



COLORADO

**Division of Reclamation,
Mining and Safety**

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

April 18, 2019

Mr. Ben Langenfeld
Greg Lewicki and Associates
3375 W. Powers Circle
Littleton, CO 80123

**Re: Empire Aggregate, Inc.; Douglas Mountain Mine; M-2018-016;
112c Permit Application Amendment (AM-01) Second Adequacy Review**

Mr. Langenfeld,

The Division of Reclamation, Mining and Safety (Division/DRMS) reviewed the content of the Empire Aggregate, Inc. 112c adequacy letter response dated March 12, 2019 for the Douglas Mountain Mine, File No. M-2018-016 application amendment (AM-01) and submits the following comments. The Division is required to make an approval or denial decision no later than April 30, 2019 therefore; a response to the following adequacy review concerns should be submitted to the Division as soon as possible.

The review consisted of comparing the application amendment content and the adequacy responses with the specific requirements of Rules 1, 3, 6.1, 6.2, 6.4 and 6.5 of the Minerals Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials. Any inadequacies are identified under the respective exhibit heading along with suggested actions to correct them. All italicized text indicates a question from the Division's first adequacy review letter.

Comments and Objections

1. The Applicant acknowledged the comments from the Colorado Division of Water Resources (DWR), however the Applicant failed to respond to the DWR comments regarding the groundwater depths in well permit numbers 67276-F and 271822 and the evidence of shallow groundwater which included visible seepage coming directly from the proposed mine site. Please address all of the DWR comments contained in their letter.
2. The Applicant states all of the DRMS jurisdictional concerns are addressed through the DRMS permit process and the permit documents, including narrative, maps, and



attachments, address each of these categories fully. Please specifically respond to all jurisdictional issues raised by all timely objections to the permit application and application amendment.

For example, the issue of increased earthquake risk from the proposed mining operation was raised by objectors. The Applicant did not address this objection in the adequacy response documents. Please specifically address this and all other issues raised by all timely objections for all jurisdictional concerns.

1.6 Public Notice

3. The Applicant's response is adequate.
4. *As required by Rule 1.6.2(e), please submit proof of the notice to all owners of record of surface and mineral rights of the affected land and the owners of record of all land surface within 200 feet of the boundary of the affected land including all easement holders located on the affected land and within 200 feet of the boundary of the affected land.*

The Division did not receive proof of notice to the following owners of record of surface and mineral rights of the affected land:

- a. Douglas Mountain Ranch
- b. Joyce Tanner

Please submit proof of notice by return receipts of a Certified Mailing or by proof of personal service.

The Division received two proof of notices to the Norseman of the Rockies with different tracking numbers. Please explain why two separate notices were mailed to the Norseman of the Rockies.

6.4 Specific Exhibit Requirements - Regular 112 Operations

The following items must be addressed by the Applicant in order to satisfy the requirements of C.R.S. 34-32.5-101 et seq. and the Mineral Rules and Regulations of the Mined Land Reclamation Board:

6.4.3 Exhibit C - Pre-mining and Mining Plan Maps of Affected Lands

5. The Applicant's response is adequate.
6. The Applicant's response is adequate.
7. The Applicant's response is adequate.

8. The Applicant's response is adequate.

The Exhibit C-2A and C-2B maps indicate a solid red line, which appears to indicate the proposed 54.6 acre affected land boundary. The line type is not identified on the maps or on the map legends. Please update the maps and map legends accordingly.

On the Exhibit C-1 map, the bold solid pink line type is identified and labeled as the Permit and Affected Land Boundary. As discussed above, on the C-2 maps the Applicant appears to indicate separate permit and affected area line types and uses the assumed affected land boundary to establish the 600' from disturbed boundary. Please explain these discrepancies and revise the Exhibit C maps accordingly.

9. The Applicant's response is adequate.

6.4.4 Exhibit D - Mining Plan

10. The Applicant's response is adequate.

11. The Applicant's response is adequate.

12. *On Page D-1, the Applicant states no portion of the mining will enter the West Fork of Clear Creek and a barrier of in-place native material will be maintained until the very end of the operation to prevent stormwater from discharging from the operation to the creek. Please describe the method of mining to be employed to remove the native material barrier as the mine elevation is lowered and at the end of the operation pursuant to Rule 6.4.4(a).*

The Applicant added the following language to the Mining Plan exhibit, "The barrier will not be removed until revegetation has successfully taken place in the disturbed areas. When removed, reclamation of its footprint will occur immediately."

