June 20, 2025 Project No. 210105.10

Lucas West
Environmental Protection Specialist
Division of Reclamation, Mining and Safety
Room 215, 1313 Sherman Street[1]Avenue
Denver, Colorado 80203

RE: Battle Mountain Resources, Inc's Response to June 5, 2025 San Luis Project, Permit No. M-1988-112, 112d-3 Reclamation Permit Amendment (AM-4), Comments and Objections Forwarded to Applicant

Dear Mr. West,

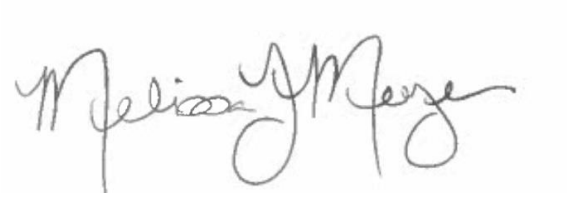
Included in this document are Battle Mountain Resources, Inc. (BMRI) responses to objections filed to Colorado Division of Reclamation, Mining and Safety (DRMS) from Costilla County Board of County Commissioners and Costilla County Conservancy District.

Below is a list of relevant documents, comments, and responses

- BMRI San Luis Project Permit Amendment Application
  - April 11, 2025 Permit Amendment Application San Luis Mine Project Permit No. M-19(sic)88-112 (BMRI April 11, 2025)
- DRMS Letter forwarding objections
  - June 5, 2025 San Luis Project, Permit No. M-1988-112, 112d-3 Reclamation Permit Amendment (AM-4), Comments and Objections Forwarded to Applicant (DRMS June 5, 2025)
    - Costilla County Board of County Commissioners Objection
      - June 4, 2025 Objection and Comments to San Luis Project-File No. M-1988-112, Battle Mountain Resources, Inc. Amendment (AM-4) Installation of a Groundwater Intercept Wall (BOCC June 4, 2025)
    - Costilla County Conservancy District Objection
      - June 4, 2025 Costilla County Conservancy District submitted objections (CCCD June 4, 2025)

BMRI's responses are included in table format for your review.

Respectfully Submitted,
**Engineering Analytics, Inc.**



Melissa Meyer, P.E.
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CC
Justin Raglan, Lead Legacy US Sites, Newmont
Julio Madrid, Lead Legacy Colorado, Battle Mountain Resources Inc.
Devon Horntvedt, US Technical Lead Legacy, Battle Mountain Resources Inc.
Karen DeAguero, Technical Advisor, United States Legacy Sites, Battle Mountain Resources, Inc.
Travis Marshall, Senior Environmental Protection Specialist, Division of Reclamation, Mining and Safety

# June 2025 Battle Mountain Resources Inc. Response to Objections for Permit Amendment AM-4 San Luis Project, Permit No. M-1988-112, 112d-3

***Prepared for:***
Lucas West
Environmental Protection Specialist
Division of Reclamation, Mining and Safety

*Prepared by:*

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**On behalf of San Luis Project and Battle Mountain Resources:**

Devon Horntvedt
US Technical Lead Legacy
Battle Mountain Resources, Inc.

