State of New Mexico
Energy, Minerals and Natural Resources Department

Michele Lujan Grisham
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Deputy Cabinet Secretary

Jerry Schoeppner, PG, Director
Mining and Minerals Division

Electronic Transmission

April 21, 2021

Dave Wykoff, Closure Properties Supervisor
LAC Minerals (USA) LLC
582 County Road #55
Cerrillos, NM 87010

RE: Technical Comments on Application for Revision 20-1, Closure/Closeout Plan Update, Cunningham Hill Mine, Permit No. SF002RE

Dear Mr. Wykoff,

The New Mexico Mining and Minerals Division ("MMD") received an application to Revise Permit No. SF002RE Cunningham Hill Mine on October 9, 2020 from John Shomaker & Associates, Inc. ("JSAI") on behalf of LAC Minerals (USA) LLC ("LAC") titled, "Cunningham Hill Mine Reclamation Project Closure/Closeout Plan Update" ("Application"). The Application, assigned Revision 20-1 by MMD, proposes to update the Closure/Closeout Plan with specific attention to implications of changes to the water level/quality monitoring of the open pit.

MMD has conducted a review of the Revision 20-1 Application and, in accordance with 19.10.5.506.E NMAC, provided the Application to, and requested comments from, the New Mexico Environment Department ("NMED"), New Mexico Office of the State Engineer ("NMOSE"), New Mexico Department of Game and Fish ("NMDG&F"), New Mexico Historic Preservation Division ("NMDCA") and New Mexico Forestry Division ("NMSFD"). Copies of the comments received from these state agencies along with comments received from the Navajo Nation Heritage and Historic Preservation Department are attached. Please also find public comments received by the New Mexico Mining Act Network ("NMMAN") attached. MMD met with LAC staff and NMED staff in a WebEx meeting on April 20, 2021 to discuss MMD's general comments on the Application. MMD is now following up with written comments.

General Comments

MMD has met with LAC in conjunction with NMED on several occasions since the fall of 2019 (November 12, 2019 meeting, February 20, 2020 site inspection, August 19, 2020 virtual meeting, and April 20, 2021 virtual meeting) to discuss the options for reclamation of the open pit unit pursuant to The New Mexico Mining Act, Chapter 69, Title 36 NMSA and the New Mexico

Mining Act Rules, Title 19, Chapter 10 NMAC. Those options are to either reclaim the open pit unit to a condition that allows for the re-establishment of a self-sustaining ecosystem ("SSE") (19.10.5.507.A NMAC) or request a waiver from the requirement of meeting a SSE (19.10.5.507.B NMAC). In the Application, LAC is proposing to reclaim approximately 2 acres in the open pit unit, and conduct vegetation and wildlife studies to demonstrate that the remaining unreclaimed pit walls achieve a SSE. Based on the approximately 15 acres of unreclaimed and exposed pit walls and current abatement status described in AP-27 (under jurisdiction of NMED) of the pit lake, MMD does not consider the open pit a reclaimed unit or a SSE, as defined in 19.10.1.7 NMAC.

After reviewing comments from NMDG&F, MMD does not consider the reclamation activities described in the CCP for the open pit enough to create a SSE within the open pit unit. NMDG&F does not consider the pit lake suitable wildlife habitat due to the nature of the pit wall chemistry and history of the pit lake data fluctuations. According to NMED, LAC does not currently meet water quality standards in the open pit as described in AP-27, nor provides a timeline or process for when or how water quality standards will be met. Further, MMD is concerned about identifying a comparable and appropriate reference area for vegetation within the open pit unit.

Section 6.1 *Reclamation Plan, Open Pit*, page 39 of the Application states, "A Pit Wavier, as described in Appendix E (section 4.3) will be considered if the assessment indicates the un-reclaimed area cannot be re-established as a self-sustaining ecosystem." MMD recommends LAC consider modifying this Application to request a pit waiver as described in 19.10.5.507.B NMAC. This would require making the appropriate changes to the permit application and another public notice.

Specific CCP Comments

1. Change "NMMA Rule 5.6" to "19.10.5 NMAC" in Section 1.1 *Purpose of Plan*, page 1.

2. Section 1.3 *Project History*, page 6 of the Application lists remaining reclamation efforts and associated permits at Cunningham Hill. Change bullet number 3 to include Permit No. SF002RE in addition to DP-55 and add the following to the list:
    a. Open Pit Reclamation (Permit No. SF002RE)
    b. Waste rock pile erosion repairs (Permit No. SF002RE, DP-55)
    c. RO Pond reclamation (Permit No. SF002RE, DP-55)
    d. Residue Pile Remediation Treatment Ponds (Permit No. SF002RE, DP-55)

3. Table 1 within Section 1.4 *Description of Updated Plan*, page 7 describes the status of the open pit unit as "pending; revised AP-27 reclamation plan in progress". MMD wants to clarify that water quality abatement of the open pit Unit is permitted under AP-27, but the surface reclamation of the open pit is under the jurisdiction of Permit No. SF002RE. As the original open pit hydrologic model (Adrian Brown Consultants, Inc. 1996) has been recalibrated to show that the pit lake has reached an approximate steady-state elevation with 14.53 acres of exposed pit walls (Figure 7), MMD does not consider the open pit to be a reclaimed unit. MMD recommends that LAC modify the Application to request a pit waiver as described in 19.10.5.507.B NMAC unless LAC can provide a method of pit reclamation significantly different than the one in the current proposal.

4. Change "NMMA Rule 5.6" to "19.10.5.506 NMAC" in Section 2.0 *Permits and Regulatory Requirements*, page 8, third paragraph.

5. Table 2 in Section 2.0 *Permits and Regulatory Requirements*, page 9 does not provide the purpose for Permit No. SF002RE.

6. Figure 4 on page 11 does not include the access road along the western edge of the open pit.

7. Section 3.2.1 *Description of Existing Mine Facilities*, *Cunningham Hill Mine Open Pit*, page 13 states that JSAI submitted a revised open pit waterbody reclamation plan in 2011 to address open pit waterbody elevation and water quality standards. This plan was also cited in Appendix E, Section 1.1.1 *Background, Closure-Closeout Plan* as a "revised reclamation plan". MMD did not receive this report from JSAI or LAC. The most recent open pit waterbody elevation and water quality model (Adrian Brown Consultants, Inc. 1996) was submitted to MMD and incorporated into Permit Revision 96-1 to Permit No. SF002RE on December 13, 2002.

8. Section 3.2.5 *Description of Existing Mine Facilities, Ancillary Units,* page 16, final sentence: change "Condition 2 of Modification 17-1 requires a building inspection certification once every five years" to "Section 9.A.2 of Permit Modification 17-1 to Permit No. SF002RE requires a building inspection certification once every five years for the duration of Permit No. SF002RE".

9. Section 4.2 *Reclamation Completed, Open Pit*, page 26 states that the open pit perimeter was fenced with a 5-ft-high, five-strand wire fence. As the open pit highwalls are hazardous to humans and potentially wildlife, MMD will require that LAC install a chain-link fence that is at least 8 feet tall (at least 2 feet buried underground and at least 6 feet aboveground) to prevent humans and wildlife from entering the pit area.

10. Section 5.0 *Reclamation Performance Objectives*, page 36 lists additional reclamation activities to be completed at Cunningham Hill. Add "Residue Pile Treatment Ponds" as a fourth bullet and add "waste rock pile cover improvements" to the first bullet.

11. Section 5.0 *Reclamation Performance Objectives*, page 36 describes a wildlife impact analysis completed in 1995 by Metric Corporation which concluded that the reclamation activities implemented at Cunningham Hill would result in a habitat that is beneficial to wildlife but did not recognize that the permit area would include a perennial source of water from the open pit. Comments provided by NMDG&F state that the open pit waterbody is not considered appropriate wildlife habitat, and that wildlife should be excluded from accessing the open pit waterbody due to the unpredictable fluctuations in the pit lake. Please review NMDG&F's attached comment letter and respond with a description of how wildlife will be excluded from accessing the open pit waterbody and address NMDG&F's recommendation of providing an alternative clean water source to attract wildlife away from the pit lake.

