



November 16, 2021

Tim Cazier
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street
Denver, Colorado 80203

Re: Parkdale Quarry, Permit No. M-1997-054; Response to Preliminary Adequacy Review for 112 Construction Materials Reclamation Permit Amendment Application (AM-02), Mitigation and Monitoring Plan for Surface Water and Groundwater

Dear Mr. Cazier.

Front Range Aggregates, LLC. received a copy of the Division of Reclamation, Mining and Safety's (DRMS) adequacy review for Exhibit G (Mitigation and Monitoring Plan for Surface Water and Groundwater) of our 112 Construction Materials Reclamation Permit Amendment Application (AM-02) for the Parkdale Quarry, Permit No. M-1997-054 dated August 6, 2021. Please see the following responses, and the referenced supporting documentation for our responses.

- A. The operator has not identified all known aquifers as required by 6.4.7(2)(b). Please identify all known aquifers.

Response: As explained in Section 4.2 of the Monitoring and Mitigation Plan, four hydrostratigraphic/aquifer units are recognized on and within one-mile of the overall mining area. They include alluvium in the Arkansas River and Tallahassee Creek stream channels and feeder drainages, sedimentary rocks north and south of the Expansion Area, and granitic rocks that are divided into weathered granite near the surface and competent but fractured granite below about 20 feet of depth.

- B. What additional permitting will be required for the sediment ponds/discharge to surface water and what discharge parameters will be monitored?

Response: The Parkdale Quarry is currently permitted under COG500325 and the site complies with the applicable stormwater management plan addressing the requirements within the permit. Monitoring requirements and discharge parameters for discharges from the site are detailed in Section 13.1 of the SWMP and include pH, oil and grease if a visible sheen is present on the water, total suspended solids, and dissolved copper.

- C. What is the nature of the "periodic disturbances" to Tallahassee Creek within the existing permit area that are discussed? Is additional permitting required for these?

Response: There is a permitted low water crossing within the mining permit boundary that disturbs less than 1/10th of an acre and is covered by a non-reporting Nationwide Permit 14.

- D. If/when the springs identified within and near the proposed permit are affected, what is the trigger for remedial action? Are there water rights implications associated with impacting these springs?

Response: No remedial action is required to offset impacts to the springs within the affected area. The water rights for those springs are held by the Bureau of Land Management (BLM) and those water rights will be withdrawn by BLM as part of their process for putting a mineral materials contract in place to mine the area, as referenced in Decision Record, Proposed Competitive Mineral Materials Sale (COC-078119) at Parkdale, Fremont County, CO, DOI-BLM-CO-F020-2019-0013 EIS, Mitigation Measure 5, Surface, Ground Water, and Water Quality, a copy of which was submitted to DRMS as Exhibit N2.

- E. DRMS will require an additional surface water monitoring point at an upstream (background) location on Tallahassee Creek to document surface water quality conditions prior to any mining related impacts, ideally immediately after the creek enters the permit area. Please identify this location on the appropriate figures.

Response: Monitoring location TC-2 has been added on Tallahassee Creek, as per Table 8 and as shown on Figure 7 of the Mitigation and Monitoring Plan for Surface Water and Groundwater.

- F. The applicant will be required to provide surface and groundwater quality monitoring plan to provide data quarterly for a minimum of five consecutive quarters prior to any mining related disturbances in the proposed expansion area. If parameters are stable, DRMS may be willing to modify the quarterly monitoring through at TR at a later date.

Response: Acknowledged.

- G. Applicant will need to expand the analytical sampling to include inorganic analytes appropriate for the surface water standards for the creeks/receiving body. Applicant will need to review Regulation No. 31 – The Basic Standards and Methodologies for Surface Water, and Regulation No. 32 - Classifications and Numeric Standards for Arkansas River Basin to determine what surface water standards are appropriate for the proposed monitoring, and provide those standards as part of the proposed monitoring plan.

Response: The Regulation No. 31 and No. 32 analytical sampling parameters for the expanded mining area have been added to Table 9 of Exhibit G.

- H. Please provide cross sections of the proposed expansion area showing the existing and proposed final surfaces with respect to the location and groundwater depths of existing and proposed monitoring wells.

Response: Cross-sections of the proposed expansion area showing the existing and proposed final surfaces with respect to the location and groundwater depths of existing and proposed monitoring wells have been added as Figures 3A and 3B.

