates, Inc. was hired by Henderson to perform evaluations of the volumetric and flow rate capacity to handle rain flood and snow flood events of the primary Seepwater Detention Area (SDA) at the toe of 1-Dam based on recommendations made by the Tailings Review Board in 2014. The seepage collection and detention system at the base of 1-Dam is formed by a berm which also serves as an access road. Raising the elevation of the seep road would increase the storage capacity in the area upstream of the berm. The additional storage capacity would be able to contain various hydrologic events including the 100-year average recurrence interval snowmelt event and for emergency storage during a problem with the Ute Park pump house.

Photographs referenced in the technical revision which were not included in the submittal to the Division were provided by Henderson during the inspection. Henderson staff stated the photographs would be sent electronically for the Division's file.

The proposed seep road project was observed and discussed from the south to north ends of the access road including; the north and south feeder channel culverts, the north and south inlet gate structures and the seep water diesel pump system. The decision date for the technical revision is October 22, 2018. Henderson staff indicated the project is scheduled to begin in a few weeks. The Division's decision letter will be sent under separate cover.

3-Dam Buttress Project - Stage 1:
The 3-Dam Buttress Project - Stage 1 was approved by the Division under TR-29 on April 4, 2018. The placement of filter sand on the stepback area has continued since the previous inspection and was approaching the southern extent planned for 2018. The filter sand was placed in two (2), nine (9) inches lifts for a total depth of 1.5 feet.

The tailings material on the setback area was placed and compacted in 1 foot lifts. Compaction was achieved by the haul trucks, a smooth drum roller and verified by AECOM with nuclear density tests every lift. The tailings sand is required to be compacted to 95% maximum density with a moisture content within a range of the optimal moisture. The delivery of the sand by haul trucks and placement with a GPS controlled dozer were observed during the inspection. The tailings material is being placed from north to south. The start of the three benches are established in the northern portion of the stepback. Tailings material placement was continuing passed the natural feature in the middle of the stepback into the southern portion of the stepback during the inspection. The finish grading of the toe buttress areas were not complete and appeared unchanged since the previous inspection. Henderson staff stated the grading would be completed at the end of the field season this year.

The removal of the lower inter-bench between 1- Dam benches F and G was approximately 90% complete. The next inter-bench would be used next as a source of tailings sand for the project. The removal of the inter-benches will allow Henderson to grade the slope between the F and G benches at the final 4H:1V slope.

1-Dam Horizontal Drains:
A horizontal drilling company was on-site and was actively installing drains into 1-Dam during the inspection. Two (2) drains were completed over foundation drain #4. The first of the two (2) planned drains over foundation drain #5 was being drilled during the inspection. A fifth drain was planned over foundation drain #6.

Gravel Pit:
The Henderson gravel pit was observed during the inspection. Henderson staff stated the gravel pit was last active in 2014 and 2015. Google Earth images from 2011 and 2015 show the mining activity at the pit to the north. The maps are attached for reference. The groundwater pond was estimated at 1.0 acres, which is less than the allowed pre-law exposure limit of 2.64 acres. Road base and cobble stockpiles were observed on the pit floor. The highwall elevations in the northern portion of the pit were estimated at 10 feet at a 1H:1V slope. The highwalls appeared stable with no observed erosion features. Evidence of noxious weed control spraying was observed in the pit. Henderson staff stated weed control measures for the entire site had been completed for the year. The southern portion of the pit was being used to stockpile imported filter sand material for the 3-Dam Buttress Project.

Photographs taken during the inspection are attached.

Inspection Contact Address
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Ec: Michael Cunningham, DRMS
Stephanie Mitchell, DRMS

PHOTOGRAPHS

View of filter sand and tailings sand placement on north 3-Dam stepback looking northwest

View of filter sand and tailings sand placement on north 3-Dam stepback looking north

View of placed filter sand and tailings sand on south 3-Dam stepback looking north

View of placed filter sand and tailings sand on south 3-Dam stepback looking northeast

View of placed filter sand and tailings sand on south 3-Dam stepback looking north at toe

View of the north 3-Dam toe buttress

View of the south 3-Dam toe buttress

View of seep road from south end looking north

View of the south feeder channel outlet pipe and diesel pump

View of south feeder channel inlet gate structure

View of the north end of the seep road looking north

View of horizontal drilling above foundation drain #5

View of the gravel pit from overburden stockpile looking north

View of the gravel pit from overburden stockpile looking southwest at the filter sand stockpile area


Henderson Gravel Pit
October 2011 Google Earth Image
Legend
3
Google Earth
Image USDA Farm Service Agency
N
1000 ft


Henderson Gravel Pit
October 2015 Google Earth Image
Legend
3
Google Earth
N
1000 ft