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

March 1, 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. 2

Ms. Todt:

The Division of Reclamation, Mining and Safety (Division) has completed its 2nd 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 currently set for March 20, 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 C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):

1) Please be sure Figure C-1 – Current Conditions shows the owner's name, type of structure, and location of all significant, valuable, and permanent man-made structures contained on the area of the affected land and within 200 feet of the affected land. The structures shown on this map should correlate with the structure list provided in Exhibit S. For example, the Division was unable to locate the fences and gates owned by Goltra West Ranch, LLC (Goltra) – only one gate owned by this entity is identified on the map (located north of the northern permit boundary). If Goltra owns fences and more than one gate within 200 feet of the proposed affected lands, please identify these structures on the map. Additionally, some of the structures identified adjacent to the CCP (e.g., existing fence gates, overhead power and lights, existing billboards) do not include the owner's name. Please ensure the owner's name is shown for all structures located on or within 200 feet of the proposed affected lands.

2) During mine phases 4 and 5 (depicted on Figures C-6 and C-7), the operation will construct an internal mine road oriented roughly north-south across the mining area, separating the phase 4 quarry (to the east) from the phase 5 quarry (to the west). According to the applicant, this road will be fenced or gated to restrict access to/from the CCP and will not be accessible by the public or by anyone associated with the mining operation (until otherwise approved by the Division and Central City). If the operation will not be able to access the phase 5 quarry via the CCP, please explain how this quarry will be accessed during mine phases 4 and 5 after construction of the internal road is completed. The Division could find no proposed crossings along the internal road. It would make sense that such a

crossing would be located toward the southern end of the road where the elevation difference between the road surface and adjacent pit floors is the least. However, a proposed crossing in that area would need to account for the sumps also located at the southern edge of the quarries. Please ensure the proposed access between the phase 4 and 5 quarries is clearly shown on Figures C-6 and C-7.

3) The revised Exhibit C figures show the approximate location where "Reclamation Materials" will be stockpiled during each mine phase. The applicant indicates this stockpile area will be utilized for the temporary storage of partially decomposed plant material and sandy loam (overburden), site derived tree mulch, coarse blasted rock, and crusher fines. According to the proposed reclamation plan, the partially decomposed plant material, sandy loam, and tree mulch will be combined with crusher fines to create a growth medium for reclamation. The coarse blasted rock will be placed as a 'rock mulch' on all reclaimed highwall and WRL slopes, and will also be used to construct stormwater and safety berms. Please describe how these different types of reclamation materials will be stored. Will each type of material be stored separately? Will the materials to be combined for use as a growth medium be mixed together prior to storage?

Exhibit D – Mining Plan (Rule 6.4.4):

4) The Division asked the applicant to provide demonstration that no toxic or acid-forming materials will be exposed or disturbed as a result of the proposed mining operation. In its response (under item no. 10), the applicant explained the site is located outside and east of the Colorado mineral belt and therefore, no toxic or acid-forming minerals (such as pyrite or pyrrhotite) are present in the rocks to be mined. Additionally, the applicant explains that acid neutralizing compounds or minerals, such as calc-silicates and tectosilicates, are found in abundance within the bedrock to be mined, which would minimize any potential for acid rock drainage. Please provide a map depicting the location of the proposed permit area with respect to the Colorado mineral belt.

   Additionally, this exhibit describes the geologic units to be mined as including Cretaceous intrusive rocks which cut across the Precambrian metamorphic bedrock. As intrusive rocks can have a high sulfur content (sometimes significantly higher than the rocks they intrude), it would seem there is at least some potential for acid generation, depending on the mineralogy and volume of the intrusive rocks to be mined. Please provide additional information on the intrusive rocks anticipated to be present in the proposed mining area. Additionally, please describe how the operation will proceed in the event that potentially acid generating materials are encountered during mining.

Exhibit E – Reclamation Plan (Rule 6.4.5):

5) The applicant proposes leaving approximately 10% of reclaimed pit walls as "intentional roughened faces, slopes, and cliff bands…left to resemble a natural cliff face". The applicant refers to Figure 2 (in Exhibit D), which is a photograph of "sporadically located cliff bands along the south face of Young Ranch and Young Ranch Resource properties". Additionally, Exhibit J indicates that rocky outcrops are characteristic of south facing slopes at the site. Given the naturally occurring cliff bands tend to be more prevalent on south facing slopes, and the proposed revegetation plan which intends to mimic natural conditions based on slope orientation, does the applicant intend to leave the proposed cliff bands only on south and west facing quarry slopes (which will receive the dry rangeland seed

mixture)? Or is the applicant proposing to leave these cliff bands on all quarry slopes, including north and east facing slopes (which will receive the forest/shrub mixture)? Please provide additional clarification on the proposed cliff bands.