- I. Please provide a groundwater contour or flow direction map of the expansion area if possible.

Response: A map showing the apparent flow direction in the expansion area has been added as Figure 5.

- J. Applicant will need to present all groundwater monitoring data compared to the most restrictive standard in Tables 1-4 of the Interim Narrative Standard (INS) for each analyte, not just Domestic Water Supply.

Response: Understood. New Table 9 shows the applicable water quality standards for the analytes that samples will be analyzed for.

- K. Applicant will need to expand the analytical sampling proposed in the provided MMP to include analytes from Tables 1-4 of the INS. DRMS will allow elimination of odor, color, coliforms, asbestos, foaming agents, phenol, and chlorophenol -which we have no reason to believe this operation would impact, however, we need the full inorganic list and gross alpha and beta.

Response: As shown in new Table 9 the analytes that groundwater samples will be analyzed for has been expanded to include analytes from Tables 1-4 of the INS, including the full inorganic list with the exception of cyanide, fluoride, mercury, odor, color, coliforms, asbestos, foaming agents, phenol, and chlorophenol as there are no operations on the site, as applicable, that use or generate those compounds or would have an impact on those properties. The analytes that samples will be analyzed for also includes gross alpha and beta particles. Given the site geology, depth to ground water, and the very low hydraulic conductivity of the bedrock the measurement of DO and ORP are not relevant for this site. Measurement of these parameters are only necessary when acid generating or oxygen depletion reactions are occurring or likely to occur. Given the observed geology of the mining area, minerals associated with these geochemical processes do not occur at this site.

- L. Based on the data provided to-date, it appears that Table Value Standards (TVS) should apply to this site with the possible exceptions of Gross Alpha and Beta. (The initial uranium detection above standards in MW10 from the first sampling event appears to be an outlier) DRMS may revise this assessment as additional quarterly data is provided. If the Applicant disagrees, please provide rationale and alternate proposed value(s).

Response: The proposed analytical standards that will be applied to analytes are shown in Table 9.

- M. Please address/clarify/discuss what standards the applicant intends to apply to the groundwater radionuclide data and gross alpha/beta data to be collected and why.

Response: The applicant will perform additional rounds of radionuclide monitoring to provide five quarters of data for each well. Given that the radionuclide data collected to date represents pre-mining conditions it is likely that groundwater in the area of the mine is naturally high in radionuclides. Consequently, following the collection of the additional data the applicant will prepare a summary of the analyses and present all of the results along with the maximum and minimum concentration/activity for the parameters. The maximum concentration/activity of the radionuclide will be set as the standard. Natural seasonal variability may occur during future monitoring that may result in a higher limit. Therefore, the limit may be adjusted based on additional monitoring. The results of the additional monitoring will be included in the annual report.

- N. Please discuss/clarify how the proposed additional monitoring well locations (MW-2, -4, -5 and -6) shown in Figure 6 of the MMP were selected, as well as what groundwater quality monitoring data is intended to be collected from them, and at what intervals.

Response: MW-4, MW-5, and MW-6 have been relocated to within the disturbance boundary because of

the difficulties associated with land ownership (some third-party private land), permitting (the need for a National Environmental Policy Act Environmental Assessment for the locations), and in accessing (near-vertical topography) the originally proposed locations. MW-2 has been deleted, as we cannot access the proposed location, and if it is moved to within the disturbance boundary it effectively duplicated MW-1. MW-4, MW-5, and MW-6 are located upgradient of the mining area, and are intended to establish background concentrations of analytes of potential concern. They will also be used to help monitor the effects of mining on water levels in the region. The groundwater quality monitoring data to be collected from them, and the sampling intervals are presented in Tables 8 and 9 of Exhibit G.

- O. Please identify the proposed Point of Compliance (POC) well(s) for this site as required by Construction Materials Rule 3.1.7(6). Given the inherent uncertainties of monitoring groundwater in a fractured bedrock setting, and the extent of groundwater characterization to date, multiple POC locations may be appropriate for this site.