Project No. 210105.10
*June 20, 2025*
*Rev. 0.0*

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| The Board of County Commissioners for Costilla County Objections for Permit Amendment AM-4 San Luis Project, Permit No. M-1988-112, 112d-3 – Dated June 4, 2025 | | |
| III.1. | **Board of County Commissioners for Costilla County (BOCC) from June 4, 2025 Objection and Comments to San Luis Project-File No. M-1988-112, Battle Mountain Resources, Inc. Amendment (AM-04) Installation of a Groundwater Intercept Wall(June 4, 2025):**<br><br>**" BMRI Statement:** In its April 11, 2025 letter to Mr. Lucas West, BMRI outlines its contentions when stating it 'proposes to install a slurry wall around portions of the West Pit to reduce the inflow of groundwater from the adjacent alluvial aquifer, which will decrease the volume of water requiring treatment in the West Pit. The proposed installation of the slurry wall meets the objectives of the GWMP and does not affect the function of the current pump and treat remedial action."<br><br>"A. Comment: The statement is problematic to the extent that it does not take into account water emanating into the West Pit from a breach of the confining layers, a primary source of water that enters the backfilled West Pit. Assuming a slurry wall is constructed as proposed, by definition, this would have no control over the waters emanating up and into the West Pit. The slurry wall does not prevent flow underneath the wall. Further, without quantifying the amount of water in the West Pit, with a break out of the water emanating from below and that which flows into the West Pit from the alluvial aquifer, it is unclear how a calculation could be made that takes into account the recharge and discharge to and from the West Pit area. To the extent this is feasible, the better practice is to have quantification of each factor, with a clearer understanding of the hydrological conditions of the West Pit area, including the conditions attaching to the upward migration of waters into the West Pit." | The intent of the slurry wall is to prevent groundwater from the alluvial aquifer from entering the West Pit, (see Section 7.3-pp 12, Exhibit G, Permit Amendment). Following the slurry wall installation, groundwater will continue to be pumped from within the West Pit to maintain current water levels that are prescribed in Discharge Permit (CO-045675), which are below that of the adjacent Rito Seco. The rate of pumping to achieve the required water level elevation within the West Pit is anticipated to be much lower than current rates because of the removal of the alluvial aquifer contribution. Groundwater modeling indicates that after installation of the slurry wall pumping rates from the West Pit on the order of 20 to 30 gallons per minute (as opposed to the current 200 gpm without the wall) will be sufficient to keep the water levels at the current levels that are prescribed in Discharge Permit (CO-045675). The actual rates may be higher or lower. BMRI will pump groundwater from the West Pit at whatever rates are necessary to maintain the prescribed water level in the Pit.<br><br>Hydrologic investigations and groundwater modeling indicate that the majority of the groundwater that recharges the West Pit is derived from the alluvial aquifer via the "alluvial window" along the southeast and south portions of the West Pit. The alluvial window is an area where the alluvium is in direct contact with the backfill materials.<br><br>The groundwater modeling was calibrated to site water level data and accounts for groundwater inflow from all sources, including the alluvial, Precambrian, Santa Fe, and meteoric waters.<br><br>The rate of groundwater pumping that is extracted from the backfill material in the West Pit is approximately 200 gpm. The water level within the West Pit has remained relatively stable during the past 25 years while pumping has remained at an extraction rate of approximately 200 gpm. Because the water level in the West Pit has remained essentially the same for the past 25 years, this means that the amount of water leaving the West Pit and the amount of water flowing into the pit are essentially equal, otherwise the water level in the pit would either fall or rise. The only discharge that is occurring from the West Pit is from the pumping backfill well (and a very slight amount from surface evaporation). Results of a detailed analysis of groundwater conditions in the vicinity of the alluvial window indicate that more than 173 gpm of alluvial groundwater is entering the West Pit (see (Appendix B Section 5.0, p. 12 Exhibit G, Permit Amendment) . A mass balance calculation indicates if >173 gpm of West Pit inflow is derived from the alluvial aquifer, then less than 27 gpm is attributed to the combined inflow of the Precambrian, Santa Fe and meteoric waters is less than 27 gpm. That inflow was accounted for in the groundwater models.<br><br>To further address the possibility that flow from the bedrock may be higher than anticipated, additional groundwater models were developed to evaluate such a condition (Appendix C, Section 6.1 - pp. 19, Exhibit G, Permit Amendment). The modeling results predict that for the slurry wall simulation with a higher rate of inflow from the bedrock, a pumping rate of 50 gpm would be required to reach the prescribed water level elevation in the West Pit (Appendix C, Section 7.2.5 - pp. 25, Exhibit G, Permit Amendment). This would still be a substantial reduction from the current 200 gpm rate. |
| III.2. | **(BOCC, 2025) "BMRI Statement:** Also problematic is the statement that 'the volume of groundwater requiring treatment will be substantially reduced (to a predicted 10% of current rates'"<br>**"A. Comment:** Again, what are the 'current rates' for the alluvial groundwater that enters | Groundwater modeling indicates a slurry wall would be effective in greatly reducing the volume of groundwater entering the West Pit (Appendix C, Section 7.1.2.5- pp. 25, Exhibit G, Permit Amendment, and Appendix E, Section 4.4-pp7-8, Exhibit G, Permit Amendment). Hydrologic studies were conducted to validate the results of the groundwater modeling. Specifically, aquifer properties were evaluated from a |

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| | the West Pit along with the attendant amounts of discharge from the West Pit, such as seepage and losses? Presumably, these factors have not been measured or are incapable of measurement based upon the lack of knowledge of the hydrological condition underlying the West Pit area. Without complete hydrogeological characterization, it is impossible to determine proper design and whether the slurry wall will be as promising (sic) as promised." | series of pumping tests conducted at five wells completed within the alluvial aquifer (Appendix B, Tables 4 and 5, Exhibit G, Permit Amendment) and one well completed in the Santa Fe aquifer (Appendix A, Section 3.0 pp 6-7, Exhibit G, Permit Amendment). Those wells are all located in the area of the "alluvial window". Aquifer properties, including transmissivity, saturated thickness, hydraulic conductivity and hydraulic gradient were used to calculate the groundwater flux into the West Pit through the alluvial window (Appendix B Section 5.0, p. 12 Exhibit G, Permit Amendment). The calculations indicated that approximately 173 gallons per minute (gpm) of alluvial groundwater passes through the southeastern portion of the alluvial window into the West Pit. Additional alluvial groundwater is discharged into the West Pit along the more southerly portion of the alluvial window that is not accounted for in the calculation. The rate of groundwater pumping that is extracted from the backfill material in the West Pit is approximately 200 gpm. The water level within the West Pit has remained relatively stable during the past 25 years while pumping has remained at an extraction rate of approximately 200 gpm. Essentially, the amount of water entering the West Pit from all sources is also approximately 200 gpm, otherwise the water level in the pit would either fall or rise in response to over or under pumping. A simple mass balance indicates that if more than 173 gpm of alluvial groundwater is entering the West Pit out of a total inflow of 200 gpm, then the combined inflow of the Precambrian, Santa Fe and meteoric waters is less than 27 gpm. The inflow was accounted for in the groundwater models.<br><br>Groundwater modeling of flow after placement of a slurry wall indicates a decrease in the inflow into the West Pit by more than 173 gpm of the current total inflow of approximately 200 gpm. This would greatly reduce the volume of water that must be extracted from the West Pit to maintain an elevation that is lower than the adjacent section of the Rito Seco. |
| III.3. . | **(BOCC,2025): "BMRI Statement:** The April 11 letter further contends that 'a reduction in the production of the brine/treatment solids generated from the treatment may allow different disposal options. If the brine treatment solids no longer have to be discharged to the tailings impoundment, this will allow for eventual closure of tailings facility.'"<br><br>A. **Comment:** Generally, the less water that has to be treated is a good thing. However, the suggestion of closing the tailings facility or no longer needing a pumping program is highly problematic. Closure ignores the continual migration of waters up and into the West Pit with these waters interacting with the backfilled materials in the West Pit and creating poor quality water. Closure ignores the possibility that a breach of the slurry wall may occur in the future. There is no evaluation of the failure of the slurry wall or the consequences of such a failure. Further, BMRI does not assert that the "leak can be plugged" in the confining layers. As such, continual treatment of poor-quality water must continue into perpetuity. | Potential closure of the tailing's facility does not imply cessation of the Groundwater Management Plan. It is acknowledged that groundwater will continue to be extracted from the West Pit following installation of the slurry wall and that extracted water will require treatment. The reduction in the volume of groundwater that requires treatment may result in a reduction in the production of the brine/treatment solids generated from that treatment. The reduced production of brine/treatment solids of groundwater may allow different disposal options such as evaporation ponds or onsite storage facilities.<br><br>In the event the slurry wall is ineffective, the water level within the West Pit can still be controlled by pumping, in the same manner that it is today. There is sufficient monitoring under the current Groundwater Management Plan and Discharge Permit CO-0045675 to detect changes in the water level within the West Pit. If a rise in water level is detected within the West Pit, pumping rates will be adjusted to correct the level to the prescribed limits. This is unchanged from the current remediation that is in place. |
| IV.1. | **(BOCC, 2025):** "The hydrology/geology underlying the southern half of Costilla County is to large extent unknown and at best only partially understood." | The BOCC states that "*The hydrology/geology underlying the southern half of Costilla County is to large extent unknown and at best only partially understood."* That may or may not be true for other portions of southern Costilla County. However, the hydrogeology/geology of the West Pit has been extensively investigated, prior to mining, during mining and during post mining reclamation, and are well understood. There is an extensive network of monitoring wells in the vicinity of the West Pit (approximately 50 wells) (see Table G-1, Exhibit G, Permit Amendment) that are routinely measured for water levels and water |