6) On the revised pages E-2 and E-3, the applicant states "wood straw created from on-site harvested trees in advance of mining may be applied to seeded surfaces to encourage vegetation germination and to retain moisture". The Division is not familiar with trees harvested from a site being turned into "wood straw", but is familiar with trees being chipped for reclamation. Please provide additional clarification on the proposed "wood straw". Did the applicant intend to say "wood chips"?

7) On the revised page E-2, the applicant states "growth medium created using recovered plant material, sandy loam, and wood mulch will be mixed with waste fines and amendments, as needed, to create a growth medium in lieu of traditional topsoil which is absent from the site. Please specify the type(s) of amendment(s) that will be used at the site and the proposed rate of application. Additionally, please be sure costs for applying this amendment are included in the reclamation bond estimate. If any part of the revegetation plan proposed in this application needs to be modified later based on the results of soil tests, etc., this can be done through the permit revision process.

8) Please provide a planting rate for the shrub species listed in Table 3 – Example Native Forest Shrub Seed Mix. The Division requires this information in order to calculate the reclamation bond.

9) Please specify the disturbed areas (e.g., backfilled highwall slopes, backfilled waste rock landform slopes, flat areas) that will receive a layer of coarse blasted rock at a depth of 3-12 inches prior to revegetation. Additionally, please clarify if these areas will also receive the 6 inches of plant growth medium, and if so, will the "rock mulch" be placed on top of the plant growth medium?

10) Please clarify whether the proposed riprap installation at the toes of the waste rock landform will remain for reclamation. While these features are shown on Figure G-2 Surface Hydrology Details, they are not shown on the reclamation plan map (Figure F-1).

Exhibit G – Water Information (Rule 6.4.7):

11) The Division had requested a generalized cross-section of the proposed processing pad during phase 1 operations, showing the anticipated grade of the top of the processing pad, the sump area, the modified culvert under the parkway, and the area east of the road where the culvert will drain. The applicant states in their response to item no. 50 that "a cross section of the phase 1 pad is now shown on the Appendix 1 maps". However, the Division was unable to find this cross section on the maps submitted. The Division realizes the applicant has revised the phase 1 plan to include installation of an underpass (rather than modifying the existing culvert) through which stormwater will be discharged via pipeline to the east side of the CCP. Please provide the requested cross-section of this area which incorporates the proposed underpass.

12) The applicant states in their response to item no. 51 that "prior to starting site disturbing activities, a site wide SWMP (stormwater management plan) will be implemented to ensure stormwater is handled appropriately" and that "all SWMP related questions will be handled by CDPHE as part of the CDPS

(Colorado Discharge Permit System)". Please commit to providing the Division with a copy of the CDPHE-approved SWMP.

13) The applicant states in this exhibit that all stormwater discharges during mining will occur via three CDPHE-permitted outfalls, two of which will be located at each toe of the waste rock landform, and the last of which will be located at the quarry floor discharge point at the southern edge of the site. Please describe how each of these outfalls will be accessed during the life of the mine to conduct any water monitoring required by CDPHE and to monitor for potential erosion issues.

14) The application states up to 40,000-50,000 gallons of water a day will be trucked in from a legal source. The Division asked the applicant to specify the anticipated source for this water. In its response to item no. 60, the applicant states "the legal source of water will be through leased fully consumable water rights" and "the site lies within multiple water district areas that currently have leasable water available". However, the applicant did not specify the anticipated source as requested. Please provide specific sources from which water could be obtained for the mining operation.

15) Please state whether the applicant anticipates any water will be needed for irrigation during reclamation. If water for reclamation is anticipated, please provide an estimate of the water requirements including flow rates and annual volumes. Additionally, please indicate the anticipated source(s) of water to supply the project water requirements during reclamation. If irrigation is anticipated, please be sure to include costs for this task in the reclamation bond estimate.