The Applicant failed to describe how the barrier would be mined to prevent stormwater from discharging to the West Fork of Clear Creek. Please describe the method of mining to be employed to remove the native material barrier as the mine elevation is lowered and at the end of the operation pursuant to Rule 6.4.4(a).

13. The Applicant's response is adequate.

14. The Applicant's response is adequate.

15. *Please provide a typical mining excavation cross-section(s) for the perimeter and active highwall configurations.*

The Applicant's response in the adequacy response cover letter states, "See Figure D-1 in the revised Exhibit D. The active highwall will be maintained until it is at the midpoint of the final reclamation slope, and then it will be knocked down to create the final slope for topsoil placement."

On Page D-2 of the revised Mining Plan, the Applicant states the total height of each bench will be determined by the operator's equipment. On Page D-3 for the revised Mining Plan, the Applicant provided Figure D-1 Active Highwall Knockdown Example and Figure D-2 Overall Mining Highwall Knockdown Conceptual without a scale or dimensions. Please provide the anticipated highwall configuration dimensions (i.e. height and width of the mined benches).

Additionally, on Page D-3 of the revised Mining Plan the Applicant states the slopes will be mined to 3H:1V which contradicts the Applicant's statements and figures proposing to mine the perimeter highwalls in benches and reclaim the slopes to the 3H:1V reclamation slope using the cut and fill method.

16. The Applicant's response is adequate, however please confirm the Applicant intended to write "prevent" instead of "print" in the last sentence of the response.
17. The Applicant's response is adequate.
18. *On Page D-2, the Applicant states processing fines, overburden (if encountered) and imported fill may be used as backfill on the slopes. Backfill placed on the slopes will be to create even shallower conditions than 3H:1V. Please comply with the requirements of Rules 3.1.5(2) and (4) - Reclamation Measures - Material Handling regarding the backfilling and grading of the final reclamation slopes.*

The Applicant added the following language to the Mining Plan exhibit, "Overburden and fines will be placed on these using trucks and front-end loaders. These will dump the material on top slopes prior to the placement of topsoil. This may lead to slightly shallower slopes than 3H:1V. This placement will happen as a part of concurrent or final reclamation of slopes, depending on when the material is available."

The Applicant's response is adequate to address the requirements of Rule 3.1.5(4). Please explain how the Applicant intends to ensure adequate compaction for stability for the slopes backfilled with overburden and fines pursuant to Rule 3.1.5(2). Please explain if the regraded slopes will be roughened prior to backfilling with overburden and fines, how the backfill material will be compacted and how the material compaction will be verified during placement.

19. The Applicant's response is adequate.

20. The Applicant's response is adequate.

21. The Applicant's response is adequate.

22. *On Page D-3, the Applicant states if the Operator decides to mine below the groundwater horizon a technical revision will be submitted to the Division to address groundwater handling. The change in post-mining land use from the currently proposed rangeland to open water or developed water resource would require the Operator to submit an amendment to the permit pursuant with Rule 1.10.*

The Applicant's response in the adequacy response cover letter states, "Any post mine land use change will necessitate an amendment to the permit, which the operator will apply for."

The Applicant failed to update the reference to submit a technical revision on the revised page D-4 of the Mining Plan. Please revise the Mining Plan to indicate the Applicant would submit and receive Division approval of a permit amendment prior to exposing groundwater.

23. *Please provide a description of the nature of the stratum immediately beneath the material to be mined in sedimentary deposits pursuant to Rule 6.4.4(f)(ii) in the Mining Plan or on the Exhibit C maps.*

The Applicant's response in the adequacy response cover letter states, "See the revised Exhibit D."

The Applicant failed to update the Mining Plan to provide a description of the nature of the stratum immediately beneath the material to be mined in sedimentary deposits pursuant to Rule 6.4.4(f)(ii). Please provide the information and revised the Mining Plan accordingly.

