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

April 14, 2022

Katie Todt
Lewicki and Associates, PLLC
3375 West Powers Circle
Littleton, CO 80123

RE: Young Ranch Resource Quarry, File No. M-2021-009, 112 Construction Materials Reclamation Permit Application, Adequacy Review No. 3

Ms. Todt:

The Division of Reclamation, Mining and Safety (Division) has completed its 3rd adequacy review of your 112 Construction Materials Reclamation Permit Application submitted for the Young Ranch Resource Quarry located in Gilpin and Clear Creek Counties. All comment and review periods for the application began on May 17, 2021, when the application was called complete for filing purposes. The decision date for the application is set for May 17, 2022.

The Division has identified adequacy items in the application requiring additional information or clarification. These items are identified below under their respective exhibit heading, and are numbered sequentially.

Exhibit D – Mining Plan (Rule 6.4.4):

1) In the event that potentially acid-generating materials are encountered during mining, the applicant has committed to isolating such rocks from the main production and disposing of them off site at the appropriate licensed facility (if the event area is small in nature), or to ceasing mining in that area until the issue can be safely and appropriately resolved (if the event area is large in nature). There was no mention of notifying the Division in either of these situations. Please commit to immediately notifying the Division in the event that potentially acid-generating materials are encountered at the site so the appropriate permitting action, if any, can be determined.

Exhibit E – Reclamation Plan (Rule 6.4.5):

2) Due to the absence of sufficient topsoil on site to complete reclamation, the applicant is proposing to create a growth medium with onsite materials, by combining partially decomposed plant material, sandy loam, and tree mulch with crusher fines. Nutrient testing will be conducted on the initial mixed growth medium to determine whether any fertilizers are needed prior to application. The growth medium will be placed on all disturbed lands at a minimum depth of 6 inches. Additionally, backfilled highwalls and waste rock landform slopes will receive a 3-12 inch layer of "rock mulch" (coarse blasted rock) in order to reduce erosion and provide micro-climates for seed germination. Retopsoiled areas will be planted with a dry rangeland grass mixture or a tree and shrub mixture, depending on slope orientation (grasses on south- and west-facing slopes and trees/shrubs on north- and east-facing

slopes). Flatter reclaimed areas will be drill-seeded and mulched with wood mulch derived from onsite trees. Steeper reclaimed areas will be hydroseeded and receive the rock mulch layer described above. The Division has the following comments regarding the proposed revegetation plan:

a. Please commit to performing baseline soil testing of an undisturbed area prior to moving into that area, and comparing these results with the nutrient testing results for the prepared growth medium to determine whether any amendments and/or fertilizers are needed. Please keep in mind, any changes to the revegetation plan approved in this application could be proposed through the Technical Revision process.

b. The Division is unfamiliar with the proposed technique of applying a layer of rock mulch on top of replaced topsoil as part of the revegetation plan for disturbed slopes. The Division is not aware of this technique having been utilized at comparable quarry sites in Colorado, and therefore, has some concerns about whether this technique could produce successful revegetation of disturbed slopes. Unless the applicant is able to provide multiple reference sites and/or literature supporting this unconventional technique, the Division will need to apply a failure rate of at least 50% to the proposed seed mixtures. This failure rate could be adjusted once the applicant demonstrates successful establishment of vegetation on reclaimed slopes. The Division encourages the applicant to utilize traditional reclamation methods for the site when practicable.

c. While the applicant is proposing to place a 3-12 inch layer of rock mulch on reclaimed slopes, it is the Division's understanding this layer will not be placed as a continuous layer given that some interstitial space (between the rocks) will be necessary to allow for successful revegetation. If the applicant chooses to keep the proposed rock mulch technique in the reclamation plan, please commit to a range in percent "rock mulch" cover (e.g., 10%-20%) to be applied on backfilled highwalls and waste rock landform slopes. The Division understands there may be some overall variation in percent rock cover throughout reclaimed slopes. However, a targeted range will ensure sufficient rock mulch is placed to control erosion and create micro-climates for seed germination (as intended), but that adequate interstitial space (between the rocks) remains for successful revegetation.

Additional Items:

3) Please review and respond to the adequacy review letter provided by Rob Zuber, DRMS (see enclosed letter, dated March 31, 2022).

4) All adequacy items identified by Zach Trujillo, DRMS have been addressed (see enclosed letter, dated April 6, 2022).