12. Section 5.1 *Reclamation Performance Objectives, Open Pit,* page 37, bullet number 3 proposes to identify a reference area specifically for the open pit. Any proposed new reference area would need to be approved by MMD prior to any vegetation sampling. MMD is concerned that finding a suitable reference area will be unattainable due to the unique chemistry and slope of the open pit walls in addition to the pit lake water source.

13. Section 5.1 *Reclamation Performance Objectives, Open Pit,* page 37, bullet number 4: please elaborate on and provide a complete list of studies proposed for the open pit and associated reference area.

14. Section 5.1 *Reclamation Performance Objectives, Open Pit,* page 37, bullet number 5 proposes to allow inaccessible pit walls and benches to revegetate naturally. Is JSAI proposing any vegetation and/or exposed surface material analyses to determine potential metal bioaccumulation in plant materials that could get ingested by wildlife? Have any of these studies been done in the past within the open pit unit?

15. Section 5.1 *Reclamation Performance Objectives, Open Pit,* page 38 states "As required by the NMMA Rules, the revised surface water standards in NMAC 20.6.4.97.C.1(a) will likely replace the current AP-27 surface water standards (see Appendix E)." Please see NMED's comment *Open Pit*, number 4 under *Mining Environmental Compliance Section (MECS)*.

16. Section 5.2 *Reclamation Performance Objectives, Waste Rock Pile,* page 38, bullet 3 proposes to "Add soil-mulch-seed mix to localized areas eroded prior to completion of stormwater drainage improvements". Please clarify this statement, including the timeline for when cover placement will be done and which stormwater drainage improvements will be made.

17. Section 5.2 *Reclamation Performance Objectives, Waste Rock Pile,* page 38: MMD and NMED have requested that LAC submit a work plan for joint agency approval to address deficiencies on the waste rock pile, including but not limited to drainage of the benches and cover thickness and efficacy. Please also see NMED's comment *Waste Rock Pile* under *Mining Environmental Compliance Section (MECS)*. Neither a description of this work or the work plan was included in the CCP. Upon receiving an acceptable waste rock pile work plan, MMD will incorporate it as part of the CCP/Application. According to our conversation on April 20, 2021, LAC may be thinking of including other areas related to the waste rock pile reclamation to this work plan. Please include these in the CCP update and related details of the work to be done.

18. Section 6.0 *Reclamation Plan,* page 39 does not include the surface reclamation plan for the Residue Pile Remediation Ponds. Please include a section for this topic.

19. Section 6.1 *Reclamation Plan, Open Pit*, page 39 describes placement of growth medium on areas left to be reclaimed within the open pit. Please elaborate on what growth medium LAC proposes to use and provide to MMD soil analyses, history of use, and storage location(s) of proposed material.

20. Section 6.1 *Reclamation Plan, Open Pit*, page 39, last paragraph proposes to install wire mesh "near the area of the northeast access road". Please provide a plan or schematic to show where and how much wire mesh will be placed to stabilize the slope.

21. Section 6.2 *Reclamation Plan, Waste Rock Pile*, page 40: please provide the depth of "soil immediately surrounding the pond" and clarify if this soil was originally placed as cover over waste rock or if it is undisturbed native soil.

22. The *Evaporation Pond Closure Design* section in Appendix F states that the soil surrounding the ponds contains sulfides and possible waste rock, but that "clean" soil stockpiled by the office building will be used as a top cover. Please explain how sulfide-containing soil and "clean" soil will be handled and applied at reclamation and provide the target depth of "clean" material over sulfide-containing soil.

23. Section 6.2 *Reclamation Plan, Waste Rock Pile*, page 40, last sentence in second paragraph states "Grass seed will be added to the soil-mulch mix." Please clarify that LAC will use the approved seed mix and that seed will be placed after cover placement and not mixed in with the soil-mulch mix.

24. Section 6.2 *Reclamation Plan, ARD Treatment Facility*, page 40, first sentence states "The first phase will include removal of lime treatment unit, and ARD treatment ponds (also sometimes referred to as settling ponds)". Please clarify which ponds this sentence is referring to (i.e. lime treatment ponds and/or ARD evaporation ponds). Provide a reclamation plan of the ARD Treatment Facility to MMD for approval at least 30 days prior to commencing reclamation of any ARD Treatment Facility and review NMED's comment ARD Treatment Facility under *Mining Environmental Compliance Section (MECS).*

25. Section 6.2 *Reclamation Plan, ARD Treatment Facility*, page 40: What is the depth of the soil immediately adjacent to the ponds, and is there reason to believe that this soil is contaminated and/or sulfide-containing? How much soil (both immediately adjacent and stockpiled proposed growth medium) will be placed over the liner?

26. Section 6.4 *Reclamation Plan, Growth Medium*, page 41: Has the mulch already been incorporated into the proposed growth medium? If not, how will the soil and mulch be applied at reclamation?

27. Table 6 in Section 6.4 *Reclamation Plan, Growth Medium*, page 41 does not include growth medium volume requirements for the RO Ponds, ARD Treatment Facility, or Residue Pile Remediation Ponds. Please include these three units in Table 6.

28. Table 6 in Section 6.4 *Reclamation Plan, Growth Medium*, page 41 includes growth medium requirements for the waste rock pile and open pit. What is the volume of growth medium available for reclamation efforts, and does it satisfy the requirements in Table 6 once it is updated to include the RO Ponds, ARD Treatment Facility, and Residue Pile Remediation Ponds growth medium volume requirements?

29. Section 6.5 *Reclamation Plan, Seeding*, page 41 "Tables 7 and 8 present the proposed seed mixtures and application rates for use at CHMRP, except for the Waste Rock Pile and the original borrow area, which have already been revegetated using seed mixtures and application rates approved by MMD." Tables 7 and 8 contain the same seed mixes described in the current CCP, approved by MMD on December 13, 2002. Please confirm that the seed mixes in Tables 7 and 8 will be used on all areas to be reclaimed in the future after cover (growth medium) placement. All plant species substitutions to species listed in Tables 7 and 8 will need to be approved by MMD prior to seeding.

30. Section 6.6 *Reclamation Plan, Trees and Shrubs*, page 43 states "Trees will be planted at a density of approximately 23 stems per acre at 45-ft spacings…. to simulate the natural density and arrangement of trees." This stocking rate does not include multi-stemmed and small shrubs, many of which are included in Table 9, and is much lower than a typical pinyon-juniper forest in New Mexico. MMD recommends planting seedlings in groups at a closer spacing (e.g. 4-8ft) and spacing groups farther apart (e.g. 50-75ft) to provide a more heterogenous landscape.

31. Table 9 in Section 6.6 *Reclamation Plan, Trees and Shrubs*, page 44 does not include one-seed juniper, but it is listed as a species to be planted in the first paragraph of Section 6.6, page 43. Additionally, New Mexico locust is listed in Table 9, but not included the description of woody species to be planted on page 43. Please clarify.

32. Section 6.6 *Reclamation Plan, Trees and Shrubs*, page 44 describes planting seedlings in 12- to 24-in.-diameter holes, which is large for typical seedling plantings. What size container stock will be planted?

33. Section 6.6 *Reclamation Plan, Trees and Shrubs*, page 44 states "Fertilizer will be applied in shallow pockets near each seedling." MMD recommends using controlled-release fertilizer or organic amendments rather than inorganic (water soluble and immediately available) fertilizers for use in reforestation efforts.