Exhibit H – Wildlife Information (Rule 6.4.8):

16) The applicant is proposing to install multiple wildlife mitigation features (e.g., wildlife fencing, exit ramps, underpasses) during the phased mine operation. The Division requested the applicant provide design details for all features proposed. The applicant stated in its response to item no. 63 "the Wildlife Mitigation Plan is being amended to incorporate the changes detailed in the revised permit narrative". The Division reviewed the revised Wildlife Mitigation Plan submitted on February 17, 2022, and was unable to find the information requested. At least for mine phase 1 (for which the applicant is requesting to be bonded at this time), please provide design details for any wildlife mitigation features proposed for this phase. If the nature of the proposed wildlife mitigation features changes after permit issuance, these changes can be incorporated into the permit through the permit revision process.

17) The Division has the following comments regarding the revised Wildlife Mitigation Plan:

    a. On page 4, the 3rd paragraph discussing mine phase 3 states "All stormwater will be directed down drainages towards the northern extent of a central access gravel road into the Project Area as shown on Figure 2" and "This internal access gravel road will be available for use following the completion of Phase 3". This description contradicts the mine phase 3 description provided in the proposed mining plan and the "End of Phase 3" scenario depicted on Figure C-5, which indicate the internal access gravel road will not be constructed during this phase. According to the proposed mining plan and Figure C-6, this road will be constructed during mine phase 4. Please correct this section accordingly.

b. On page 5, the reclamation summary states "Topsoil will be generated on-site using waste fines from mining and screened with imported topsoil, as needed, or amended with fertilizer". This topsoil description contradicts the proposed reclamation plan, which describes the plant growth medium to be used for reclamation as "partially decomposed plant material, sandy loam, and site derived tree mulch paired with crusher fines, as needed", and states that "no growth medium will need to be imported for reclamation". Additionally, no fertilizers are proposed in the reclamation plan. Please update this section to correlate with the proposed reclamation plan.

c. On page 7, the 2nd paragraph states "Existing culverts underneath the CCP will be widened during the pre-mining phase and Phase 1". This contradicts the revised mining plan which now proposes "closure of the inlet" of the existing culvert during mine phase 1 and construction of an underpass through which stormwater will be directed via pipeline to the drainage located east of the CCP. Please correct this section accordingly.

d. On page 21, the 3rd paragraph mentions a "spring in unnamed drainage" located "to the east". At the end of page 21 and continuing onto page 22, the text states "The predominant wetland/riparian habitat types within or adjacent to the Site include Fountain Gulch to the north, Clear Creek to the east and south, and the unnamed drainage to the east". Please clarify the location of the unnamed drainage referred to in this section. Is it one of the drainages located within the proposed permit area that will be utilized for the WRL?

e. On page 22, in Table 6 – Impacts to Land Use Class and Vegetation Cover Type within the Project, the Phase 1 section shows a total of 24.6 acres will be impacted by the operation. However, the proposed mining plan includes disturbing a total of 43.6 acres (of which, 35.7 acres will be reclaimed). Please explain and/or correct this discrepancy.

f. On page 29, the 3rd paragraph states "Two Deed Restricted Wildlife Migration Corridors will be established to allow for populations of big game species to access the Clear Creek corridor to the south of the Project area" and that "These areas will be permanently set aside and will remain undeveloped through the life of the Project". However, the revised Figures C-7 – End of Phase 5 and F-1 – Reclamation show that mining disturbance will occur within the northern portion of this proposed corridor (outlined in orange on these maps). It does not appear the applicant is proposing to expand this corridor during mine phase 5, as the total acreage attributed to the corridor remains at "131.5 acres". Please make the appropriate corrections to this section and/or the figures submitted with the application.

g. On page 34, the Earthen Berms section states "Earthen berms should be placed strategically to complement wildlife safe fencing that would help to funnel wildlife to the designated road crossings (over passes and underpasses)" and "Berms should also be used alongside wildlife safe fencing to encompass the entire mining operation (to) minimize conflict between wildlife and human operations". Please state whether the recommended earthen berms will be constructed in conjunction with the proposed wildlife fencing and overpass/underpass structures.

h. On Figure 9 – Proposed Mitigation Options for Phase 1, the "New Internal Gravel Access Road" is shown, indicating this road will be constructed during mine phase 1. However, the proposed

mining plan and Exhibit C maps show this internal road will not be constructed until mine phase 4. Please remove this feature from Figure 9 to eliminate any confusion it might cause.