5) Pursuant to Rule 1.6.2(1)(c) and (2), any changes or additions to the application on file in our office must also be reflected in the public review copy which was placed with the local County Clerk and Recorder. Pursuant to Rule 6.4.18, you must provide our office with an affidavit or receipt indicating the date this was done. Please ensure the revised application submitted to the Gilpin and Clear Creek County Clerk and Recorder offices includes all revised materials submitted to the Division, including

the revised materials submitted on March 25, 2022 and April 4, 2022 (and any additional revised materials submitted in response to this adequacy letter).

This concludes the Division's 3rd adequacy review of your application. Please ensure the Division sufficient time to complete its review process by responding to these items no later than **April 29, 2022**.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129 or by email at amy.eschberger@state.co.us.

Sincerely,

Amy Eschberger
Environmental Protection Specialist

Encls: Third Adequacy Review, from Rob Zuber, DRMS, dated March 31, 2022
Technical Adequacy Review No. 3, from Zach Trujillo, DRMS, dated April 6, 2022

Cc: Ben Miller, Lewicki and Associates, PLLC
Robert L. Young Jr., Young Ranch Resource, LLC
Rob Zuber, DRMS
Zach Trujillo, DRMS
Michael Cunningham, DRMS

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MEMORANDUM

Date: March 31, 2022
To: Amy Eschberger and Michael Cunningham, DRMS
From: Rob Zuber, DRMS
RE: Young Ranch Resource Quarry (M-2021-009), Third Adequacy Review, Emphasis on responses to adequacy item 96 and other items related to surface water

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I reviewed the applicant's responses to my second adequacy memorandum (letter from Lewicki & Associates to me, dated 24 March 2022). While most of my adequacy items have been addressed sufficiently, there are still three items for them to address.

The numbers below refer to the numbered adequacy items in the Division PAR.

Adequacy Item 3f

- The comment related to access for sediment removal was not addressed. If sediment removal will not be needed, please state that in response.

Adequacy Item 12

- The response does not include details on how water will be fanned across the working lift of the WRL. More detail should be included within Exhibit C maps and/or the text of Exhibit D. For example, will this be done with perforated pipe or by some other means?

Adequacy Item 96, Sub-item 7

- Regarding discrepancies between the Mining Runoff tables and the maps, there are still apparent errors. For example, the curve numbers on Map G-1 (CN = 89) do not match the tables for basins 1 and 2 (CN = 79), for the reclaimed condition. Please explain this, or revise the map or tables, and check all of the values.

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Date: **April 6, 2022**

To: **Amy Eschberger**

CC: **Jason Musick, Michael Cunningham**

From: **Zach Trujillo**

RE: **Young Ranch Resource Quarry, DRMS File No. M-2021-009 Technical Adequacy Review No. 3**

Amy,

As requested I have reviewed the responses provided by Young Ranch Resource, LLC (YR) to the Division's adequacy letter dated March 1, 2022 for the proposed Young Ranch Resource Quarry (YRRQ) application. Previous items from my adequacy memo's that have been satisfied by the applicant have been removed from this memo. Please see the following review and additional comments based on the newly provided Section 6.5 of the YR application.

*Division**:** Please have YR provide the following analyses for the following scenarios:*

3. *Slope stability analysis for the entire slope (restraints including crest and toe of slope) of the active WRL under seismic conditions.*

4. *Slope stability analysis for the entire slope (restraints including crest and toe of slope) of the reclaimed WRL.*

5. *Slope stability analysis for the entire slope (restraints including crest and toe of slope) of the reclaimed WRL under seismic conditions.*

YR: Each of the above scenarios are evaluated. Please see the amended Geotechnical Exhibit.

Division: The following numbered responses correlate to the above numbered items above:

3. This scenario has not been provided. Based on the discussion between the Division and Mr. Langenfeld, this scenario was ran but not provided due to the fact that the associated provided slopes stability model is more refined and conservative but the requested scenario can be provided. However, after reviewing the updated Section 6.5 provided to the Division on February 7, 2022, this scenario was still not included with the updated Section 6.5. ***This item is still pending based on the resultant slope stability analysis being provided for the Division's review.***

4. This scenario has not been provided. Please see the Divisions comment #3 above. ***This***

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Jared S. Polis, Governor | Dan Gibbs, Executive Director | Virginia Brannon, Director

item is still pending based on the resultant slope stability analysis being provided for the Division's review.