34. Section 6.7.1 *Reclamation Plan, Revegetation Success Monitoring, Proposed Revegetation Standards*, page 47, bullet number 3 includes a shrub/tree density standard for non-grassland revegetated units. Please provide a map showing grassland-revegetated vs. woodland-revegetated units of the remaining units in Permit No. SF002RE.

35. Section 6.7.1 *Reclamation Plan, Revegetation Success Monitoring, Proposed Revegetation Standards*, page 47: please provide a map showing the locations of the reference areas.

36. Section 7.0 *Post-Reclamation Monitoring and Maintenance*, page 48 states that all monitoring, maintenance activities, and performance standards are covered under the Updated Contingency Plan in Appendix B. Likewise, the first sentence of the last paragraph states, "If the monitoring program described above reveals that repair of any reclaimed feature is required, then LAC will proceed with necessary repairs as specified in the Contingency Plan." Conditions within Permit No. SF002RE (including future Permit Conditions), may include maintenance, monitoring requirements, and performance standards not specified in the Updated Contingency Plan as required by the New Mexico

Mining Act. LAC will be required to follow all Conditions within Permit No. SF002RE, including all Modifications and Revisions to the Permit, in addition to all Conditions within the Contingency Plan.

37. Section 7.4 *Revegetation Success Monitoring*, page 49: vegetation success monitoring will be conducted in accordance with Permit No. SF002RE in addition to Performance Standard SW-1 within the Contingency Plan.

38. Section 8.0 *Reclamation Schedule*, page 51 states "Reclamation of the open pit would proceed after the self-sustaining ecosystem assessment has been completed." Clarify what the SSE assessment consists of and provide an explanation for why the assessment would be done prior to reclamation.

39. Section 8.0 *Reclamation Schedule*, page 51: provide a timeline of when reclamation for each unit will commence following the water treatment requirements and Performance Standards described in the Contingency Plan, DP-55, and/or AP-27. Also include estimated completion times for reclaiming the Residue Pile Remediation Ponds and RO Ponds.

40. Section 8.0 *Reclamation Schedule*, page 51 does not include a timeline for when the waste rock pile repairs described in Section 6.2 *Reclamation, Waste Rock Pile* will commence and an estimated time for completion.

41. Appendix E, Section 1.0 *Introduction*, page 1 incorrectly states that the Permit Revision to Permit No. SF002RE is only for the open pit portion of Cunningham Hill. The CCP includes an update to reclamation activities planned for all units described in Permit No. SF002RE.

42. Appendix E, Section 1.0 *Introduction*, page 1 states that there are 3.5 acres of open pit walls, but Table 5 in Appendix E lists 16.39 acres of unreclaimed pit walls (pit lake elevation 6,795ft amsl), Figure 10 in Appendix E shows that there are 17.46 acres of unreclaimed pit walls (pit lake elevation 6,795ft amsl), and Figure 7 within the body of the CCP lists the unreclaimed pit wall acreage as 14.53 acres (pit lake elevation 6,800ft amsl). Please clarify the steady-state elevation of the pit lake and acreage of unreclaimed pit walls.

43. Appendix E, Section 1.1.3 *Background, Timeline,* page 6, first row states that the CCP was revised by MMD in 2002. The Permit Revision was tracked by MMD as Permit Revision 96-1 to Permit No. SF002RE, and approved on December 13, 2002.

44. Appendix E, Section 1.1.3 *Background, Timeline,* page 6, third row (2002) states "Reverse osmosis (RO) treatment completed, but removed more water than anticipated due to extreme drought and low treatment efficiency". What was the rate per year of RO water removal (i.e., percent losses or reject waters)?

45. Appendix E, Section 1.1.3 *Background, Timeline,* page 6, ninth row (2018-current): page 23 indicates water treatment starting in 2020 to operate seasonally. What is the expected percent water loss of the nanofiltration system?

46. Appendix E, Figure 5, page 12: from 2011 to 2019, the model appears to depart from the measured amount. The current figure is too busy. Provide a separate graph (e.g., 5.1) that shows from post-reclamation year 1996 going forward with pit water elevation from 6775 to 6875 ft amsl.

47. Appendix E, Section 3.2 *Abatement Plan 27, Discharges to Groundwater,* page 15: model calibration predicted 7.5 gpm groundwater discharge, yet water level data suggest no pit water discharge to groundwater. Explain the magnitude of this uncertainty and sources of the discrepancy.

48. Appendix E, Section 4.1 *Closure/Closeout Permit, Post-Mining Land Use (PMLU),* page 19 states that "The PMLU will likely change to livestock, wildlife, limited aquatic life, and secondary contact if the changes in reclaimed areas requires a Permit Revision Application to the CCP." However, this change of PMLU is not requested within the body of the CCP. Please clarify.

49. Appendix E, Section 4.2 *Closure/Closeout Permit, Self-Sustaining Ecosystem,* page 19 states "As long as AP-27 water-quality standards are maintained, the open pit should meet the PMLU and Self-Sustaining Ecosystem requirements, even if the pit does not fill beyond its current level." and "Remaining un-reclaimed pit walls and benches are required to protect and maintain the water source, and are therefore necessary for the self-sustaining ecosystem." (pg 22) Since NMED indicates that the open pit does not satisfy the requirements of AP-27, MMD will not consider the open pit unit a SSE. MMD recommends that LAC modify the Application to request a pit waiver as described in 19.10.5.507.B NMAC unless LAC can provide a method of pit reclamation significantly different than the one in the current proposal.

50. Appendix E, Section 4.3 *Closure/Closeout Permit, Evaluation of Permit Revision or Waiver,* page 22 incorrectly states "A need for a revision may not be required if the open pit water can meet AP-27 standards and maintain those standards with implemented source controls." Pursuant to 19.10.5.505.B(c) NMAC, LAC submitted this Application because the closeout activities described in the Closeout Plan (2002) are significantly different based on the new pit water elevation model (2020).

51. Appendix E, Section 5.1 *Conclusions, AP-27,* page 24 cites Figure 6 at 0.8 ft/yr increase from 2010 to 2020, which varies from decreasing rate to increasing rate. -1ft/yr at 2010-2014; 2015-2016 there are no changes, 2017-2020 at +2.0 ft/yr, and overall 2010 to 2020 is +0.5 ft/yr. Revise the water level increase to accurately describe the data in Figure 6 for the pit lake level.

52. Appendix E, Section 5.2 *Conclusions, Closure-Closeout Plan,* page 24: Areal extent of lake at about 11 acres is a weak position of similarity to the CCP when area generating the acid wall seepage (AWS) is not submerged. Water for wildlife is asserted as a beneficial change relative to surface water. Did pre-open pit mining conditions have springs or temporary puddles on rocks as sources of water for wildlife?

53. Appendix F, Report by DBS&A (2018), *Evaporation Pond Closure Design*: Attachment 5 *Hydrus 1D Modeling Results* is missing from the document.

NMDG&F Comments:

Please review the comment letter received by NMDG&F and respond to all elements that are not also addressed in MMD's comments.

NMED Mining Environmental Compliance Section, Ground Water Quality Bureau Comments ("MECS")

Please review the comment letter received by NMED MECS Ground Water Quality.

NMED Surface Water Quality Bureau Comments ("NMED/SWQB")

Please review the comment letter received by NMED/SWQB.

Please respond to the general and specific MMD comments and review the attached comments from other state agencies and the public within 30 days of receipt of this letter. If you have any questions, concerns, or would like to meet again regarding these comments, please contact me at (505) 216-8399 or at carmen.rose@state.nm.us.