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| | | quality. Some of those measurements have been collected since 1990, shortly after mining ended. Aquifer tests (pumping tests) have been conducted at over 25 of those wells (see Table G-2, Exhibit G, Permit Amendment) providing extensive data on aquifer characteristics in the vicinity of the West Pit. The geology and hydrogeology of the West Pit are described in Sections 3.0 and 4.0, respectively of Exhibit G, Permit Amendment. Following initial groundwater modeling to evaluate the feasibility of a implementing a slurry wall to aid in groundwater management at the site (Appendix C, Exhibit G, Permit Amendment), additional hydrologic investigations were conducted that verified modeling assumptions and results (Appendices A and B, Exhibit G, Permit Amendment). |
| IV.2. | **BOCC, 2025):** "Several provisions in the BMRI engineering report: are noteworthy: 1) 'BMRI proposes to install a slurry wall around the southern portions of the West Pit that will act as a hydraulic barrier to prevent the inflow of groundwater from the adjacent alluvial aquifer' p.1, ii)' Once mine dewatering ceased, groundwater began to saturate the backfilled material within the West Pit.' p.2, iii) 'By October 1998, seeps were observed along the North Bank of the Rito Seco, directly south of the West Pit. The occurrence of the seeps was attributed to discharge of groundwater from the West Pit' p.2, iii) 'The Precambrian rocks within the mine area contain an aquifer of unknown extent" p.3, iv') 'The Santa Fe Fm is a laterally extensive-stratigraphic unit extending regionally to the south and west. Groundwater flows within this unit may be facture- dominated and may be compartmentalized by faults and igneous dikes'. p.4, v) 'Key components in addressing the hydrologic system of the West Pit study are aquifer recharge and discharge… Discharge from a hydrologic unit can occur via pumping wells, evapotranspiration, seeps, springs, and vertical or horizontal movement to another hydrologic unit' p.6. vi) 'Discharge of groundwater in the vicinity of the West Pit occurs primarily through pumping wells, evapotranspiration, seeps and springs and lateral flow into surrounding hydrologic units and the Rito Seco." p.7, vii) 'Seeps were observed along the north banks of the Rito Seco following re-establishment of the hydraulic gradient from the West Pit to the stream. The seeps appear to have dried up in response to pumping from the West Pit.' p.7, and viii) As part of Engineering Analytics inc.'s assessment for the reduction/elimination of wastewater treatment, 'Multiple numerical models were constructed to address uncertainty in the site hydrogeology (i.e. the source of water inflow to the West Pit' p.10. | This comment states the sequence of events that led to the current Groundwater Management Plan. It is recognized that if uncontrolled, groundwater from the West Pit will eventually discharge into the Rito Seco. Groundwater modeling confirms this (see Appendix C, Section7.2.1, pp 21-22, Exhibit G, Permit Amendment and Appendix E, Section 4.1, pp 6, Exhibit G, Permit Amendment). However, reducing the water level elevation within the West Pit has been demonstrated to effectively prevent discharge of impacted groundwater to the Rito Seco. Currently that is achieved by extracting groundwater from a well located within the backfill material at a rate of approximately 200 gpm. BMRI conducted evaluations into other hydraulic control options that can achieve the same effect of lowering the water level elevation within the West Pit (see Appendix C, Exhibit G, Permit Amendment). Multiple models were developed to address the potential of higher than anticipated inflow into the West Pit from sources other than the alluvial aquifer. The installation of a slurry wall, coupled with pumping, but at a reduced rate, was considered the best hydraulic option for continued control<br>of groundwater in the West Pit for each of the models. The only difference was the amount of water that needed to be pumped in order to maintain the prescribed water level elevation in the Pit. Subsequent hydrologic investigation (see Appendices C and E, Exhibit G, Permit Amendment) verified the assumptions of the original base model, that the alluvial aquifer provides the majority of groundwater inflow into the West Pit. The models were refined based on the additional hydrologic information, but the results were essentially the same, that the slurry wall will effectively reduce the volume of extracted groundwater that is required to maintain the prescribed water level in the West Pit see Appendix E, Exhibit G, Permit Amendment). |
| IV.3. | **(BOCC, 2025):** "The lack of quantification of key component of what constitutes recharge/discharge in the West pit area is not unimportant. Because the various inflow/outflow components of the West Pit area cannot be quantified with a reasonable degree of scientific certainty, and the hydrology/geology is obviously complex, the better practice is to wait and see the results of the RGDSS modeling efforts to determine if that groundwater model and engineering analysis based upon it provide for a better understanding of the West Pit area. As currently proposed by BMRI, it is unclear if the geology/hydrology of the area allows for a high degree of comfort that the construction of a slurry wall will produce an acceptable result without having unwanted side effects." | The RGDSS model is a basin-scale model that is focused more on surface water/groundwater interactions. That model provides information on a more regional scale than the models developed to evaluate groundwater in the vicinity of West Pit. The current West Pit models are based on an extensive amount of site-specific data, including water level conditions under different hydraulic stresses, long term water level monitoring, and aquifer characteristics determined from hydrologic testing (pumping) of site wells. Detailed site geologic mapping is incorporated into the models. The West Pit model development was supported by site hydrologic investigations specific to key parameters of interest including the aquifer characteristics of the various hydrostratigraphic units that are present in the area of the West Pit (including the backfilled material in the Pit, which has its own unique aquifer properties). It is doubtful that a model that covers a much larger area would provide a more detailed analysis of potential hydraulic stresses to the West Pit. |