i. On Figure 10 – Proposed Mitigation Options for Phase 2, the "New Internal Gravel Access Road" is shown, indicating this road will be present during mine phase 2. However, the proposed mining plan and Exhibit C maps show this internal road will not be constructed until mine phase 4. Please remove this feature from Figure 10 to eliminate any confusion it might cause.

j. On Figure 11 – Proposed Mitigation Options for Phase 3, the "New Internal Gravel Access Road" is shown, indicating this road will be present during mine phase 3. However, the proposed mining plan and Exhibit C maps show this internal road will not be constructed until mine phase 4. Please remove this feature from Figure 11 to eliminate any confusion it might cause.

k. Please explain the proposed locations for wildlife fencing (shown on Figures 9-13) to be installed during each mine phase. For example, Figure 9 shows that during mine phase 1, wildlife fencing will be installed only along the southern edge of the CCP in the area of the phase 1 quarry. Is this proposed alignment meant to encourage wildlife to cross the CCP north and south of the proposed quarry area? Also, Figure 11 shows that during mine phase 3, additional wildlife fencing will be installed along the northern edge of the CCP at the southwestern edge of the site. No wildlife fencing is proposed for the southeastern edge of the site during mine phases 3-5. Please explain how the wildlife fencing locations were chosen. Additionally, will the operation adhere to any of the recommended measures proposed on page 34 to mitigate wildlife-vehicle collisions at the ends of wildlife fencing (e.g., wildlife warning signs, ending the fence near the road, boulder fields between the fence and road, wildlife guards across the road, electric mats embedded in the road surface, ending fences on straight highway sections or with increased lighting)?

Exhibit M – Other Permits and Licenses (Rule 6.4.13):

18) Please explain what is meant by "State of Colorado Conditional Water Right, as needed" (item no. 10 from the list). Does this refer to the Substitute Water Supply Plan that may be needed from the Division of Water Resources for water used for dust control and material washing? Please clearly state the agency from which the required permit, license, or approval may be needed.

Geotechnical Stability Exhibit (Rule 6.5):

19) The Division has the following comments regarding the revised Geotechnical Stability Exhibit submitted on February 7, 2022:

a. This exhibit states "sufficient buffers will be maintained to neighboring property lines to ensure all activity is contained within the affected area". Please specify the proposed mining buffers/setbacks from the permit boundary that will be maintained during mining. This information should also be provided on the appropriate Exhibit C Mining Plan Map(s) and in the Exhibit D Mining Plan.

b. Figure GS-2 USGS Fault Location – Phase 3 actually depicts the phase 5 scenario shown on Figure C-7 (and not phase 3). Please correct the caption of this figure accordingly.

c. This exhibit states "for the purposes of slope stability analysis, the tallest mining highwall (500', Figure GS-1) and tallest waste rock landform (600', Figure GS-2) scenarios were modeled". Figure GS-1 depicts the proposed phase 1 scenario and Figure GS-2 depicts the proposed phase 5 scenario (caption incorrectly states Phase 3). However, according to the Exhibit C maps, the tallest pit wall will be approximately 1,000 feet in height during mine phase 5 (as measured from the southern pit wall of the phase 5 quarry), and the tallest WRL slope will be approximately 1,350 feet in height during mine phase 5 (as measured in the eastern drainage). The Division understands the applicant is proposing to reclaim highwalls concurrently with mining, so that the active (unbackfilled) portion of the highwall will be no more than 25 feet in height (one bench) at any time. Given this proposed reclamation plan for quarry highwalls, the 500 foot scenario modeled in the stability analysis is sufficient. However, the maximum proposed height for the WRL must be incorporated into the stability analysis. Therefore, please update the stability analysis to include the actual proposed height of the WRL, which the Division estimates to be approximately 1,350 feet. If the applicant chooses not to revise the stability analysis as requested, the proposed mining and reclamation plans and maps must be revised to reflect the maximum WRL height addressed by the stability analysis.

Additional Items:

20) Please ensure all relevant information provided in your response to the Division's individual adequacy items is also incorporated into the text of the appropriate exhibit.

21) Please review and respond to the adequacy review letter provided by Rob Zuber, DRMS (see enclosed letter, dated February 11, 2022).

22) Please review and respond to the adequacy review letter provided by Zach Trujillo, DRMS (see enclosed letter, dated February 11, 2022).