Sincerely,

Carmen Rose, Permit Lead
Mining Act Reclamation Program ("MARP")
Mining and Minerals Division

Attachments: November 5, 2020 Letter to MMD from the NMDCA
November 10, 2020 E-mail to MMD from the Navajo Nation Heritage and Historic Preservation Department
March 12, 2021 Letter to MMD from NMDG&F
March 19, 2021 Letter to MMD from NMED
March 23, 2021 Letter to MMD from NMOSE
April 12, 2021 Letter to MMD from NMMAN (public comment)

CC: Holland Shepherd, Program Manager, MARP, MMD
Kevin Hamatake, Environmental Coordinator, Barrick Gold of North America. Inc.
Steve Finch, Principal Hydrogeologist-Geochemist, John Shomaker & Associates, Inc.
Kurt Vollbrecht, Program Manager, Mining Environmental Compliance Section, NMED
Jonathan Beyeler, Permit Lead, Mining Environmental Compliance Section, NMED

From:	Shepherd, Holland, EMNRD
To:	Rose, Carmen, EMNRD
Cc:	Ohori, David, EMNRD
Subject:	FW: CUNNINGHAM HILL MINE, PERMIT SF002RE
Date:	Wednesday, November 11, 2020 5:40:35 PM

Forgot to forward this to you earlier.

From: Schoeppner, Gerard, EMNRD <Gerard.Schoeppner@state.nm.us>
Sent: Tuesday, November 10, 2020 9:35 AM
To: Timothy Begay <tbegay@navajo-nsn.gov>
Cc: Shepherd, Holland, EMNRD <holland.shepherd@state.nm.us>
Subject: RE: CUNNINGHAM HILL MINE, PERMIT SF002RE

Mr. Begay:
Thank you for your response to Mine and Minerals Division's letter regarding Permit Revision 20-1, Application to Update Closure/Closeout Plan and Financial Assurance for the Cunningham Hill Mine in Santa Fe County.

Jerry

Jerry Schoeppner, P.G.
Director, Mining and Minerals Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Cell 505-467-9671
gerard.schoeppner@state.nm.us

From: Timothy Begay <tbegay@navajo-nsn.gov>
Sent: Tuesday, November 10, 2020 9:23 AM
To: Schoeppner, Gerard, EMNRD <Gerard.Schoeppner@state.nm.us>
Subject: [EXT] CUNNINGHAM HILL MINE, PERMIT SF002RE

Dear Mr. Schoeppner:

The Navajo Nation Heritage and Historic Preservation Department's (NNHPD) Traditional Culture Program is (TCP) in receipt of your letter regarding the request for Permit Revision 20-1, Application to Update Closure/Closeout Plan and Financial Assurance at Cunningham Hill Mine in Santa Fe County, New Mexico.

After reviewing your letter and cross referencing our Traditional Cultural Properties (TCP's) database, NNHHPD-TCP has determined that there are No Navajo TCP's within the project area and you may proceed without further consultation for this project.

If you have any additional questions, concerns or would like to discuss these issues further, please don't hesitate to contact our office at (928) 871-7198 or (928) 871-7152. Thank you for your cooperation and understanding.

Sincerely,

Timothy C. Begay, Navajo Cultural Specialist
Navajo Nation Heritage and Historic Preservation Department
P.O. Box 4950
Window Rock, AZ 86515
tbegay@navajo-nsn.gov

Michelle Lujan
Grisham
Governor

STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 FAX (505) 827-6338

November 5, 2020

Carmen Rose
Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program
1220 S. St. Francis Drive
Santa Fe, NM 87505

Re: HPD Log# 114059, Request for Comments on Updated Closure/Closeout Plan and Financial Assurance, Permit Revision 20-1, Permit No. SF002RE, Cunningham Hill Mine.

Dear Ms. Rose:

I am writing in response to your request for comment on the above referenced permit modification received at this office October 29, 2020

Pursuant to 19.10.5.505 NMAC, Permit Modifications and Revisions, the Director shall determine whether a permit modification would have an adverse impact on cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties or be located in a known cemetery or other burial ground.

According to our files, there are no cultural resources listed on either the National Register of Historic Places (NRHP) or the State Register of Cultural Properties in the modified permit area. There are also no known cemeteries or other burial grounds. Based on this information, this permit modification will have no adverse impacts to cultural resources listed on the National or State Registers.

Although there are no cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties, only portions of the permit area have previously been surveyed for archaeology, and these surveys occurred more than twenty years ago. The surveyed segments of the permit area contain two known archaeological sites, one of these sites has been determined to be eligible for the NRHP and the other has been recommended as eligible for the NRHP

As the mine permit area has only been partially surveyed and as two archaeological sites are located in the permit area, this office recommends that a cultural resources survey be conducted on any undisturbed portions of the permit area where new ground disturbance will occur resulting from this closeout permit revision.

This survey should be performed by a qualified professional to determine if any historic or archaeological properties are present and if so, to provide documentation of those resources to our office. This information can then be used to evaluate the National Register of Historic Places eligibility of any resources identified during

the survey and determine project effects on those resources. A list of state permitted archaeologists and archaeological firms are available from this office upon request or can be downloaded from our web site at:

http://www.nmhistoricpreservation.org/documents/consultants.html

If you have any questions concerning these comments, please do not hesitate to contact me by phone at (505)-452-6115 or e-mail me at richard.reycraft@state.nm.us

Sincerely,

Richard Reycraft

Richard. Reycraft
Staff Archaeologist

GOVERNOR
Michelle Lujan Grisham

DIRECTOR AND SECRETARY
TO THE COMMISSION
Michael B. Sloane

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way, Santa Fe, NM 87507

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For information call: (888) 248-6866

www.wildlife.state.nm.us

12 March 2021

Carmen Rose, Reclamation Specialist
Mining and Minerals Division (MMD)
Mining Act Reclamation Program
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Updated Closure/Closeout Plan and Financial Assurance, Permit Revision 20-1, LAC Minerals LLC, Cunningham Hill Mine, Permit No. SF002RE; NMDGF No. NMERT-864.

Dear Ms. Rose,

The New Mexico Department of Game and Fish (Department) has reviewed the above referenced project. On behalf of LAC Minerals, LLC (LAC), John Shomaker and Associates, Inc. submitted a report (Report) requesting a revision to the Cunningham Hill Mine Permit No. SF002RE. The revision requests to update the closure/closeout plan and financial assurance. A site inspection was conducted on 23 February 2021 by staff from the Department, MMD, the New Mexico Environment Department and the Operator.

LAC is requesting that the Post Mine Land Use (PMLU) for the open pit be designated as Wildlife Habitat and that the pit will meet the MMD definition of a “Self-sustaining Ecosystem”. In Section 4.2 of the Report it states that “As long as AP-27 water-quality standards are maintained, the open pit should meet the PMLU and Self-sustaining Ecosystem requirements, even if the pit does not fill beyond its current level. The revised reclamation plan includes source controls and does not require filling of the open pit beyond the current elevation to meet water-quality standards.” The Department believes that the geological and hydrological complexities and inherent uncertainties make accurately predicting long-term future pit lake water quality extremely difficult. Because of this, the Department does not consider pit lakes that are susceptible to the adverse effects of acid mine drainage appropriate wildlife habitat, and that wildlife should be excluded from accessing the pit lake to the greatest extent that is reasonably possible. The Department also recommends that LAC provide alternative clean water sources that would attract wildlife away from the pit lake.

In Section 5.3 it states that LAC plans to remove components of the Acid Rock Drainage (ARD) Treatment Facility that are no longer needed and to establish a self-sustaining ARD treatment system where passive treatment is available using the existing collection ponds A and B. Collection ponds A and B currently contain ARD water with a pH of around 2.0 that is hazardous to wildlife. During the site inspection it was observed that portions of the protective netting, installed to prevent birds and bats from contacting the toxic water, were sagging below water

level. Additionally, a tear in the netting was observed that can allow wildlife to access the ARD water and also creates an entrapment hazard. The Department recommends that the entire netting system for collection ponds A and B are adequately repaired and redesigned to more effectively prevent wildlife from accessing potentially toxic ARD water. Extruded plastic, knit or woven netting material is preferred. Monofilament nylon netting should not be used due to its tendency to ensnare wildlife and cause injury or death. All materials should be resistant to corrosion and ultraviolet radiation. The Department recommends a mesh size of $^{3}/_{8}^{th}$ inch to exclude smaller animals. If the potential for snow loading needs to be addressed, a maximum mesh size of 1½ inches is acceptable. Netting must be held taut and securely fastened to a rigid and adequately supportive frame or cross-hatched wire cables to prevent sagging. Regular inspection and maintenance are critical to repair holes and to restore tension to prevent sagging. A site inspection should be conducted as soon as possible following heavy snow or high wind events to assess netting for damage, or to clear excessive snow loading if necessary. The Department is available for consultation regarding netting options for site-specific pond sizes and containment needs.

