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#### SENT CERTIFIED, RETURN RECEIPT REQUESTED 7015-1660-0000-0779-8324

27 December 2016

Mr. Tim Cazier Environmental Protection Specialist Colorado Department of Natural Resources Division of Reclamation, Mining and Safety Office of Mined Land Reclamation 1313 Sherman Street, Room 215 Denver, Colorado 80203

Re: M-1980-244 Cresson Project – 2015 Arequa Gulch VLF Annual Geotechnical Inspection Report.

Dear Mr. Cazier:

Please find enclosed a copy of the 2015 Arequa Gulch VLF Annual Geotechnical Inspection report, completed on behalf of Cripple Creek and Victor Gold Mining Company (CC&V) by Newfields Engineering. The field inspection and written report was completed by Mr Jay Janney-Moore who is a Registered Professional Engineer within the state of Colorado.

This report addresses the Divisions comment made within the September inspection report noting the absence of the report submission. Section 1 of the report addresses concerns regarding the monitoring and evaluation of Settlement Cracks identified in October 2015.

Should you require further information please do not hesitate to contact Mr. Cheyne Mann at (719)-306-3388 or <u>Cheyne.Mann@newmont.com</u>.

Sincerely,

Meg Burt Senior Environmental Manager Cripple Creek and Victor Gold Mining Company

MB/CRM



December 15, 2015

NewFields Project 475.0106.001

Cripple Creek & Victor Gold Mining Company P.O. Box 191 100 North 3<sup>rd</sup> Street Victor, Colorado 80860

Attention: Chris Hanks Chief Environmental Coordinator

RE: 2015 Annual Arequa Gulch Valley Leach Facility Inspection Cripple Creek & Victor Gold Mining Company Cresson Project Victor, Teller County, Colorado

Dear Chris,

NewFields Mining and Technical Services (NewFields) has prepared this letter report for Cripple Creek & Victor Gold Mining Company (CC&V) presenting the results of the annual inspection of the Arequa Gulch Valley Leach Facility (AG-VLF) conducted on October 22 and November 3, 2015 by Mssrs. R. Michael Smith and Jay Janney-Moore.

The primary objectives of the AG-VLF inspection included:

- Assess the settlements cracks that are being observed along an access road on the north side of the pad, within the limits of Phase 4;
- Assess the overall stability of the AG-VLF including the ore slopes, foundation, and internal solution ponds;
- > Verify the operation of the AG-VLF is in accordance with the project design criteria; and
- Evaluate the AG-VLF underdrain flow and water quality with respect to AG-VLF containment performance

This letter report presents observations made during the site inspection, data provided by CC&V in support of the inspection program, and NewFields' conclusions based on the inspection results.

## 1. SETTLEMENT CRACKS

NewFields was called to inspect some cracks that had developed in an access road on the north side of the pad. The cracks started developing in October 2015, after a 100' high ore lift had



been placed immediately above the haul road. The cracks are oriented semi-orthagonally to the centerline of the haul road and are subparallel to one another. A series of 5 cracks were observed while on site during the October 22, 2015 site visit.

Crack monitoring data was reviewed in Eric Munroe's (Geotechnical site lead) office while on site and no significant movement was discernable. Observations made in the field are in agreeance with the data. No vertical displacement across cracks was observed. Based on field observations and available monitoring data, cracking in the haul road appears to be the result of settlement in the pad immediately adjacent to the road and the lateral displacement that has occurred as part of the settlement. In our opinion these cracks are not indicative or instability.

## 2. AG-VLF INSPECTION OBSERVATIONS

This section presents visual observations made as part of the AG-VLF inspection. The inspection covered the entire VLF and was (Phase I through Phase 5) focused on the conditions of the overall ore slopes, ore benches, foundation conditions of the Pregnant Solution Storage Area (PSSA) containment embankments, and the ore stacking geometry.

## 2.1. Visual Inspection

On November 3, 2015, NewFields personnel completed a visual inspection of the AG-VLF by driving around the perimeter of the pad, along select benches, and across the top of the AG-VLF and periodically stopping to verify the conditions of the existing benches and slopes. Additionally, NewFields paid particular attention to the most critical slopes, located above the PSSA risers.

The ore slopes within the AG-VLF were observed to be stable. NewFields did not observe signs of slope slumping (other than minor surficial slips due to bench grading activities and slopes under active leach), seepage faces or evidence of perched water zones, surface cracking, or any other signs of any unstable slope movements, i.e. surface tension cracks at the slope crest or bulging at the toe of the slopes. Above the PSSA Risers, the ore set back appears to be adequate, and the slope above the risers appears dry and stable.

While on site, NewFields took several pictures to document the current condition of the AG-VLF, which can be seen in Figure 1, Photo Log. Figure 2, Current Topography, shows the latest configuration of the AG-VLF, as of October 2015, the date of the current fly over.