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| IV.4. | **(BOCC, 2025):** "In summary, the BOCC object to BMRI proceeding with any construction/modifications of the existing remediation regime until the result of the contemplated change can be determined with a high degree of certainty. Clearly, no comprehensive understanding exists of the hydrology/geology of the underlying confining layers/aquifers beneath the West Pit area, including with knowledge of the nature of the upward pressure that exists. The initial piercing of the confining layers at the inception of the mining activity was due to an apparent miscalculation and lack of understanding of the complex geology/hydrology of the area. The existing regime that calls for pumping as required and treatment of poor- quality waters appears to be adequately performing. BMRI is requesting to change that regime with an uncontrolled experiment with public groundwater resources without a complete understanding of the hydrogeology of the site and what can go wrong. This is gambling with the potential of irreversible effects. Further, with the RGDSS groundwater model continually being refined, and as more information becomes available and input is provided, theoretically the model should provide a means to more precisely evaluate the underlying hydrology/geology of the Costilla Plains in the southern part of Costilla County and the area in and around the West Pit. | See previous comment regarding the RGDSS modeling.<br>It should be noted that one of the key objectives of the slurry wall placement is to return the alluvial groundwater system back to its pre-mining condition, wherein much of the alluvial groundwater discharges directly into the Rito Seco. |
| IV.5. | **(BOCC, 2025):** "If DRMS is considering approval of installing the slurry wall, the BOCC requests that the pumping as required and current treatment of water continue and that no other conditions of the reclamation be changed. Facing potential irreversible harm to groundwater resources with incomplete scientific understanding, the DRMS should place the burden on BMRI to demonstrate how safe the slurry wall can be constructed and operated. DRMS should require a trial period of no less than 5 years to study the effects of the slurry wall. During that time, BMRI should be required to provide quarterly chemical compatibility evaluation, annual geophysical surveys of slurry wall integrity, continuous multi-parameter monitoring in all wells, install more monitoring wells if necessary, quarterly comprehensive water quality analysis in the West Pit and the Rito Seco, and a statistical trend analysis with early warning triggers. In essence, DRMS should not allow BMRI to discontinue any of its current remediation measures without a proven time period of how the slurry wall, in fact and not in theory, operates." | Pumping of the West Pit will continue at current rates during installation of the slurry wall. Following installation of the slurry wall the pumping rate will be reduced to avoid dewatering of the backfill materials inside of the West Pit. Pumping rates will be adjusted to reach the prescribed water level.<br><br>In the unlikely event that the slurry wall is ineffective or partially ineffective, the pumping rate within the West Pit will be increased to maintain the water level at its currently prescribed elevation , even if that pumping rate has to be as high as what it is currently being pumped. Effectively, there is no "risk" associated with installation of the slurry wall, as the fallback protection is to resume the previous pumping scenario to maintain hydraulic control of the West Pit groundwater.<br><br>The current monitoring program will be continued but with some enhancements that will allow higher frequency of measurements at key points (see Section 8.0, pp12-14, Exhibit G, Permit Amendment). |
| IV.6. | **(BOCC, 2025):** "The DRMS cannot gamble the waters of the state on an unproven effect of a slurry wall. If DRMS approves the permit, the BOCC requests that DRMS implement contingency measures for BMRI to follow, including the following: a. If contamination is detected, require a detailed emergency response plan by BMRI; b. if water levels exceed the quantity and quality parameters, require BMRI to maintain its facilities to treat waters at the current level and to deploy such treatment. | BMRI will continue to operate the West Pit Groundwater Management Plan as required by Division of Reclamation and Mine Safety (DRMS) and Discharge Permit CO-0045675 as required by Colorado Department of Public Health (CDPHE). BMRI has not proposed to remove the current water treatment plant.<br><br>The current monitoring program will be continued but with some enhancements that will allow higher frequency of measurements at key points (see Section 8.0, pp12-14, Exhibit G, Permit Amendment).<br><br>Following slurry wall installation, BMRI will extract groundwater from the West Pit at a rate that will achieve the required water level elevation in the pit.<br><br>Under a worst-case scenario, BMRI would be pumping at the same or less than current rates to achieve the |