Thank you for the opportunity to review and comment on the proposed updated closure/closeout plan. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist at (505) 476-8159 or ronald.kellermueller@state.nm.us.

Sincerely,

Matt Wunder, Ph.D.
Chief, Ecological and Environmental Planning Division

cc: USFWS NMES Field Office

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

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MEMORANDUM

Date: March 19, 2021

To: Holland Shepherd, Program Manager, Mining Act Reclamation Program

Through: Anne Maurer, Mining Environmental Compliance Section

From: Jonathan Beyeler, Mining Environmental Compliance Section
Alan Klatt, Surface Water Quality Bureau
Sufi Mustafa, Air Quality Bureau

Subject: **NMED Review and Comments, Revision 20-1, Updated Closure/Closeout Plan and Financial Assurance, Cunningham Hill Mine, LAC Minerals (USA), LLC, Santa Fe County, New Mexico Mining Act Permit No. SF002RE**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on October 8, 2020 requesting NMED review and provide comments on the above-referenced Mining Act permitting action. The application is for revision of Mining Act Permit No. SF002RE. Comments were due to MMD on December 7, 2021. A site inspection was originally scheduled in November of 2021. MMD postponed the comment deadline until after a site inspection was performed. Due to COVID-19 restrictions, the multi-agency site inspection was postponed until February 23, 2021. MMD requested comments by March 8, 2021. NMED requested an extension to submit comments by March 12, 2021 and a second extension to submit comments by March 19, 2021. NMED has the following comments.

Background

LAC Minerals (USA), LLC (applicant) submitted the 20-1 Revision application on October 9, 2020 to MMD. The application for permit revision includes a proposed updated Closure/Closeout Plan (Updated CCP). The Updated CCP includes a discussion of surface water and groundwater pollution abatement activities required under the Water Quality Act and Water Quality Control Commission (WQCC) regulations, and proposed surface reclamation activities required under the Mining Act for areas of the mine that are not yet fully reclaimed. The abatement components include the Open Pit water body and associated water treatment system, and the

Waste Rock Pile and associated Dolores Gulch Acid Rock Drainage collection and treatment system. NMED regulates abatement of the pit lake water body and groundwater around the open pit under an abatement plan (AP-27). Groundwater abatement associated with the Waste Rock Pile and the Dolores Gulch Acid Rock Drainage collection and treatment system is regulated by NMED under Discharge Permit 55 (DP-55). Groundwater abatement of the Cyanide Residue Pile Plume is also regulated under DP-55 and is not included in the Updated CCP. The Cyanide Residue Pile area surface has been fully reclaimed and released from further Mining Act requirements.

Air Quality Bureau

The Air Quality Bureau comments are provided under separate letterhead.

Surface Water Quality Bureau

The Surface Water Quality Bureau (SWQB) comments are provided under separate letterhead.

Mining Environmental Compliance Section (MECS)

Future surface reclamation activities proposed in the Updated CCP include areas that can be reclaimed currently and are not associated with existing abatement activities, and areas that cannot be reclaimed until surface water and groundwater pollution have been abated and released by NMED under the WQCC regulations. NMED has the following comments on the proposed reclamation activities.

Open Pit

1) The applicant proposes the following reclamation for the open pit that NMED suggests can be completed at this time. Reclamation of these areas will provide additional source control to aid in open pit water body abatement.
    a. Bench areas with limited access around the open pit.
    b. Placement of wire mesh on certain portions of the pit walls
    c. Surface reclamation of an area on the north side of the open pit

2) The applicant proposes the following reclamation for the open pit that NMED will require be completed following abatement of surface water and groundwater pollution in accordance with AP-27.
    a. Open Pit water body access road corridor
    b. West side access Road

3) The applicant indicates in Section 6.1 of the Updated CCP that a pit waiver is under consideration. NMED suggests that the applicant meet with MMD and NMED to discuss a pit waiver as a potential mechanism to address Mining Act requirements for the open

pit prior to completion of abatement of surface water and groundwater pollution required under AP-27.

4) The applicant states on page 38 of the Updated CCP "*As required by the NMMA Rules, the revised surface water standards in NMAC 20.6.4.97.C.1(a) will likely replace the current AP-27 surface water standards (see Appendix E).*" As mentioned in SWQB comments, NMED will address any necessary changes to the surface water quality abatement standards set forth in AP-27 in accordance with the WQCC regulations and the Water Quality Act. The Mining Act has no authority over surface water quality standards for surface waters of the state.

Waste Rock Pile

The applicant proposes to repair several areas of localized erosion on the north slope of the Waste Rock Pile. NMED has required under DP-55 that the applicant provide a work plan to address this erosion, as well as address concerns related to surface water flow off the benches of the Waste Rock Pile. MMD has requested the applicant provide this work plan for approval as well. Following joint agency approval of the work plan to address cover and drainage issues on the north slope of the Waste Rock Pile, this work should be initiated in accordance with an approved schedule. Reclamation of these areas will provide additional source control to aid in Dolores Gulch Acid Rock Drainage abatement.

The RO treatment ponds on the top surface of the Waste Rock Pile are necessary components of the pit lake water body treatment system. NMED will require reclamation of the RO treatment ponds following completion of abatement of surface water and groundwater pollution required under AP-27.

ARD Treatment Facility

The applicant proposes to remove and reclaim any unnecessary components of the ARD Treatment Facility. NMED has required under DP-55 that the applicant provide an assessment of the ponds associated with the ARD Treatment Facility and determine which are no long necessary. Following NMED review and approval of this evaluation, the unnecessary treatment system components should be removed and reclaimed in accordance with an approved schedule. NMED will require reclamation of any remaining ponds and infrastructure associated with the ARD Treatment System upon completion of abatement of groundwater pollution required under DP-55.

Other Components, Updated CCP

Several additional components of the Updated CCP are almost exclusively related to the abatement requirements of AP-27 and DP-55, and the requirements of the WQCC regulations. This includes Appendix B, Updated Contingency Plan; and Appendix E, Open Pit evaluation report. NMED will provide comments on these two Appendices directly to the applicant and incorporate any necessary changes to AP-27 and DP-55 as appropriate. NMED will copy MMD on all comments provided to the applicant related to the appendices

Financial Assurance

The Updated CCP does not include a proposed cost estimate for the proposed reclamation activities. Following agreement on the scope of required surface reclamation activities noted above that can be completed prior to completion of water quality abatement, the applicant should be required to provide a cost estimate for review. Financial assurance for these activities should be held jointly by NMED and MMD. NMED has requested an updated cost estimate for abatement activities associated with AP-27 and DP-55 in the recent renewal of DP-55, contingent on approval of the Updated CCP. NMED will continue to maintain separate financial assurance for activities associated with abatement of surface water and groundwater pollution.

NMED Summary Comment

NMED is withholding issuance of the environmental determination pending satisfactory applicant response to the comments herein.