5. *This scenario has not been provided. Please see the Divisions comment #3 above.* ***This item is still pending based on the resultant slope stability analysis being provided for the Division's review.***

YR: The above-mentioned slope stability figures have been added to the Geotechnical Stability Exhibit in Appendix GS-1. Restraints for the GALENA models can be seen including the crest and toe of the slopes. Active WRL Analysis 3 shows slope stability for the entire slope under seismic conditions. Reclaimed WRL Analysis 1 shows slope stability for the entire reclaimed WRL slope. Reclaimed WRL Analysis 2 shows slope stability for the entire reclaimed WRL slope under seismic conditions.

All the requested scenarios have been provided by YR.

3. This scenario has been provided under GS-1. The resulting factor of safety is 1.29 which is below the minimum requirements of Section 30. While the resulting factor of safety is below the minimum requirements, the resultant failure on the analysis indicates a small surficial failure. As discussed in my previous memos, these types of failures are small in nature and would be considered general maintenance items during mining and reclamation operations. They are not representative to the global stability of a slope. **This item has been satisfied and no further comment is necessary.**

4. This scenario has been provided under GS-1. The resulting factor of safety is 1.53 which meets or exceed the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

5. This scenario has been provided under GS-1. The resulting factor of safety is 1.34 which meets or exceed the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

No additional comments regarding the provided slope stability analyses.

Division: *Based on the Division's team meeting on February 11, 2022, it has come to the attention that seeps were discovered along the natural drainage in which the main portion of the WRL is being constructed. This was documented during the Division's field inspection conducted on August 4, 2021 and a visual reference can been seen under Photo 26 of the inspection report. From the visual inspection and documentation, this seep appears to have measurable flow. Reviewing the slope stability analyses, ground water levels are assumed to be below the WRL. It appears this is potentially inconsistent with the site conditions based on the Division's August 2021 inspection. Currently, the proposed YR application is not proposing any underdrain to intercept potential groundwater. The location of these seeps indicate groundwater levels that could intrude into the WRL and potentially impact global stability.*

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- *Please provide the Division on how YR plans to address the potential impact of groundwater intrusion into the WRL. Additionally, please provide the Division with rational on why no underdrain is included in the WRL design given the existence of seeps along the primary drainage in which the WRL is being constructed in.*

YR: The identified seeps have been analyzed by Environmental Resource Consultants and are noted as Aquatic Resource C and Aquatic Resource D. They are both shown on Map G-2 for reference. These seeps are the expression of seasonal groundwater rises and dissipate within the surrounding uplands. The permeability of the WRL and the accompanying underdrain will allow the seasonal

groundwater rise to continue unabated. The presence of groundwater at the surface of the pre mine soils is modeled in GALENA as a piezometric surface. Modeling in this manner assumes saturated soils atop bedrock whereas the seeps in question are limited in size. This modeling approach is conservative in its approach to groundwater.

An underdrain will be installed in the drainages at the bottom of the WRL. The design details can be found on Map G-2.

Further details on the seeps can be found in the ERC report attached to this adequacy response.

The Division has reviewed the GALENA model in relation to the addition of the underdrain as well provided piezometric surface. With the inclusion of the underdrain, groundwater levels within the WRL would be expected to be minimized. This has been conservatively shown in the GALENA models and resulted in factors of saftey which meet the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

Division:

- *Additionally, please update Section 6.5 geotechnical slope stability report and analyses to discuss and account for groundwater levels consistent to the observed site conditions noted in the Division's August 4, 2021 inspection.*

YR: In the Slope Stability Exhibit, Impact of Surface Water Infiltration subsection of Exhibit 6.5, the presence of groundwater is discussed. All slope stability analyses assume a piezometric surface immediately within the soil profile of the natural ground. Due to the scale of the WRL sections, this piezometric surface can be difficult to see in the GALENA outputs. An example of the piezometric surface from a zoom window in GALENA is shown in Figure 1 for reference.