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| | | objectives of the Groundwater Management Plan |
| IV.7. | **(BOCC, 2025):** "The BOCC along with the Costilla County Conservancy District intend to retain its own engineer to review the lengthy and detailed BMRI engineering analysis that appears to have been an ongoing endeavor over several years." | Comment is noted. |
| IV.8. | **(BOCC, 2025):** "The BOCC request that the BMRI amended permit application be denied subject to reconsideration after consulting with its engineering expert. For the present, the unknown hydrological/geological (sic) beneath the West pit area and lack of a clear understanding of the components and quantities of each that impact the area create a risk as proposed. If allowed to proceed, at a minimum a modified monitoring system with clear safeguards/protocols should be in place so that activities cease if the plan does not proceed as expected. | See response to Comment IV. 6. |
| IV.9. | **(BOCC, 2025):** "Aside from the initial mining error in drilling into an area with the aquifer layers under confining pressure allowing water to flow up and into the backfilled West Pit, BMRI has had to address an August 20, 1999, CDPHE Cease and Desist Order which ultimately resulted in having a permanent water treatment facility in place. See CDPHE Settlement Agreement and Stipulated Order of May 26, 2000 with BMRI as a participant. This is not designed to rehash old events that caused problems, but to reinforce that having better knowledge and information has a distinct benefit in planning." | Comment is noted. |
| IV.10. | **(BOCC, 2025):** "The Colorado Department of Public Health and Environment (CDPHE) has authority over the West Pit area and discharge of treated waters into the Rito Seco. There has been no showing that the BMRI contemplated action has received CDPHE approval." | BMRI and its consultant EA, have communicated with CDPHE regarding the proposed installation of the slurry wall and potential affects to the groundwater flow system as it relates to the West Pit. A teleconference was held between BMRI, EA, and CDPHE on April 4th, 2025, to discuss the proposed implementation of the slurry wall. CDPHE indicated that the Discharge Permit requirement of keeping water levels within the West Pit below the level of water within the adjacent Rito Seco must be maintained. No changes to Discharge Permit CO-0045675 are proposed in regards to installation and operation of the slurry wall. Pumping rates within the West Pit will be adjusted to maintain the water level elevation of the West Pit below the water level elevation of the adjacent Rito Seco during and following slurry wall installation |
| The Costilla County Conservancy District Objections for Permit Amendment AM-4 San Luis Project, Permit No. M-1988-112, 112d-3 – Dated June 4, 2025 | | |
| III.4. | **The Costilla County Conservancy District (CCCD) objections dated June 4, 2025:**<br>**"BMRI Statement:** In its April 11, 2025 letter to Mr. Lucas West, BMRI outlines its contentions when stating it 'proposes to install a slurry wall around portions of the West Pit to reduce the inflow of groundwater from the adjacent alluvial aquifer, which will decrease the volume of water requiring treatment in the West Pit. The proposed installation of the slurry wall meets the objectives of the GWMP and does not affect the function of the current pump and treat remedial action.'"<br>**:**<br>**"Comment:** The statement is problematic to the extent that it does not take into account water emanating into the West Pit from a breach of the confining layers, a primary source of water that enters the backfilled West Pit. Assuming a slurry wall is constructed as proposed, by definition, this would have no control over the waters emanating up and into the West Pit. The slurry wall does not prevent flow underneath the wall. Further, without quantifying the amount of water in the West Pit, with a break out of the water emanating | The intent of the slurry wall is to prevent groundwater from the alluvial aquifer from entering the West Pit, (see Section 7.3-pp 12, Exhibit G, Permit Amendment). Following slurry wall installation, groundwater will continue to be pumped from within the West Pit to maintain the water level elevation below that of the adjacent Rito Seco. The rate of pumping to achieve the required water level elevation within the West Pit is anticipated to be much lower than current rates because of the removal of the alluvial aquifer contribution. Groundwater modeling indicates that after installation of the slurry wall pumping rates from the West Pit on the order of 20 to 30 gallons per minute (as opposed to the current 200 gpm without the wall) will be sufficient to keep the water levels at the current levels that are prescribed in Discharge Permit (CO-045675). The actual rates may be higher or lower. BMRI will pump groundwater from the West Pit at whatever rates are necessary to maintain the prescribed water level in the Pit.<br><br>Hydrologic investigations and groundwater modeling indicate that the majority of the groundwater that recharges the West Pit is derived from the alluvial aquifer via the "alluvial window" along the southeast and south portions of the West Pit. The alluvial window is an area where the alluvium is in direct contact with |

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| III.5. | **(CCCD , 2025): "BMRI Statement:** Also problematic is the statement that 'the volume of groundwater requiring treatment will be substantially reduced to a predicted 10% of current rates.'"<br><br>**"Comment:** Again, what are the 'current rates' for the alluvial groundwater that enters the West Pit along with the attendant amounts of discharge from the West Pit, such as seepage and losses? Presumably, these factors have not been measured or are incapable of measurement based upon the lack of knowledge of the hydrological condition underlying the West Pit area. Without complete hydrogeological characterization, it is impossible to determine proper design and whether the slurry wall will be as promising (sic) as promised." | Groundwater modeling indicates a slurry wall would be effective in greatly reducing the volume of groundwater entering the West Pit (Appendix C, Section 7.1.2.5- pp. 25, Exhibit G, Permit Amendment, and Appendix E, Section 4.4-pp7-8, Exhibit G, Permit Amendment). Hydrologic studies were conducted to validate the results of the groundwater modeling. Specifically, aquifer properties were evaluated from a series of pumping tests conducted at five wells completed within the alluvial aquifer (Appendix B, Tables 4 and 5, Exhibit G, Permit Amendment) and one well completed in the Santa Fe aquifer (Appendix A, Section 3.0 pp 6-7) Exhibit G, Permit Amendment). Those wells are all located in the area of the "alluvial window". Aquifer properties, including transmissivity, saturated thickness, hydraulic conductivity and hydraulic gradient were used to calculate the groundwater flux into the West Pit through the alluvial window (Appendix B Section 5.0, p. 12 Exhibit G, Permit Amendment). The calculations indicated that approximately 173 gallons per minute (gpm) of alluvial groundwater passes through the southeastern portion of the alluvial window into the West Pit. Additional alluvial groundwater is discharged into the West Pit along the more southerly portion of the alluvial window that is not accounted for in the calculation. The rate of groundwater pumping that is extracted from the backfill material in the West Pit is approximately 200 gpm. The water level within the West Pit has remained relatively stable during the past 25 years while pumping has remained at an extraction rate of approximately 200 gpm. Essentially, the amount of water entering the West Pit from all sources is also approximately 200 gpm, otherwise the water level in the pit would either fall or rise in response to over or under pumping. A simple mass balance indicates that if more than 173 gpm of alluvial groundwater is entering the West Pit out of a total inflow of |