If you have any questions, please contact Kurt Vollbrecht at (505) 660-9420.

cc: Carmen Rose, Lead Staff, EMNRD-MMD
Kurt Vollbrecht, Program Manager, MECS
Shelly Lemon, Bureau Chief, NMED-SWQB
Elizabeth Bisbey-Kuehn, Bureau Chief, NMED-AQB

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Deputy Secretary

MEMORANDUM

DATE: March 16, 2021

TO: Anne Mauer, Mining Environmental Compliance Section, Ground Water Quality Bureau

FROM: Alan Klatt, Watershed Protection Section, Surface Water Quality Bureau

SUBJECT: **Request for Review and Comment, Cunningham Hill Mine, Updated Closure/Closeout Plan and Financial Assurance, Revision 20-1, Santa Fe County, New Mexico Mining Act Permit No. SF002RE**

The New Mexico Environment Department (NMED)-Surface Water Quality Bureau (SWQB) received the Subject request for comments on November 13, 2020. The application has been submitted by LAC Minerals (USA) LLC for the Cunningham Hill Mine located in Santa Fe County. SWQB has prepared the following comment pursuant to 19.10.5.506.E New Mexico Administrative Code (NMAC).

Both the Updated Contingency Plan (under Appendix B, Section 3.1 Performance Standard CHP-1: Open Pit Water Quality) and the Updated Closure/Closeout Plan (under Table 3 in Appendix E, Section 3.1 Surface Water Quality Standards) reference 20.6.4.97.C.1(a) NMAC as the applicable surface water quality standard for the open pit. This standard only applies to the ephemeral waters in Cunningham Gulch. Perennial waters of the state, such as open pit lakes, are subject to 20.6.4.99 NMAC and include designated uses for warmwater aquatic life, livestock watering, wildlife habitat, and primary contact. SWQB will work with GWQB to ensure that appropriate surface water standards are established and achieved through AP-27.

For questions related to these comments, please contact Alan Klatt, SWQB, at 505-819-9623.

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MEMORANDUM

DATE: March 15, 2021

TO: Kurt Vollbrecht, Program Manager, Mining Environmental Compliance Section

FROM: Sufi Mustafa, Staff Manager, Air Dispersion Modeling and Emission Inventory Section, Air Quality Bureau

RE: Request for Review and Comment, Cunningham Hill Mine, Updated Closure/Closeout Plan and Financial Assurance, Revision 20-1, Santa Fe County, New Mexico Mining Act Permit No. SF002RE

The New Mexico Air Quality Bureau (AQB) has completed its review of the above-mentioned mining project. Pursuant to the New Mexico Mining Act Rules, the AQB provides the following comments.

Air Quality Permitting History

The AQB has issued Permit No. 2420 to this mine site for the operation of power generating engines.

Details

LAC Minerals (USA) LLC has requested to revise Permit No. SF002RE by updating the Closeout/Closure Plan (CCP) for the Cunningham Hill Mine Reclamation Project. The updated CCP reflects changes due to ongoing reclamation activities.

Air Quality Requirements

The New Mexico Mining Act of 1993 states that "Nothing in the New Mexico Mining Act shall supersede current or future requirements and standards of any other applicable federal or state law." Thus, the applicant is expected to comply with all requirements of federal and state laws pertaining to air quality.

20.2.15 NMAC, *Pumice, Mica and Perlite Processing.* Including 20.2.15.110 NMAC, *Other Particulate Control:* "The owner or operator of pumice, mica or perlite process equipment shall not permit, cause, suffer or allow any material to be handled, transported, stored or disposed of or a building or road to be used, constructed, altered or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne."

Paragraph (1) of Subsection A of 20.2.72.200 NMAC, *Application for Construction, Modification, NSPS, and NESHAP - Permits and Revisions*, states that air quality permits must be obtained by:

"Any person constructing a stationary source which has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Ambient Air Quality Standard. If the specified threshold in this subsection is exceeded for any one regulated air contaminant, all regulated air contaminants with National or New Mexico Ambient Air Quality Standards emitted are subject to permit review."

Further, Paragraph (3) of this subsection states that air quality permits must be obtained by:

"Any person constructing or modifying any source or installing any equipment which is subject to 20.2.77 NMAC, *New Source Performance Standards*, 20.2.78 NMAC, *Emission Standards for Hazardous Air Pollutants*, or any other New Mexico Air Quality Control Regulation which contains emission limitations for any regulated air contaminant."

Also, Paragraph (1) of Subsection A of 20.2.73.200 NMAC, *Notice of Intent*, states that:

"Any owner or operator intending to construct a new stationary source which has a potential emission rate greater than 10 tons per year of any regulated air contaminant or 1 ton per year of lead shall file a notice of intent with the department."

The above is not intended to be an exhaustive list of all requirements that could apply. The applicant should be aware that this evaluation does not supersede the requirements of any current federal or state air quality requirement.

Fugitive Dust

Air emissions from this project should be evaluated to determine if an air quality permit is required pursuant to 20.2.72.200.A NMAC (e.g. 10 lb/hour or 25 TPY). Fugitive dust is a common problem at mining sites and this project will temporarily impact air quality as a result of these emissions. However, with the appropriate dust control measures in place, the increased levels should be minimal. Disturbed surface areas, within and adjacent to the project area, should be reclaimed to avoid long-term problems with erosion and fugitive dust. EPA's *Compilation of Air Pollutant Emission Factors, AP-42, "Miscellaneous Sources"* lists a variety of control strategies that can be included in a comprehensive facility dust control plan. A few possible control strategies are listed below:

Paved roads: covering of loads in trucks to eliminate truck spillage, paving of access areas to sites, vacuum sweeping, water flushing, and broom sweeping and flushing.

Material handling: wind speed reduction and wet suppression, including watering and application of surfactants (wet suppression should not confound track out problems).

Bulldozing: wet suppression of materials to "optimum moisture" for compaction.

Scraping: wet suppression of scraper travel routes.

Storage piles: enclosure or covering of piles, application of surfactants.

Miscellaneous fugitive dust sources: watering, application of surfactants or reduction of surface wind speed with windbreaks or source enclosures.

Recommendation

The AQB has no objection to the current request to revise their MMD permit.

This written evaluation does not supersede the applicability of any forthcoming state or federal regulations.

If you have any questions, please contact me at 505.476.4318.

From:	Rappuhn, Doug H., OSE
To:	Rose, Carmen, EMNRD
Subject:	NMOSE Review of Updated Closure/Closeout Plan; Permit Revision 20-1, MMD Permit No. SF002RE, Cunningham Hill Mine
Date:	Tuesday, March 23, 2021 7:00:39 AM

Carmen Rose
Sr. Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program

Dear Ms. Rose –

Thank you for the opportunity for the NMOSE to comment on the subject Updated Closure / Closeout Plan, initially requested October 28, 2020. Application for Revision 20-1 of MMD Permit No. SF002RE and related October 2020 Revision to July 2020 CHMRP Closure Plan Update includes changes to previous submittals by LAC Minerals (USA) LLC regarding the Cunningham Hill Mine Reclamation Project (CHMRP) due to updated data on general project progress, including open pit filling and open pit water chemistry.

As this was a project update, NMOSE comments are restricted to those general in nature at this time, offered as follows:

- Numerous wells and types of wells exist on the project tract. Complete tabulations of wells by well network or use may have been provided in previous submittals or updates to accompany maps such as Figure 4 (CHMRP Closure Plan Update, October 2020 Revision). It would be helpful for future updates to routinely include such a tabulation, listing well identifier / agency permit number, site coordinates, site elevation (if available), well use, casing and screen intervals, casing diameter, and general nature and frequency of measurement / sampling / use to track availability of data for review as the need is suggested.

- It is anticipated that as cessation of well use occurs due to monitoring protocol, sampling or project wind-down, or attrition, a number of the wells may require decommissioning. For wells designated for decommissioning, NMOSE Well Plugging Plan of Operations Form WD-08 must be submitted to and approved by the NMOSE prior to the initiation of any well plugging activity. The approval process will include the appropriateness of decommissioning method, and proposed sealant choice and placement. Well plugging shall be conducted by the firm of a New Mexico-licensed water well driller.