The toe area below Phase II and Phase 5 PSSA embankment were also visually inspected and showed no signs of distress or instability. The toe area appeared to be dry (no seepage on



slope faces) and stable. The foundation and embankment slopes did not show any signs of distress.

# 2.2. Pad Growth and Pad Geometry

Utilizing the Flyover Topography for the 2014 and 2015, NewFields developed AutoCAD Civil3d surfaces for both years. NewFields compared the side-slopes and pad development looking for differences between the two surfaces. The most significant change was the addition of the lift within the Phases 4 and 5 limits. The ultimate height increased by approximately 100', bring the maximum elevation of the AG-VLF to 10395' above sea level. Generally, all the side slopes remained unchanged from the previous year and the access road on the side of the VLF show signs of road maintenance performed by CC&V.

NewFields analyzed the side slopes of the 2015 flyover AG-VLF surface, and found the ore slopes between the benches ranged between 1.3H: 1V, the designed angle of repose for the ore, and 2:1 around the perimeter of the VLF. The composite slope of the VLF, measured from the base of the facility to the top crest, varied between 1.8H: 1V to 2.1H: 1V. These slopes are flatter than the recommended design slopes of 1.6H: 1V and 2.0H: 1V as described in the letter from Dr. John Lupo with AMEC Earth and Environmental, dated February 5, 2010; regarding Phase 5 PSSA Ore Slopes. In the letter, Dr. Lupo amends the design slopes to those cited above based on a flatter Phase 5 PSSA pond bottom than was originally envisaged in the design submittal.

Additionally, to show the development of the AG-VLF over the previous 5 years, NewFields created Figure 3. This figure shows that the pad continues to be stable and shows no signs of movement.

## 3. AG-VLF UNDERDRAIN RECORDS

CC&V provided NewFields with flow and water quality records for the AG-VLF underdrains, and reviewed as part of the annual inspection program. The purpose of the underdrain data review is to identity any trends in the data that may be indicative of potential leakage from the AG-VLF containment system. For this inspection program, the review focused on the underdrain flow rates measured WAD cyanide concentrations, as these parameters would be directly impacted if leakage from the AG-VLF should occur.

The data records reviewed include time histories from January 2015 through November 2015 if flow and quality for the following underdrains:

> 24 inch solid pipe



- AG01 Spring pipe
- > UD4A
- > UD4B
- > UD5
- UD North
- > UD South

The majority of the underdrains were dry during the period of record with the exception UD North and UD South. Flow from UD North was measured less than 1 gpm, and was measured only on 4 of 23 sampling dates which occurred between June and August of 2015. The flow measured from UD South varied between 3.7 gpm to 54.5 gpm, depending on the time of year. The measured flow was the lowest in the winter months, and peaks in September. Based on the as-built information NewFields received from CC&V, it appears the UD South underdrain is feed by a natural spring located in the northeast corner of the pad under the Phase 5 expansion. The chemistry of the samples taken from this underdrain suggests that the water is from the natural spring.

#### 4. CONCLUSION

After completing the annual physical site inspection, analyzing the flyover topography, reviewing crack monitoring data supplied by CC&V geotechnical department and underdrain records, the AG-VLF continues to perform as designed.

If you have any questions or require additional information, please contact the undersigned at your earliest convenience.

Sincerely,

## **NewFields Mining Design & Technical Services**

Jay N. Janney-Moore, P.E. Senior Engineer

JNM/RMS/ng Addressee: (via e-mail)



**Reviewed by:** 

R. Michael Smith, P.E. Principal



PHOTO 1: NEAR PHASE II PSSA RISERS



PHOTO 2: VLF SIDE-SLOPE LOOKING SOUTHEAST AT THE VLF SLOPE NEAR PHASE II PSSA RISERS



PHOTO 4: LEACHING ON SIDE-SLOPES ABOVE THE PHASE 5 PSSA RISERS



PHOTO 5: PHASE 1 SLOPE, THE PHOTO WAS TAKEN FROM PHASE 5 EMBANKMENT



PHOTO 7: LOOKING WEST AT SETTLEMENT CRACK



PHOTO 8: LOOKING NORTH AT SETTLEMENT CRACK



PHOTO 3: PHASE 1 PSSA RISERS



PHOTO 6: PHASE 4 PSSA RISERS

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CURRENT TOPOGRAPHY	FILENAME 106.001.0 FIGURE NO. 2		



EXISTING GROUND CONTOURS EXISTING ROADS/TRAILS EXISTING DRAINAGES PHOTOGRAPH LOCATION



2015 FLYOVER TOPOGRAPHY

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2014 FLYOVER TOPOGRAPHY