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| | | 200 gpm, then the combined inflow of the Precambrian, Santa Fe and meteoric waters is less than 27 gpm. The inflow was accounted for in the groundwater models.<br><br>Groundwater modeling of flow after placement of a slurry wall indicates a decrease in the inflow into the West Pit by more than 173 gpm of the current total inflow of approximately 200 gpm. This would greatly reduce the volume of water that must be extracted from the West Pit to maintain an elevation that is lower than the adjacent section of the Rito Seco. |
| III.6. | **(CCCD, 2025): "BMRI Statement:** The April 11 letter further contends that 'a reduction in the production of the brine/treatment solids generated from the treatment may allow different disposal options. If the brine treatment solids no longer have to be discharged to the tailings impoundment, this will allow for eventual closure of tailings facility."'<br><br>"**Comment:** Generally, the less water that has to be treated is a good thing. However, the suggestion of closing the tailings facility no longer needs a pumping program is highly problematic. Closure ignores the continual migration of waters up and into the West Pit with these waters interacting with the backfilled materials in the West Pit and creating poor quality water. Closure ignores the possibility that a breach of the slurry wall may occur in the future. There is no evaluation of the failure of the slurry wall or the consequences of such a failure. Further, BMRI does not assert that the 'leak can be plugged' in the confining layers. As such, continual treatment of poor-quality water must continue into perpetuity." | Potential closure of the tailing's facility does not imply cessation of the Groundwater Management Plan. It is acknowledged that groundwater will continue to be extracted from the West Pit following installation of the slurry wall and that extracted water will require treatment. The reduction in the volume of groundwater that requires treatment may result in a reduction in the production of the brine/treatment solids generated from that treatment. The reduced production of brine/treatment solids of groundwater may allow different disposal options such as evaporation ponds or onsite storage facilities.<br><br>In the event the slurry wall is ineffective, the water level within the West Pit can still be controlled by pumping, in the same manner that it is today. There is sufficient monitoring under the current Groundwater Management Plan and Discharge Permit CO-0045675 to detect changes in the water level within the West Pit. If a rise in water level is detected within the West Pit, pumping rates will be adjusted to correct the level to the prescribed limits. This is unchanged from the current remediation that is in place. |
| IV.7. | **(CCCD, 2025):** "The hydrology/geology underlying the southern half of Costilla County is to large extent unknown and at best only partially understood. Although the State's groundwater model, referred to as the RGDSS model has been in existence, refined over the years and is in effect for the entire San Luis Valley, the sole exception is for the Costilla Plains which includes the West Pit area. Due to the unique hydrology/geology and general complexity of the aquifers underlying the Costilla Plains, including faults in existence the area, attempts to understand and have the RGDSS model become operative have failed to date. The findings of the RGDSS groundwater model, and the expert opinion testimony that rely upon it have been accepted a (sic) standard by the Water Court in Division 3." | The BOCC states that "*The hydrology/geology underlying the southern half of Costilla County is to large extent unknown and at best only partially understood.*" That may or may not be true for other portions of southern Costilla County. However, the hydrogeology/geology of the West Pit has been extensively investigated, prior to mining, during mining and during post mining reclamation, and are well understood. There is an extensive network of monitoring wells in the vicinity of the West Pit (approximately 50 wells) (see Table G-1, Exhibit G, Permit Amendment) that are routinely measured for water levels and water quality. Some of those measurements have been collected since 1990, shortly after mining ended. Aquifer tests (pumping tests) have been conducted at over 25 of those wells (see Table G-2, Exhibit G, Permit Amendment) providing extensive data on aquifer characteristics in the vicinity of the West Pit. The geology and hydrogeology of the West Pit are described in Sections 3.0 and 4.0, respectively of Exhibit G, Permit Amendment. Following initial groundwater modeling to evaluate the feasibility of a implementing a slurry wall to aid in groundwater management at the site (Appendix C, Exhibit G, Permit Amendment), additional hydrologic investigations were conducted that verified modeling assumptions and results (Appendices A and B, Exhibit G, Permit Amendment). |
| IV.8. | **(CCCD, 2025:** "Several provisions in the BMRI engineering report: are noteworthy: 1) 'BMRI proposes to install a slurry wall around the southern portions of the West Pit that will act as a hydraulic barrier to prevent the inflow of groundwater from the adjacent alluvial aquifer' p.l, ii) 'Once mine dewatering ceased, groundwater began to saturate the backfilled material within the West Pit.' p.2, iii) 'By October 1998, seeps were observed along the North Bank of the Rito Seco, directly south of the West Pit. The occurrence of the seeps was attributed to discharge of groundwater from the West Pit" p.2, iii) 'The | This comment states the sequence of events that led to the current Groundwater Management Plan. It is recognized that if uncontrolled, groundwater from the West Pit will eventually discharge into the Rito Seco. Groundwater modeling confirms this (see Appendix C, Section7.2.1, pp 21-22, Exhibit G, Permit Amendment and Appendix E, Section 4.1, pp 6, Exhibit G, Permit Amendment). However, reducing the water level elevation within the West Pit has been demonstrated to effectively prevent discharge of impacted<br>groundwater to the Rito Seco. Currently that is achieved by extracting groundwater from a well located |

