



Newmont Mining Corporation  
Cripple Creek & Victor Gold Mining Company  
100 North 3<sup>rd</sup> Street  
P.O. Box 191  
Victor, CO 80860  
[www.newmont.com](http://www.newmont.com)

## Electronic Delivery

January 24, 2018

Mr. Timothy Cazier, P.E.  
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: Permit No. M-1980-244; Cripple Creek & Victor Gold Mining Company; Cresson Project; - Addendum to VLF2 Liner Inspection TR100 Record of Construction Report – VLF2 Removal of the Crushed Ore Stockpile & Liner Integrity Verification Project; Adequacy Review Response

Dear Mr. Cazier:

On November 20, 2018, Newmont's Cripple Creek and Victor Gold Mining Company (CC&V) submitted Technical Revision 100 Addendum, proposing to conduct a liner integrity investigation beneath unsupported material north of the mill platform, as identified in the March 15, 2018 Division of Reclamation Mining and Safety (DRMS) inspection.

On December 17, 2018, CC&V submitted the Record of Construction Report – VLF2 - Removal of the Crushed Ore Stockpile & Liner Integrity Verification Project. DRMS reviewed the Construction Report and provided comments to CC&V. These comments were shared with Newfields, the certifying engineering consultant; their responses are provided in Attachment 1.

Should you require further information please do not hesitate to contact Justin Bills at 719-689-4046 or [justin.bills@newmont.com](mailto:justin.bills@newmont.com) or me at (719) 689- 4042 or [Justin.Raglin@newmont.com](mailto:Justin.Raglin@newmont.com).

Regards,

A handwritten signature in black ink, appearing to read "Justin Raglin", is written over a horizontal line.

Justin Raglin  
Senior Environmental Manager  
Cripple Creek and Victor Mining Company

JR/jb

Enc  
File

**Attachment 1:**

Record of Construction Report, VLF2 Removal of the Crushed Ore & Stockpile Liner  
Integrity Verification Project;  
Response to DRMS' Comments

January 22, 2018  
NewFields Job 475.0106.030

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

**Attention: Mr. Laurin Colby**  
**Senior Metallurgist**

**RE: Cripple Creek & Victor, Co., Cresson Project M-1980-244;  
Review Comments of the Crushed Ore Stockpile & Liner Integrity Verification Project  
Record of Construction Report, (TR-100 Addendum)**

Dear Mr. Colby,

NewFields Mining Design & Technical Services (NewFields) has prepared this letter in response to comments pertaining to the “Record of Construction Report, VLF2-Removal of the Crushed Ore Stockpile & Liner Integrity Verification project” by the Colorado Division of Reclamation Mining and Safety (DRMS), received on January 15, 2019. DRMS comments appear in blue and are followed by NewFields’ response.

- 1. Pot Hole #14: There are no comments in the report specific to any of the potholes, only the photographs. The photograph of pot hole #14 on page 7 of Appendix A shows a large geomembrane wrinkle running diagonally across the pot hole. The DRMS is concerned when several hundred feet of ore is loaded on this wrinkle, it may fold flat and the crease may lead to a tear in the liner. Please provide a summary of observations mad for each of the 34 pot holes and discuss the potential for liner failure when Pot Hole #14 wrinkle is loaded with ore.*

NewFields has added observations to each photo in Appendix A, Pot Hole Photo Log.

During the installation of the LLDPE geomembrane, it is normal for thermal expansion of the geomembrane to result in the formation of wrinkles. Significant effort is made by the earthworks contractor and the QA/QC team to place Drain Cover Fill (DCF) in a manner that best eliminates small wrinkles and minimizes and reduces the size of large wrinkles. That said, it is impossible to wrinkle-free geomembrane installation; wrinkles are unavoidable.

The State has expressed a concern that the wrinkle in question could fold over and eventually result in a tear in the liner. Wrinkles do not tend to tear on the own, but the apex of wrinkles do result in a stress concentration that research has shown can reduce the service life of the



geomembrane<sup>1</sup>. The physical service life of geomembranes are typically defined by their “half-life”, where material properties have degraded to 50 percent of their original values but the material still functions at a reduced performance level. Service life predictions have been completed, primarily for HDPE, with estimates exceeding 400 years for buried applications<sup>2</sup>. LLDPE geomembranes are assumed to be similar to HDPE.

Finally, it is our opinion that for a small wrinkle standing vertical as shown in pot hole #14 the potential negative impacts of exhuming a large area of the pad and capping the wrinkle with an extrusion welded patch would likely result in worse composite liner performance than simply allowing the existing wrinkle to remain.