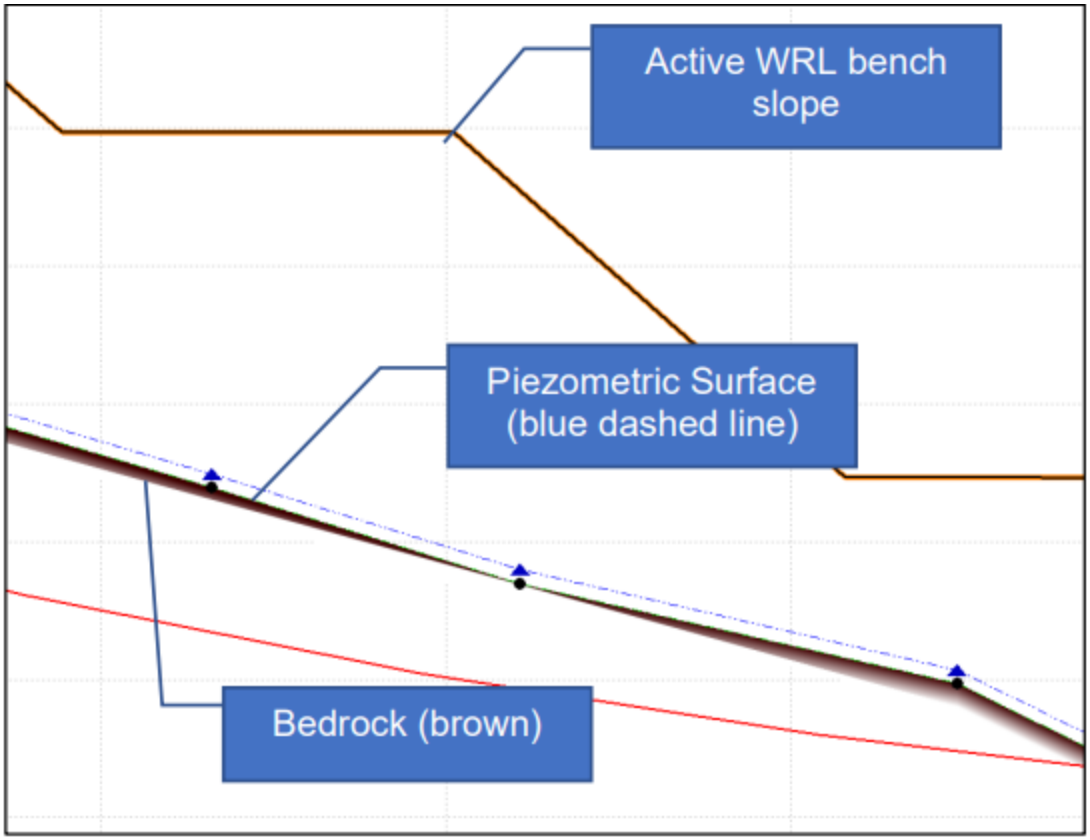

Figure 1. Screenshot of Active WRL Model from GALENA.

This piezometric surface represents groundwater that would produce the seep identified in the August 4, 2021 site visit.

Language has been added to the Slope Stability Exhibit, Impact of Surface Water Infiltration subsection to emphasize that this piezometric surface is how the groundwater in the area is accounted for in the slope stability analysis.

Based on the additional comments and clarification regarding the existing piezometric surface and seeps, **this item has been satisfied and no further comment is necessary.**

Division: *Finally, there appears to be an error under Subsection 6 - Conclusion of Section 6.5. Paragraph two states the Division's minimum requirements for factors of safety are 1.5 for static conditions and 1.1 for seismic conditions for the proposed YR application. Since material strength properties used in YR's stability analysis are from generalized assumed values, the Division minimum requirements for resulting factors of safety are 1.5 for static conditions and 1.3 for seismic conditions for a critical structure. For more information, please refer to Table 1 of Section 30.4, for criteria under generalized, assumed, or single test strength measurements for a critical structure.*

- *Please update Subsection 6 – Conclusion to include the correct factor of safety minimum requirement for seismic conditions to 1.3.*

YR: The Conclusions section is corrected to list the minimum factor of safety required by the Division in seismic analysis as being 1.3.

Section 6.5 has been updated as requested. **This item has been satisfied and no further comment is necessary.**

This concludes my review and comments for the responses provided by Young Ranch Resource, LLC to the Division's adequacy letter dated March 1, 2022 for the proposed Young Ranch Resource Quarry (YRRQ) application. If you have any questions feel free to contact me.

Sincerely,

Zach Trujillo
Environmental Protection Specialist
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