23) 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 exhibits submitted on December 22, 2021, the revised Geotechnical Stability Exhibit submitted on February 7, 2022, and the revised Weed Management Plan and Wildlife Mitigation Plan submitted on February 17, 2022. (A new affidavit will need to be provided for any additional revised materials submitted in response to the adequacy items identified in this letter).

This concludes the Division's 2nd adequacy review of your application. Please ensure the Division sufficient time to complete its review process by responding to these adequacy items no later than two weeks prior to the decision date, by **March 6, 2022**. If additional time is needed to respond, you must submit an extension request to our office prior to the decision date.

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: Second Adequacy Review, from Rob Zuber, DRMS, dated February 11, 2022
Technical Adequacy Review No. 2, from Zach Trujillo, DRMS, dated February 11, 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

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

MEMORANDUM

Date: February 11, 2022
To: Amy Eschberger and Michael Cunningham, DRMS
From: Rob Zuber, DRMS
RE: Young Ranch Resource Quarry (M-2021-009), Second 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 response (received on December 22, 2021) to our preliminary adequacy review (PAR) in the context of Rules 3.1.5, 3.1.6, and 6.4.7. I considered potential impacts to the hydrologic balance during all phases of the operation: during mining, after mining and during reclamation, and post-reclamation. In addition to reviewing the responses to my items in the PAR (item 96), I identified several other items that are related to the management of surface water, and I have commented on those items.

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

- 1 - 2: Not surface water related
- ***3f: The Division recommends that the mining plan state that traffic will be minimized in the sump area to insure continual infiltration of stormwater and also that access will be maintained for sediment removal.***
- 4 – 11: Not surface water related
- ***12: Please provide more detail regarding the handling of water from large storms prior to underpass construction. Also, provide more detail on how water will be spread ("fanned") on the WRL.***
- 13 - 26: Not surface water related
- 27: No additional comments or questions.
- 28 – 48: Not surface water related

- ***49: Several aspects of Exhibit G require additional responses by the applicant:***
  - ***In Exhibit G, the discussion of protection of the hydrologic balance was revised to exclude the phrase "preventing an increase in sediment discharge." The applicant needs to explain why this text was omitted or include it in the text.***

- ***In the SEDCAD report, the elevation, area, and capacity values in the Elevation-Capacity-Discharge Tables are identical for the East Quarry Sump and West Quarry Sump. Please explain if both tables are accurate.***
- ***In the SEDCAD report, the flow into each of the sumps is approximately 500 cfs: 502 cfs for the East Quarry Sump and 499 cfs for the West Quarry Sump. These are very high discharge values and warrant an explanation. Are they the result of a simplification in the model? For example, are they the result of several subbasins (the different areas around the sumps) being combined into one sub-basin for each sump?***
- ***Please explain how the sumps completely contain the 100-year runoff, as stated in the text (page G-2), given the following from the SEDCAD model. For the East Quarry Sump, the volume of runoff from a 100-year storm is 24.4 acre-feet (Subwatershed Hydrology Detail). However, per the Elevation-Capacity-Discharge Table the capacity of the sump is only 5.2 acre-feet prior to discharge. The values are comparable for the West Quarry Sump.***

- 50: No additional comments or questions.
- 51: No additional comments or questions.
- 52: No additional comments or questions.
- 53: No additional comments or questions.
- 54: No additional comments or questions.
- 55: No additional comments or questions.
- 56: No additional comments or questions.
- 57: No additional comments or questions.
- ***58: The response did not address the stability of the WRL. Please explain where in the permit exhibits and additional reports that this concern is addressed.***
- 59: No additional comments or questions.
- 60: No additional comments or questions.
- 61: No additional comments or questions.
- 62 – 95: Not surface water related

The rest of this memo pertains to Item 96, my adequacy items from the PAR
(Note that the original text from the PAR is repeated.)

1. There appears to be a discrepancy on Figure 5 (page D-12). Per this figure, the WRL will have a rock surface, but it also will be planted with a native seed mix. The applicant needs to provide more detail on where the rock cap will be located and where the topsoil and plants will be placed in relation to the rock.

- *No further response required.*

2. Regarding page D-13, the applicant should confirm that the height of the berm is 9 feet or less. There could be an error and this dimension should be 9 feet or more.