24. The Applicant's response is adequate.

25. *On Page D-5, the Applicant states all fuel tanks will have secondary containment...with over 110% of the volume of the largest tank. Please commit to constructing and maintaining secondary containment for 110% of the volume all tanks in the containment facility, not only the volume of the largest tank.*

The Applicant revised Page D-6 of the Mining Plan to change the first reference for all secondary containment will have 110% of volume of the largest tank to state the volume of the combined tanks, however the second reference to the size of the secondary containment volume was not revised and still states 110% of the volume of the largest tank. Please revise the page to correct the second containment volume reference.

26. On Page D-5, the Applicant indicates all fuel tanks will have secondary containment. Please provide the construction and maintenance details for the containment facilities.

The Applicant's response in the adequacy response cover letter states, "Containment will consist of double-walled tanks and/or lined berms with appropriate capacity."

Please provide the typical construction and maintenance details for the lined berm containment facilities.

27. The Applicant's response is adequate.

28. The Applicant's response is adequate.

29. The Applicant's response is adequate.

30. The Applicant's response is adequate.

31. The Applicant's response is adequate.

32. The Applicant's response is adequate.

33. The Applicant's response is adequate.

6.4.5 Exhibit E - Reclamation Plan

34. The Applicant's response is adequate.

35. The Applicant's response is adequate.

6.4.6 Exhibit F - Reclamation Plan Map

36. The Applicant's response is adequate.

The Exhibit F map indicates several misused or unidentified line types. The solid red line, red dashed line and green contour lines are not identified in the map legend and the red dash with a single dot line type is labeled as indicating Mining Phases, but

appears to indicate parcel boundary on portions of the map. Please update the map and map legends to accurately use and identify all required line types accordingly.

6.4.7 Exhibit G - Water Information

37. The Douglas Mountain Ranch Mine 112c Reclamation Permit Application Flood Analysis dated March 6, 2019 is under view by the Division. The Division will submit any questions regarding the flood analysis under separate cover, if necessary.

38. The Applicant's response is adequate.

39. The Applicant's response is adequate.

40. The Applicant's response is adequate.

41. *On Page G-1, the Applicant states there are 7 wells within 600 feet of the Douglas Mountain Mine dug to depths below the pit bottom. During the pre-operational inspection, the Applicant stated a cross-section of the proposed mine site with the well data and monitoring well data was created to understand the relationship between the wells and the mining operation. Please provide the Division with a copy of the well cross-section for review.*

The Applicant provided a cross-section on Map C-3 of the following wells; #31816 - Colorado Society for Crippled Children and #217822 - Norseman of the Rockies, and the piezometers (TH-4 and TH-5) in response to the question. Please revise the cross-section to include the following surrounding wells; #71299-A - Martha Boxberger, #54580-MH - Easter Seals Colorado, #67277 - Daniel and Mary Ann Dalpes and #67276-F - Daniel and Mary Ann Dalpes.

The Applicant states on Map C-3 Well #31816 - Colorado Society for Crippled Children appears abandoned and Well #217822 - Norseman of the Rockies the location is suspect. Please provide justification for the Applicant's statements for the abandoned and suspect location for the wells.

42. The Applicant's response is adequate.

43. The Applicant's response is adequate.

44. The Applicant's response is adequate.

45. The Applicant's response is adequate.

46. The Applicant's response is adequate.

47. The Applicant's response is adequate.

48. The Applicant's response is adequate.

49. The Applicant's response is adequate.

50. The Applicant's response is adequate.

51. The Applicant's response is adequate.

6.4.8 Exhibit H - Wildlife Information

52. All aspects of the Mining and Reclamation Plans shall take into account the safety and protection of wildlife on the mine site, at processing sites, and along all access roads to the mine site with special attention given to critical periods in the life cycle of those species which require special consideration (e.g., elk caving, migration routes, peregrine falcon nesting, grouse strutting grounds) pursuant to Rule 3.1.8(1).