- If new or revised uses of ground or surface water are anticipated or realized, or the need

for additional monitor well drilling arises, the NMOSE Water Rights Division should be consulted to determine the need for and nature of filing applications necessary to change and/or condition an existing or new permitted use.

Douglas H Rappuhn, PG

Hydrology Bureau

New Mexico Office of the State Engineer

doug.rappuhn@state.nm.us

April 12, 2021

Carmen Rose
Reclamation Specialist
Mining and Minerals Division
Mining Act Reclamation Program
1220 S. St. Francis Drive
Santa Fe, NM 87505

RE: Public Comments on Updated Closure/Closeout Plan and Financial Assurance, Permit Revision 20-1, Permit No. SF002RE, Cunningham Hill Mine

Dear Ms. Rose:

Please find attached the New Mexico Mining Act Network's (NMMAN) comments on the Cunningham Mine permit. These comments were prepared for NMMAN by Jim Kuipers of Kuipers and Associates.

Thank you for consideration of our input.

Sincerely,

Rachel Conn
Co-Chair NMMAN
Projects Director
Amigos Bravos

Allyson Siwik
Co-Chair NMMAN
Executive Director
Gila Resources Information Project

Cc: Holland Shepherd, MMD/MARP
Kurt Vollbrecht, NMED/MECS

James Kuipers P.E.
Principal Consulting Engineer
jkuipers@kuipersassoc.com

Kuipers & Associates, LLC

PO Box 145
Wisdom, MT 59761
406-689-3464

April 12, 2021

To: Rachel Conn, Amigos Bravos; Allyson Siwik, Gila Resources Information Project

From: Jim Kuipers P.E., Kuipers & Associates

Re: **Cunningham Hill Mine Reclamation Project CCP Update Technical Review Comments**

Please find the following comments based on our review of the Cunningham Hill Mine Reclamation Project Closure/Closeout Plan (CCP) Update by JSAI on behalf of LAC Minerals revised and submitted to the Mining and Minerals Department (MMD) on October 2020. The comments are to an extent limited by a lack of prior involvement with the site.

It is our understanding based on conversations with the New Mexico Environment Department (NMED), and comments provided by NMED to MMD on the CCP, that the updated CCP will not alter or otherwise affect the existing conditions and requirements of AP-27, the Abatement Plan for the Cunningham Hill Mine Open Pit Facility issued by NMED, or DP-55, the Discharge Permit for the Cunningham Hill Mine Facility issued by NMED. Therefore, the following comments are limited to those applicable only to the New Mexico Mining Act (NMMA) (NMSA 1978, §69-36-1, et seq. (1993, as amended through 1999) and NMMA Rules (Title 19, Chapter 10, Parts 1 through 14 NMAC, and any amendments thereto).

As noted in the CCP, the mine closed in 1987, and between 1996 and 2020 reclamation has been completed and financial release issued for many areas of the mine (243 acres released out of 363 total disturbed). The CCP addresses the reclamation efforts required related to the remaining areas, which also have closure requirements in AP-27 and DP-55. This consists of the Open Pit, Waste Rock Pile, ARD Treatment Facility in Dolores Gulch, Freshwater Makeup Ponds, and plugging and abandonment of monitoring wells.

3.2.1 Cunningham Hill Mine Open Pit

According to this section, mining ceased at 6,665 ft amsl and in June 2020 the surface elevation of the Open Pit waterbody was approximately 6,800 ft amsl.

Recommendation: The CCP should provide the depth of the current waterbody (135 ft). The CCP should also address the limnological characteristics of the waterbody to ensure that aspects such as stratification and potential turnover are considered in management of the pit waterbody.

Also, according to this section, a geotechnical investigation was conducted to evaluate the probable long-term stability of the Cunningham Hill Open Pit Slopes (Call & Nicholas, Inc. 1994). According to the CCP, the evaluation concluded that the current post-mining configuration is stable and that the probability of the occurrence of a large-scale slope failure is low.

It has been my experience at numerous other mine sites throughout the U.S. that nearly all evaluations of long-term stability start with presumption that large-scale slope failure is unlikely, and exceptions have been made only where actual slope failure is evident. An example relevant to New Mexico that MMD is familiar with is the Questa Mine. An initial opinion prior to the year 2000 was provided by the owner's engineer of record at that time that there was no evidence of instability associated with the open pit at the Questa Mine. However, after I formally challenged that opinion, a second opinion was provided by a technical review board, and they acknowledged clear evidence of a large-scale slope failure that was active. A third evaluation by the new owner, Chevron, and a new engineer of record (R. Dawson, Norwest) showed clear evidence of an active pit highwall failure, and acknowledged that there was a significant probability of occurrence of a large-scale highwall failure that could impact some existing mine facilities and roads. Based on our experience, rather than suggest there is a low-likelihood of pit wall failure, it is critical that the potential for such failures be recognized, which allows for focus on the more important need to assess whether the failure will result in safety or environmental hazards.

It is also important to note that "predictions" in general are nearly always bounded by a high level of uncertainty and often prove to be inaccurate. A case in point noted in this section of the CCP is the initial prediction at the same time as that of the pit highwall stability that the pit waterbody would not become acidic over time (Adrian Brown Consultants, Inc., 1996). According to the CCP, by 2002 actions such as Reverse Osmosis treatment were being required to address acid generation from the pit walls impacting water quality. Long-term pit wall stability estimates are no more reliable than long-term water quality estimates and should always be accompanied by a discussion as to the inherent uncertainty present in such estimates.

Recommendation: The previous geotechnical investigation should be updated included based on current site observations and methods. In conducting the evaluation, "long-term" should be defined as over geologic time. Safety should address not only "public" safety but the future safety of regulators and contractors who at some point in the future will be required to perform the site monitoring and maintenance, as well as any water treatment operations, next to or within the Open Pit and waterbody. For this reason, the investigations should also include a multi-stakeholder Failure Modes and Effects Analysis (FMEA)[1] that considers the various types and extents of open pit wall failures that could occur (e.g. failure modes), the probability and consequences of occurrence, and mitigation measures that could be used to reduce the probability and/or consequences of occurrence.

Also, according to this section, "As determined by long-term monitoring and model calibration, the Open Pit water body has achieved near steady-state level at 6,800 ft amsl elevation (JSAI, 2011; JSAI, 2020)." However, according to Appendix B (JSAI 2020) "Steady-state Open Pit water levels are predicted to range from 6,800 to 6,840 ft above mean seal level (amsl)." "The maximum expected open pit water level is 6,840 ft amsl, which would require an average open pit water level rise of 0.6 ft/yr over the next 60 to 70 years. The observed rise in open pit water levels over the last 4 years has been at an average rate of 2.0 ft/yr

Recommendation: The CCP should provide additional information as to predicted future pit waterbody levels going out at least 200 years, and identify the potential amount of fluctuation in the pit lake level over periods of drought, excess precipitation, and accounting for future climate change. The CCP should define and identify the bounds of steady-state that is expected to be achieved as "near steady-state level" is not a meaningful description without further context.

[1]Robertson 1996, Failure Modes & Effects Analysis (FMEA) https://rgc.ca/?page=page&id=99

3.2.2 Reclaimed Waste Rock Pile

According to the CCP, "Between 2011 and 2016, significant improvements were made to shed stormwater runoff and reduce the potential for cover erosion." The CCP does not identify the actual improvements that were made other than to suggest they were "significant."

Recommendation: The CCP should described the improvements that were made and suggest how they were significant in reducing the potential for cover erosion."

Also, according to the section, "As a result of source controls implemented between 2011 to current, Waste Rock Pile ARD flows have significantly decreased to where only ARD ponds A and B have been utilized for discharge by evaporation. The lime treatment system and ponds have not been in use for over a decade." The CCP does not identify the actual decrease in flows other than to describe them as "significant." This information is provided in Section 4.4 but should be also included in this section.