- *The original adequacy item was addressed, but other editorial issues with this section were identified:*
    - *Pagination for Exhibit D appears to have errors. For example, pages D1 - D4 are followed by "D-0." Please revise these pages.*
    - *Figure 5 in Exhibit D is labeled as a cross section, but it is actually a profile view. This problem should also be revised for similar figures.*

3. On page D-14 more detail is needed regarding the culvert mentioned in the first paragraph. Calculations for the size of the culvert should be provided, or the application should include an explanation as to why this calculation is not needed. Additional information in text and on Map G-2 should answer the following questions. What happens to the water that will flow through this culvert? Will it be diverted offsite? How will the WRL be protected from these flows?

- *No further response required.*

4. On pages E-2 to E-4, the applicant has committed to practices for reducing erosion (roughening, ripping, hydroseeding, mulch, and wood straw), but given the fact that reclaimed slopes will not be compacted (on page G-4 the application states that lack of compaction will create lower runoff conditions), there is a higher likelihood of erosion. Therefore, the application should include a commitment to repair any rills that develop and to use additional Best Management Practices, including straw bales and wattles (aka erosion logs), as appropriate. The application should also state if access roads will be built on reclaimed slopes to assist in rill repair.

- ***The commitment for Best Management Practices should be included in the text of Exhibit E.***

5. The applicant should state if there are known seeps or springs in the vicinity of the WRL, and (if so) provide some detail on location, size, and other pertinent information related to these features.

- ***Page G-1 states that there are no wetlands in the project area, however, the ERC report (Appendix 7) describes two areas as wetland habitat. Also, the Division interprets the designations of PEM, PUB, and PFO as wetland types in the National Wetland Inventory. Please address this apparent discrepancy, with additional discussion in Exhibit G.***

6. As required by Rule 3.1.5(3), the mining plan needs to include a detailed discussion of the practices that will be employed along the ridgetop, at the southern and western sides of the quarry, to prevent the transport of sediment onto downgradient undisturbed areas. Specify if diversion ditches, vegetated berms, straw bales, or other BMPs will be used. This is especially necessary during the mining phase of the operation, but should also be addressed for the post-mining and post-reclamation phases.

- *No further response required.*

7. On page G-1 there appears to be a discrepancy. There is text regarding "deep organic litter and sandy loam substrate" onsite that has "moderate to high" permeability. However, the text also indicates that the site has mostly group D soils (which means low permeability). Furthermore, page D-10 (bottom of page) discusses the lack of topsoil onsite. Please explain these apparent discrepancies.

- *No further response required.*

8. Page G-4 (middle of page) discusses "the channel bottom created by the embankment slope where it intercepts the natural grade on either side." The applicant should explain why this "channel" is not a designed ditch. This explanation should include estimated flows using the SCS Method or other method used in standard practice of stormwater engineering. Alternatively, designs for WRL side ditches (including hydrology and hydraulics calculations) should be included in the application, and these structures should be shown on Map G-2 and other applicable maps.

- *Several additional responses are required by the applicant:*
    - *The response to the PAR states that SEDCAD reports and TR-55 data are included in Appendix G-1. That appears to be an error. Are the referenced pages actually in Appendix 4?*

- *The documentation of calculated flows is not complete. Please provide more description of how estimates of discharge values were calculated using TR-55 and the Graphical Peak Discharge method. In particular, provide a discussion on the determination of times of concentration. Also, indicate if basins are connected and peak discharge values (right-hand column) include flows from other basins in the tables. For example, the flow used in SEDCAD to assess the riprap channel is 204.2 cfs; does this value correspond to any of the results from the TR-55 analysis?*
- *Please address discrepancies between the Mining Runoff tables (based on TR-55 method) and the maps for all conditions: baseline, mining, and reclaimed. For example, on Map G-1 for Mining Conditions, Basin 15 is shown to have an area of 42.1 acres and a CN value of 79; in the table the area is 53.2 acres and the CN value is 89.*
- *The Division would like to insure that the operator is preventing erosion at the sides of the WRL, where it connects to the natural grade. A discussion should be provided in Exhibit G on how erosion will be prevented on the side of the WRL.*

9. Map G-1 contains a statement that the "quarry floor drains offsite via road." Given this, more details for the road drainage at the south end are required. If appropriate, include flow calculations, a design for a roadside ditch and any other related structures, and a discussion on how this flow will be managed to prevent erosion on the undisturbed area adjacent to the road.