With all this information in mind, it is our professional opinion that the wrinkle in question does not significantly impact the competence of the existing LLDPE and that exposing and capping will not result in in better containment.

2. Pot Hole #8: Based on the daily logs in Appendix B, it appears all the potholes were dug on either December 6<sup>th</sup> or 7<sup>th</sup>, 2018. Pot holes 1, 7 16, 17 and 18 through 34 were dug on the 6<sup>th</sup>. Pot holes 2 through and 9 through 16 were dug on the 7<sup>th</sup>. When was Pot Hole #8 dug?

Pot Hole #8 was dug on December 6, 2018. Pot hole #16, which was recorded twice, was dug on December 7, 2018.

If you have any questions or require additional information, please contact the undersigned.

Sincerely,

**NewFields Mining Design & Technical Services**

Jay Janney-Moore, P.E.  
Engineer of Record



**Reviewed by:**

Keith C. Williams, P.E.  
Principal, Partner

JNM/KCW/jnm

<sup>1</sup> Koerner, R.M., and Koerner, G.R. (2013). GRI White Paper #27, The Intimate Contact Issue of Field Placed Geomembranes with respect to Wave (or Wrinkle) Management, Geosynthetic Institute.

<sup>2</sup> Koerner, R.M., Hsuan, G.Y., and Koerner, G.R. (2005). GRI White Paper #6, Geomembrane Lifetime Prediction: Unexposed and Exposed Conditions, Geosynthetic Institute. Updated 8 February, 2011.



**Attachments:**

Attachment 1 – Revised Appendix A- Pot Hole Photo Log

**Addressee:** (via e-mail)

P:\Projects\0106.030 CC&V Reject Pile\J-REPORTS\ROC\Adequacy Comments\190118 Addendum reject pile.docx



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## **APPENDIX A**

### **Pot Hole Photo Log**





**Pot Hole 1**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 2**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 3**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole. A high volume collection pipe can is present in the lower right hand corner of the pothole.*



**Pot Hole 4**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 5**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 6**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 7**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 8**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 9**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 10**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 11**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 12**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 13**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 14**

*Geomembrane surface doesn't show any signs of damage or distress. Additionally, a wrinkle in the geomembrane runs through the pot hole.*





**Pot Hole 15**

*Geomembrane surface doesn't show any signs of damage or distress.*



**Pot Hole 16**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 17**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 18**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 19**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 20**

*Geomembrane surface doesn't show any signs of damage or distress.*





**Pot Hole 21**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 22**

*Geomembrane surface doesn't show any signs of damage or distress*





**Pot Hole 23**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 24**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 25**

*Geomembrane surface doesn't show any signs of damage or distress*



**Pot Hole 26**

*Geomembrane surface doesn't show any signs of damage or distress*





**Pot Hole 27**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole. A high volume collection pipe can is present in the lower right hand corner of the pothole.*



**Pot Hole 28**

*Geomembrane surface doesn't show any signS of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 29**

*Geomembrane surface doesn't show any signs of damage or distress*



**Pot Hole 30**

*Geomembrane surface doesn't show any signs of damage or distress*





**Pot Hole 31**

*Geomembrane surface doesn't show any signs of damage or distress*



**Pot Hole 32**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*





**Pot Hole 33**

*Geomembrane surface doesn't show any signs of damage or distress other than minor surface scratches developed during the excavation of the pot hole.*



**Pot Hole 34**

*Geomembrane surface doesn't show any signs of damage or distress*



STATE OF  
COLORADO

Cazier - DNR, Tim <tim.cazier@state.co.us>

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## TR100 Addendum AR Responses

1 message

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**Justin Bills** <Justin.Bills@newmont.com>

Thu, Jan 24, 2019 at 4:28 PM

To: "Cazier - DNR, Tim" <tim.cazier@state.co.us>

Cc: Michael Cunningham <michaela.cunningham@state.co.us>, Elliott Russell - DNR <elliott.russell@state.co.us>, Amy Eschberger - DNR <amy.eschberger@state.co.us>, Justin Raglin <Justin.Raglin@newmont.com>, Linda White <Linda.White@newmont.com>, Katie Dehlin <Katie.Blake@newmont.com>, Erik Munroe <Erik.Munroe@newmont.com>

Tim,

Attached is the response to DRMS' TR100 Addendum Adequacy Review. Please let me know if you need anything else or have additional questions.

Thank you,



**Justin Bills**

Senior Environmental Specialist

Cripple Creek and Victor Gold Mining Co.

T 719.689.4046

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