Recommendation: The CCP should describe the actual flows over the period of record (a Figure would be helpful in doing so) from the Waste Rock Pile. As noted in later comments, it should also describe the chemistry and contaminant load over the same period. The significance of a reduction in flows should be considered related to the overall load of contaminants from the pile, rather than just on the quantity of flows alone.

4.2 Open Pit

According to this section of the CCP, "The Open Pit water body has achieved a current steady-state water level elevation of 6,800 ft amsl, which has a surface area of 2.82 acres."

Recommendation: As also noted in comments on Section 3.2.1, the CCP should identify when actual steady-state is expected to be achieved as "near steady-state level" and "current steady-state" water level are not meaningful descriptions without further context.

4.3 Waste Rock Pile

According to this section of the CCP, "There has been a substantial decrease in the volume of water emanating from the toe of the Waste Rock Pile (see DP-55 annual reports)."

Recommendation: As also noted in comments on Section 3.2.2, the CCP should describe the actual flows over the period of record (a Figure would be helpful in doing so) from the Waste Rock Pile.

4.3.1 Recontouring and Cover System

According to the CCP, "Vegetation monitoring results indicate that revegetation efforts conducted to date have been successful at re-establishing a productive vegetation community (Metric, 1995c, 1995d)." The CCP provides Table 5. Vegetation monitoring results, which the reader might infer are intended to demonstrate success at re-establishing a productive vegetation community. In the next paragraph the CCP identifies revegetation surveys conducted post-1995 including a 2017 revegetation survey that according to the CCP "indicated ground cover data and associated species diversity collected

from the Waste Rock top and slopes areas are in excellent condition and readily pass bond release standards for ground cover and species diversity (Cedar Creek Associates, Inc., 2018)."

Recommendations: The 1995 results are no longer relevant and in addition the information presented in Table 5 does not appear to support any conclusion as to long-term revegetation success related to a sustainable ecosystem. The more recent 2017 revegetation survey is relevant and additional information should be provided in the CCP to support the results beyond suggesting the "…areas are in excellent condition and readily pass bond release standards…"

4.4 ARD Treatment System

According to the CCP, "ARD flow averaged 7.3 acre-feet per year (ac-ft/yr) from 1991 to 2005, and from 2005 to current ARD flow has averaged 0.7 ac-ft/yr." 1 ac-ft = 0.62 gpm, so this suggests the average flow decreased from approximately 4.5 gpm to approximately 0.4 gpm.

Recommendation: The CCP should present the information in terms of gpm rather than ac-ft as the information on the flow rate is more informative when using gpm with respect to magnitude as well as treatability. For example, the ability to address the flows using passive evaporation methods is much more technically feasible for flow rates of less than 5 gpm than if flow rates were greater. As noted previously, when describing the flow, the actual information provided in this section should be cited if suggestions as to significance are made.

5.0 RECLAMATION PERFORMANCE OBJECTIVES

According to the CCP, "A wildlife impact analysis was completed (Metric Corporation, 1995b) in September 1995 to analyze the long-term implications for wildlife of implementing the reclamation measures proposed in the CCP." The CCP then goes on to note that "…the study did not recognize… that the wildlife habitat in the permit area did not have access to a perennial source of water such as the Open Pit water body."

Recommendation: What the CCP should emphasize is that the study recognized that the natural and sustainable wildlife habitat in the permit area, prior to any disturbances by mining, did not include an open pit water body. The suggestion by the CCP that an open pit water body is a benefit in terms alteration of the previously existing natural and sustainable wildlife habitat is unwarranted.

5.1 Open Pit

The CCP suggests "Wildlife habitat has already been documented for the Open Pit water body (see photo-graphic documentation in Appendix D)."

The presence of wildlife does not necessarily translate to suitable and desirable habitat. For example, if an open pit water body attracts a concentration of a particular animal species, that animal may become more susceptible to predation, and/or create scarcity of the species in other areas, as well as impact their otherwise natural and sustainable use of the area similar to what existed prior to mining. In addition, the water quality of the open pit water body will require ongoing monitoring and, in all likelihood, periodic treatment for as long as it exists. Without consideration of the entire ecosystem impact well beyond the open pit water body, it is not possible to determine whether an open pit water body in this particular setting can be defined as a desirable outcome.

Recommendation: The company and the agencies should reconsider the proposal of a pit lake water body. Alternatively, consideration should be given to backfilling the open pit to the level necessary to prevent the formation of a pit lake, which would restore the area to its natural condition and could be accomplished so as to achieve a sustainable ecosystem. While this would quite likely create the need for additional on-going water management including treatment, it would result in the restoration of the site to a more natural condition, therefore the cost-benefit should be considered in terms of meeting the requirements of the New Mexico's mining and water quality laws and regulations.

According to the CCP "As indicated in JSAI (2020), included as Appendix E to this CCP, "The January 2020 open pit water-quality results meet the revised surface water quality standards for wildlife, livestock, and secondary contact." JSAI (2020) provides additional details on surface water quality standards and the Open Pit water body." The CCP does not provide as to the relevance of this accomplishment for a single month and the information elsewhere that water treatment of the open pit water body is planned for the relatively near future.

Recommendation: The CCP should describe the history of water quality results prior to January 2020, since that time to current, and provide a prediction as to future water quality. It should provide a comparison of water quality for those periods with the applicable water quality standards. The prediction as to future water quality should be for at least 200 years in the future and account for evapo-concentration of constituents of concern. The CCP should provide the context of any future open pit waterbody treatment that is planned and the proposal for a self-sustaining ecosystem involving the same waterbody. While water treatment is described in Section 8.0 Reclamation Schedule, it should have been described in this section.

5.2 Waste Rock Pile

The CCP identifies one of the four criteria in their reclamation performance objectives as "Limit the production of ARD to where passive treatment is self-sustaining."

It has been our experience and we believe the preponderance of evidence supports the fact that passive treatment, while requiring significantly less capital and no active operations, cannot be expected to be "self-sustaining." Periodic maintenance and replacement of ponds, media, and conveyances is still required. So, while the overlying revegetation may result in meeting the requirements of the Mining Act, future monitoring and maintenance of the waste rock pile cover and stormwater conveyances, vegetation, and passive treatment will continue to be necessary into the future for as long as required to meet New Mexico's water quality regulations.

Recommendation: The CCP should make clear that long-term monitoring and maintenance will be a necessary condition of the CCP and also must be accounted for in existing and future financial assurance for the site.

7.0 POST-RECLAMATION MONITORING AND MAINTENANCE

According to the CCP, the monitoring period under this CCP will be 12 years from the completion of reclamation activities, except for water quality remediation under DP-55. If, at the end of 12 years, a monitored condition exists that does not meet NMMA requirements, monitoring and remedial actions for that condition will be extended beyond 12 years as determined by MMD.

In other CCPs submitted under the requirements of the Mining Act the requirements of the Water Quality Act, such as that require by DP-55, have been incorporated. This CCP is difficult to understand as the incorporation appears to be included in places but excluded in others. The section is an example wherein the requirements of NMED are likely to result in more robust and long-term monitoring and maintenance that is not described in the CCP.

Recommendation: The CCP should be revised to describe and incorporate the requirements of both AP-27 and DP-55 to the extent necessary to satisfy the NMED.

Financial Assurance

The reviewer did not find a financial assurance estimate appended to the CCP or otherwise available on the MMD website. The CCP should not be considered technically complete, and formal public review should not be initiated, until that information is available. The financial assurance estimate should provide for not only the requirements of the Mining Act, but also for NMED requirements related to the Water Quality Act, including long-term monitoring and maintenance of the site. While we understand that NMED is confident in their financial assurance for these aspects, it should nonetheless be treated diligently and made transparent and current. The agencies should address how financial assurance will be administered over the long-term.