- *Management of flow at the south end was not adequately addressed. Map G-1 and the runoff tables in Appendix 4 were reviewed, and the Division has the following questions.*
  - *Why is the drainage area for the mining and post-mining drainage calculations (21.2 acres) much smaller than the area for the baseline condition (63 acres)? It appears that sub-basins on the south end are contributing flow to the road that are not accounted for in the mining and post-mining calculations (e.g., sub-basins 5, 6, and 7). Therefore, the flow comparisons do not appear to be accurate. Furthermore, the curve number for mining conditions (89) suggests that runoff during mining will be higher than flow during the baseline condition (when the CN is 79).*
  - *Please explain the source of the value 41.1 cfs in Table 8 on page G-8. This value does not appear to match any of the values in the runoff tables in Appendix 4.*
  - *Regarding Map G-1, Reclaimed Conditions, please clarify the course of runoff from Subbasin 2. For example, does it drain through a culvert and enter the roadside ditch on the east side of the haul road?*

- *Within Detail 2 of Map G-1, please explain if the statement "NORTH IS INTO THE PAGE" is correct. Should it state that south is into the page? Please revise the map as appropriate.*

10. A text box on Map G-2 states that the riprap for the buttresses at the bottom of the WRL was sized for 100-year flows. However, Exhibit G does not provide calculations for riprap size or for other design parameters for these buttresses. The applicant needs to provide this information.

- *No further response required.*

11. On Map G-2 there appears to be an error with symbology. The buttress on the east side of the WRL is indicated, but there is no symbol for a buttress on the west side.

- *On Map G-2, please improve the symbol for riprap at the toe of the west side of the WRL.*

12. North Clear Creek is within 300 feet of the toe of the WRL. As required by Rule 3.1.6(1), describe how the applicant will ensure that mining operations will not impact water quality in North Clear Creek. In addition, please specify if surface water monitoring is required under any of the other permits, licenses or approvals which will be sought for the proposed mining operation.

- *A SEDCAD report is provided for the assessment of hydraulics for the eastern portion of the WRL, however a report is not provided for the western portion of the WRL. This additional report should be provided for two reasons: 1) to support the selection of riprap size in this "channel" and 2) to show the source of the value of 5.6 fps in Table 7 within Exhibit G.*

13. The applicant should explain why the SCS method was not used to estimate peak flows from the mining operation. (Only volumes are provided.)

- *No further response required.*

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

Date: **February 11, 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. 2**

Amy,

As requested, I have reviewed the adequacy response provided by Young Ranch Resource LLC (YR; received on December 22, 2021) to the Division's adequacy letter dated August 23, 2021 for the proposed Young Ranch Resource Quarry (YRRQ) application. On February 7, 2022, I reached out to Ben Langenfeld of Lewicki & and Associates to clarify some of my original comments that appeared to not have been addressed in the YR adequacy response. During the discussion, it came to Mr. Langenfeld's attention that the provided updated Section 6.5 (geotechnical stability report) was not the fully updated section that would potentially satisfy any remaining comments I have. On February 7, 2022 Mr. Langenfeld provided the correct and updated Section 6.5. 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 additional discussion on why highwalls will not be eliminated entirely and approximately 10% of highwalls will remain after backfill and grading concludes.*

  YR: *Approximately 10% of reclaimed faces will remain as cliff faces to preserve the current aesthetic and function of the site. Wildlife of the area sometimes prefer rocky ledges; therefore, they are included in the quarry reclamation plan. All WRL surfaces will be backfilled and reclaimed. Please refer to the response of the Division's questions 32, 35 and 37 of their Preliminary Adequacy Review.*

  Division: After reviewing the question and associated response to Division's questions 32, 35, and 37, this comment is redundant and has been addressed in the referenced questions. **This item has been retracted.**

- ***Division:*** *Please have YR provide additional discussion on how they plan on grading the reclaimed pit slopes so that it is done in a manner to control erosion and siltation of the affected lands to satisfy Rule 3.1.5(3).*

  YR: *Pit slopes will be backfilled and graded while the bench spanning safety and stormwater berm is still in place. This berm will be constructed to half-wheel height of the largest piece of heavy machinery that enters the area per MSHA regulations. Only during the last step of grading*

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will this berm be incorporated into the reclaimed slope. Immediately following final grading and pending seasonal limitations, vegetation planting and seed distributing will occur. If a bench is fully reclaimed outside of vegetative planting and growing seasons, the active bench below with a complete and intact stormwater and safety berm will serve to control erosion from the graded bench above. It should be noted that only one 35-foot-tall bench would find itself in this position with the higher and earlier mined benches vegetated and stabilized.