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| | Precambrian rocks within the mine area contain an aquifer of unknown extent' p.3, iv) 'The Santa Fe Fm is a laterally extensive-stratigraphic unit extending regionally to the south and west. Groundwater flows within this unit may be facture- dominated and may be compartmentalized by faults and igneous dikes'. p.4, v) 'Key components in addressing the hydrologic system of the West Pit study are aquifer recharge and discharge... Discharge from a hydrologic unit can occur via pumping wells, evapotranspiration, seeps, springs, and vertical or horizontal movement to another hydrologic unit' p.6. vi) 'Discharge of groundwater in the vicinity of the West Pit occurs primarily through pumping wells, evapotranspiration, seeps and springs and lateral flow into surrounding hydrologic units and the Rito Seco.' p.7, vii) 'Seeps were observed along the north banks of the Rito Seco following re-establishment of the hydraulic gradient from the West Pit to the stream. The seeps appear to have dried up in response to pumping from the West Pit.' p.7, and viii) As part of Engineering Analytics Inc.'s assessment for the reduction/elimination of wastewater treatment, 'Multiple numerical models were constructed to address uncertainty in the site hydrogeology (i.e. the source of water inflow to the West Pit' p.10. | within the backfill material at a rate of approximately 200 gpm. BMRI conducted evaluations into other hydraulic control options that can achieve the same effect of lowering the water level elevation within the West Pit (see Appendix C, Exhibit G, Permit Amendment). Multiple models were developed to address the potential of higher than anticipated inflow into the West Pit from sources other than the alluvial aquifer. The installation of a slurry wall, coupled with pumping, but at a reduced rate, was considered the best hydraulic option for continued control<br>of groundwater in the West Pit for each of the models. The only difference was the amount of water that needed to be pumped in order to maintain the prescribed water level elevation in the Pit. Subsequent hydrologic investigation (see Appendices C and E, Exhibit G, Permit Amendment) verified the assumptions of the original base model, that the alluvial aquifer provides the majority of groundwater inflow into the West Pit. The models were refined based on the additional hydrologic information, but the results were essentially the same, that the slurry wall will effectively reduce the volume of extracted groundwater that is required to maintain the prescribed water level in the West Pit see Appendix E, Exhibit G, Permit Amendment). |
| IV.9. | **(CCCD, 2025):** The lack of quantification of key component of what constitutes recharge/discharge in the West pit area is not unimportant. Because the various inflow/outflow components of the West Pit area cannot be quantified with a reasonable degree of scientific certainty, and the hydrology/geology is obviously complex, the better practice is to wait and see the results of the RGDSS modeling efforts to determine if that groundwater model and engineering analysis based upon it provide for a better understanding of the West Pit area. As currently proposed by BMRI, it is unclear if the geology/hydrology of the area allows for a high degree of comfort that the construction of a slurry wall will produce an acceptable result without having unwanted side effects." | The RGDSS model is a basin-scale model that is focused more on surface water/groundwater interactions. That model provides information on a more regional scale than the models developed to evaluate groundwater in the vicinity of West Pit. The current West Pit models are based on an extensive amount of site-specific data, including water level conditions under different hydraulic stresses, long term water level monitoring, and aquifer characteristics determined from hydrologic testing (pumping) of site wells. Detailed site geologic mapping is incorporated into the models. The West Pit model development was supported by site hydrologic investigations specific to key parameters of interest including the aquifer characteristics of the various hydrostratigraphic units that are present in the area of the West Pit (including the backfilled material in the Pit, which has its own unique aquifer properties). It is doubtful that a model that covers a much larger area would provide a more detailed analysis of potential hydraulic stresses to the West Pit. |
| IV.10. | **(CCCD, 2025**): "In summary, CCCD and the BOCC object to BMRI proceeding with any construction/modifications of the existing regime until the result of the contemplated change can be determined with a high degree of certainty. Clearly, no comprehensive understanding exists of the hydrology/geology of the underlying confining layers/aquifers beneath the West Pit area, including with knowledge of the nature of the upward pressure that exists. The initial piercing of the confining layers at the inception of the mining activity was due to an apparent miscalculation and lack of understanding of the complex geology/hydrology of the area. The existing regime that calls for pumping as required and treatment of poor- quality waters appears to be adequately performing. BMRI is requesting to change that regime with an uncontrolled experiment with public groundwater resources without a complete understanding of the hydrogeology of the site and what can go wrong. This is gambling with the potential of irreversible effects. Further, with the RGDSS groundwater model continually being refined, and as more information becomes available and input is provided, theoretically the model | See previous comment regarding the RGDSS modeling.<br><br>It should be noted that one of the key objectives of the slurry wall placement is to return the alluvial groundwater system back to its pre-mining condition, wherein much of the alluvial groundwater discharges directly into the Rito Seco. |