Response: We will have two Point of Compliance (POC) wells, MW-1 and MW-3. One POC well will be MW-1, as it is located closest to potential offsite wells that may be impacted by the mining. MW-1 is near the hydrogeological downgradient edge of the phase 3 and 4 mining areas. MW-3 is located on the edge of the disturbance boundary for mining phases 1, 2, and 3. MW-3 is near the hydrogeological downgradient edge of the mining area and will also serve as a POC well. Prior to the time where MW-1 and/or MW-3 will be destroyed by the mining, a replacement well will be installed in a location within 500 feet of the well being replaced, that has already been mined or is otherwise unlikely to be destroyed by mining activities

- P. DRMS will require that all additional wells be installed prior to mining activity in the expansion area if at all possible, rather than the proposed “phased” approach. This would provide additional useful baseline data prior to disturbance in those areas. Please address.

Response: The applicant will install the wells prior to mining in the Expansion Area such that five quarters of sampling will be performed to document pre-mining groundwater conditions. The phased approach was selected for installation of the three additional monitoring wells due to the high costs and logistical challenges resulting from the site topography for access to well locations prior to the start of development of the associated mine phase. The first part of development of each mining phase is construction of haul roads, which will also act as access routes for installation of the proposed monitoring wells. The cost to develop and maintain dedicated access roads to reach the proposed well locations years prior to the start of the associated mine phase exceeds the cost of the actual drilling and well installation and would be inconsistent with fundamental mine planning principles. In order to access the proposed monitoring well locations without the road issues drilling would have to be performed using helicopter access, which would be even more costly than road building and would require a National Environmental Policy Act Environmental Assessment.

- Q. DRMS will require submittal of groundwater monitoring data with the annual report at a minimum. If TVS monitoring parameters are exceeded DRMS will require notification within 5 working days per Rule 3.1.7(9). Please acknowledge

Response: Acknowledged.

- R. With respect to the monitoring measures proposed in the MMP, DRMS will need to be notified as appropriate for exceedances of TVS values for groundwater, exceedances or observed possible negative impacts to surface water, and/or groundwater quantity impacts. Please acknowledge

Response: Acknowledged.

- S. The applicant should establish “trigger levels” or identify baseline levels for the indicators specified in Table 9 of the MMP (other than TVS analytes which have established standards). This will clarify what constitute an “increase” in specific conductivity and turbidity, or an increase or decrease from historic or pre-mining “baseline” levels for quality or quantity.

Response: “Trigger levels” or baseline levels for the indicators are specified in Table 10 (which was formerly Table 9) of the MMP.

- T. Figures 3 through 6 do not show the existing permit boundary, only the proposed expansion area. Please include the existing permit boundary on all figures in Exhibit G. If any proposed points of compliance for surface water or groundwater are outside the permit boundary, please provide an explanation or move the POC to within the permit boundary.

Response: The figures in Exhibit G have been revised to show the existing permit boundaries. All points of compliance have been moved inside the permit boundary except the surface water monitoring points TC-1 and TC-2 on Tallahassee Creek and CC-1 and CC-2 on Currant Creek. TC-1, TC-2, and CC-2 are located on land owned by another subsidiary of the applicant’s parent company, but outside of the permit boundary. CC-1 on Currant Creek is located on publicly accessible BLM land immediately north of the permit boundary.

- U. Exhibit M lists a Substitute Water Supply Plan as required. Does the SWSP account for the springs in the proposed expansion area that will be mined through, or do you have documentation from the Colorado Division of Water Resources indicating that is not necessary?

Response: The water rights for the springs in the expansion area are held by the BLM. BLM intends to withdraw Federal Reserved Water Rights on Cactus Mountain Spring and Parkdale Spring as part of the mineral materials contract for the site as referenced in Decision Record, Proposed Competitive Mineral Materials Sale (COC-078119) at Parkdale, Fremont County, CO, DOI-BLM-CO-F020-2019-0013 EIS, Mitigation Measure 5, Surface, Ground Water, and Water Quality. Therefore, an SWSP is not required for disturbance of those springs.

- V. The mitigation plan for the “Alteration of water quality or flow at springs” proposes the installation of a “guzzler”. Please describe how this would be installed and implemented.

Response: The water rights for the springs in the expansion area are held by the BLM and those water rights will be withdrawn by BLM as part of their process for putting a mineral materials contract in place to mine the area. Colorado Parks and Wildlife and BLM are not requiring installation of a guzzler. Therefore, that mitigation has been removed from the mitigation plan.

November 16, 2021

Page 6

If you have questions about this response, please contact me at (720) 245-6423 or e-mail at david.bieber@martinmarietta.com.

Sincerely,

Front Range Aggregates, LLC

A handwritten signature in black ink, appearing to read "D. W. Bieber", written in a cursive style.

David Bieber, PG