Division: Based on YR's response, all requirements of Rule 3.1.5(3) have been satisfied. **This item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please have YR provide additional discussion on compaction of the reclaimed slopes for both the pit and the WRL.*

  YR: *Slopes will be stabilized through track compaction and roughening and ripping prior to seeding and mulching. Please refer to response to question 4 of the Division's Preliminary Adequacy Review.*

  Division: After reviewing the Division's question 4 and YR's response, **this item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please have YR provide additional discussion on how the foundation of the WRL will be addressed prior to the placement of waste material.*

  YR: *The area will be stripped of vegetation prior to start of fill activities within the WRL footprint. Vegetation, including mulched woody debris, will be utilized as backfill and or mulch for final reclaimed slopes. See Appendix 1 maps for additional details on WRL development.*

  Division: After reviewing Appendix 1 maps and YR's response, **this item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please have YR provide the location of each slope profile used in the slope stability analyses in the form of a transect line within an appropriate map or figure.*

  YR: *Please see the revised Geotechnical Stability Exhibit. The slope profiles used to build the GALENA models are identified therein.*

  Division: After reviewing the provided Section 6.5 (Geotechnical Stability Exhibit) of the YR adequacy review responses, the location of each slope profile has been provided under Figure GS-2. **This item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please have YR include the material properties used in the stability analyses as part of the text within the Geotech Exhibit.*

  YR: *Please see the revised Geotechnical Stability Exhibit.*

  Division: All material properties used in the stability analyses have been provided in the Table GS-1. **This item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please have YR address potential impacts of water infiltration as part of the slope stability discussion and analysis for both the pit area and the WRL.*

  YR: *Please see the revised Geotechnical Stability Exhibit.*

  Division: After reviewing the revised Geotechnical Stability Exhibit, a piezometric surface was

included into the slope stability analysis to model potential impacts of water infiltration. Of the provided stability analyses including the piezometric surface, two of analyses indicated a factor of safety below the minimum requirements and indicate failure. However, as discussed in my original technical adequacy memo dated July 23, 2021, these models are made to observe small surficial failures along individual bench crests or on the WRL waste material surface. 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. All other provided stability analyses meet or exceed the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

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

    1. *Slope stability analysis for the entire reclaimed mined bench slope (restraints including crest and toe of slope).*

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

    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:

    1. This scenario has been provided under GS-1. The resulting factor of safety is 40.15 which meets or exceed the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

    2. This scenario has been provided under GS-1. The resulting factor of safety is 1.72 which meets or exceed the minimum requirements of Section 30. **This item has been satisfied and no further comment is necessary.**

    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 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.**

- ***Division:*** *Please provide the Division with discussion and rational behind the seismic coefficients used in the slope stability analyses including why two separate coefficients are used between the mined bench slope and the WRL.*

  YR: *Seismic coefficients are discussed in the revised Geotechnical Stability Exhibit.*

  Division: Seismic coefficients are discussed under subsection 2.1 of the updated Section 6.5. YR's rational behind the use of the assigned seismic coefficient is based from published USGS seismic zone maps and associated scales for typical seismic coefficients specific to the Mine's general location. Additionally, the seismic coefficient used in the provided updated Section 6.5 stability analyses for both the mined bench slope and the WRL are consistent with each other. **This item has been satisfied and no further comment is necessary.**

- ***Division:*** *Please provide the Division information regarding whether the seismic coefficients used in the slope stability analyses take into consideration blasting that may occur during mining operations.*

  YR: *Seismic coefficients are discussed in the revised Geotechnical Stability Exhibit.*

  Division: YR discusses blasting in regards to seismic coefficients under subsection 2.1. After reviewing the provided rational and discussion, **this item has been satisfied and no further comment is necessary.**

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.

- **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.**

- **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.**

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.**

This concludes my review and comments for the responses provided by Young Ranch Resource, LLC to the Division's adequacy letter dated August 23, 2021 for the proposed Young Ranch Resource Quarry (YRRQ) application. If you have any questions feel free to contact me.

Sincerely,

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