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| | should provide a means to more precisely evaluate the underlying hydrology/geology of the Costilla Plains in the southern part of Costilla County and the area in and around the West Pit." | |
| IV.11. | **CCCD, 2025**): "If DRMS is considering approval of installing the slurry wall, CCCD and the BOCC request that the pumping as required and current treatment of water continue and that no other conditions of the reclamation should be changed. Facing potential irreversible harm to groundwater resources with incomplete scientific understanding, the DRMS should place the burden on BMRI to demonstrate how safe the slurry wall can be constructed and operated. DRMS should require a trial period of no less than 5 years to study the effects of the slurry wall. During that time, BMRI should be required to provide quarterly chemical compatibility evaluation, annual geophysical surveys of slurry wall integrity, continuous multi-parameter monitoring in all wells, install more monitoring wells if necessary, quarterly comprehensive water quality analysis in the West Pit and the Rito Seco, and a statistical trend analysis with early warning triggers. In essence, DRMS should not allow BMRI to discontinue any of its current remediation measures without a proven time period of how the slurry wall, in fact and not in theory, operates." | Pumping of the West Pit will continue at current rates during installation of the slurry wall. Following installation of the slurry wall the pumping rate will be reduced to avoid dewatering of the backfill materials inside of the West Pit. Pumping rates will be adjusted to reach the prescribed water level.<br><br>In the unlikely event that the slurry wall is ineffective or partially ineffective, the pumping rate within the West Pit will be increased to maintain the water level at its currently prescribed elevation , even if that pumping rate has to be as high as what it is currently. Effectively, there is no "risk" associated with installation of the slurry wall, as the fallback protection is to resume the previous pumping scenario to maintain hydraulic control of the West Pit groundwater.<br><br>The current monitoring program will be continued but with some enhancements that will allow higher frequency of measurements at key points (see Section 8.0, pp12-14, Exhibit G, Permit Amendment). |
| IV.12. | **CCCD, 2025**): "CCCD and the BOCC cannot gamble the waters of the state on an unproven effect of a slurry wall. If DRMS approves the permit, we request that ORMS implement contingency measures for BMRI to follow, including the following: a. If contamination is detected, require a detailed emergency response plan by BMRI; b. if water levels exceed the quantity and quality parameters, require BMRI to maintain its facilities to treat waters at the current level and to deploy such treatment." | BMRI will continue to operate the West Pit Groundwater Management Plan as required by Division of Reclamation and Mine Safety (DRMS) and Discharge Permit CO-0045675 as required by Colorado Department of Public Health (CDPHE). BMRI is not proposing to remove the water treatment plant not discontinue water treatment.<br><br>The current monitoring program will be continued but with some enhancements that will allow higher frequency of measurements at key points (see Section 8.0, pp12-14, Exhibit G, Permit Amendment). Following slurry wall installation, BMRI will extract groundwater from the West Pit at a rate that will achieve the required water level elevation in the pit.<br><br>Under a worst-case scenario, BMRI would be pumping at the same or less than current rates to achieve the objectives of the Groundwater Management Plan |
| IV.13. | **CCCD, 2025): "**Division Engineer Craig Cotten of the Division of Water Resources in Alamosa has stated that the RGDSS modeling personnel intend to again focus their efforts on the Costilla Plains in the next five years or so. In doing so, this should result in a more comprehensive and independent means to address the complex hydrological/geological conditions underlying the Costilla Plains and the area beneath the West Pit. It is known that some faults exist in the Costilla Plains with some unusual hydrological conditions that result from their existence." | The RGDSS model is a basin-scale model that is focused more on surface water/groundwater interactions. That model provides information on a more regional scale than the models developed to evaluate groundwater in the vicinity of West Pit. The current West Pit models are based on an extensive amount of site-specific data, including water level conditions under different hydraulic stresses, long term water level monitoring, and aquifer characteristics determined from hydrologic testing (pumping) of site wells. Detailed site geologic mapping is incorporated into the models. The West Pit model development was supported by site hydrologic investigations specific to key parameters of interest including the aquifer characteristics of the various hydrostratigraphic units that are present in the area of the West Pit (including the backfilled material in the Pit, which has its own unique aquifer properties). It is doubtful than a model that covers a much larger area would provide a more detailed analysis of potential hydraulic stresses to the West Pit. |
| IV.14. | **(CCCD, 2025): "**The CCCD and the BOCC intend to retain its own engineer to review the lengthy and detailed BMRI engineering analysis that appears to have been an ongoing endeavor over several years." | Comment is noted. |

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| IV.15. | **(CCCD , 2025):** "CCCD and the BOCC request that the BMRI amended permit application be denied subject to reconsideration after consulting with its engineering expert. For the present, the unknown hydrological/geological beneath the West pit area and lack of a clear understanding of the components and quantities of each that impact the area create a risk as proposed. If allowed to proceed, at a minimum a modified monitoring system with clear safeguards/protocols should be in place so that activities cease if the plan docs not proceed as expected." | See response to comment IV. 12 |
| IV.16. | **CCCD, 2025):** "Aside from the initial mining error in drilling into an area with the aquifer layers under confining pressure allowing water to flow up and into the backfilled West Pit, BMRI has had to address an August 20, 1999, CDPHE Cease and Desist Order which ultimately resulted in having a permanent water treatment facility in place. See CDPHE Settlement Agreement and Stipulated Order of May 26, 2000 with BMRI as a participant. This is not designed to rehash old events that caused problems, but to reinforce that having better knowledge and information has a distinct benefit in planning." | Comment is noted. |
| IV.17. | **(CCCD, 2025):** "The Colorado Department of Public Health and Environment (CDPHE) has authority over the West Pit area and discharge of treated waters into the Rito Seco. There has been no showing that the BMRI contemplated action has received CDPHE approval." | BMRI and its consultant EA, have communicated with CDPHE regarding the proposed installation of the slurry wall and potential affects to the groundwater flow system as it relates to the West Pit. A teleconference was held between BMRI, EA and CDPHE on April 4th, 2025, to discuss the proposed implementation of the slurry wall. CDPHE indicated that the Discharge Permit requirement of keeping water levels within the West Pit below the level of water within the adjacent Rito Seco must be maintained. No changes to Discharge Permit CO-0045675 are proposed in regards to installation and operation of the slurry wall. Pumping rates within the West Pit will be adjusted to maintain the water level elevation of the West Pit below the water level elevation of the adjacent Rito Seco during and following slurry wall installation |
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