The Colorado Parks and Wildlife (CPW) submitted an objection letter dated June 18, 2018 for the original application. The letter listed three (3) biological concerns regarding this project; the bighorn sheep herd in the vicinity of the proposed mine and truck routes, an active peregrine falcon nest buffer and the elk winter range at the proposed mine location. CPW provided an additional comment letter dated December 18, 2018 for the amended application pursuant to Rule 3.1.8(2).

Please revise Exhibit H to include the mitigation measures required by CPW to address their biological concerns at the proposed mine site.

The Applicant stated a revised set of mitigations has been provided to CPW. The applicant is awaiting their response to further revise these mitigations as required. Once CPW has determined that the mitigations are sufficient, the final set will be provided to the DRMS. Please provide Division with the CPW approved mitigations when available.

6.4.10 Exhibit J - Vegetation Information

53. The Applicant's response is adequate.

Exhibit L - Reclamation Costs

54. The worst case reclamation cost scenario provided by the Applicant is not sufficient for the Division to accurately calculate the cost of reclamation that would be incurred by the State. Please provide all information necessary to calculate the cost of reclamation

broken down into the various major phases of reclamation pursuant to Rule 6.4.12(1). Please include the anticipated equipment types, material volumes and haul distance for each reclamation task, at minimum. Additionally, please include tasks for removal of all the mining facilities not just the truck scale and office trailer.

As requested the first adequacy letter, please include tasks for removal of all the mining facilities not just the truck scale and office trailer Worst Case Reclamation Scenario cost estimate. The Division will calculate the cost for an independent contractor to reclaim the worst case reclamation scenario following the submittal of all required information by the Applicant.

On Page L-2 Table L-1 Phase 2 Reclamation Task and Cost Estimate, the Applicant entered the highwall knockdown volume instead of the cost to regrade the slopes and provided two different total bond amounts; \$176,412 and \$576,128. Please correct Page L-2 and Table L-1.

Additionally, on Page L-1 the active highwall knockdown dimensions are described as 500 feet of vertical, 50' tall, highwall bulldozed to final smooth 3H:1V. The Applicant states in the Mining Plan the maximum anticipated excavation depth between 100-120 feet, not 500 feet and there is not a reference to 50' tall benches in the Mining Plan. Please review and clarify the dimensions of the worst case highwall requiring grading during reclamation.

55. On Page L-1, the Applicant includes a reclamation task to bulldoze 500 feet of benched slope to the final 3H:1V grade. The Applicant did not describe the construction or reclamation of benched slopes in the Mining and Reclamation Plans. Please provide additional details regarding the construction and reclamation of the benched slopes in the appropriate Exhibit(s) within the application amendment.

The Applicant's response in the adequacy response cover letter states, "See the revised Exhibit L. References to a "benched" highwall have been removed."

Please explain why the Applicant removed the reference to benched highwalls, when benched highwalls are discussed in the Exhibit C - Mining Plan and depicted in Figures D-1 and D-2 in the Mining Plan exhibit.

6.4.13 Exhibit M - Other Permits and Licenses

56. The Applicant's response is adequate.

57. The Applicant's response is adequate.

6.4.14 Exhibit N - Source of Legal Right to Enter

58. The Right of Entry document for the Douglas Mountain Ranch and Preserve indicates Record No. 1837-284-00-010. The owner of this record number is Westfork Clear Creek LLC according to the Clear Creek County Assessor. Please explain this discrepancy and revise the right of entry document for the Douglas Mountain Ranch and Preserve accordingly.

The Applicant's response in the adequacy response cover letter states, "The revised right of entry is attached."

The Division did not receive a revised right of entry for the Douglas Mountain Ranch and Preserve for Record No. 1837-284-00-010. Please submit the revised right of entry document.

59. The Right of Entry document for the Douglas Mountain Ranch and Preserve does not include the parcel with Record No. 1837-273-00-667 which is crossed by the proposed access road. Please explain this discrepancy and revise the right of entry document for the Douglas Mountain Ranch and Preserve accordingly.

The Applicant's response in the adequacy response cover letter states, "The revised right of entry is attached."

The Division did not receive a revised right of entry for the Douglas Mountain Ranch and Preserve for Record No. 1837-273-00-667. Please submit the revised right of entry document.

60. On Page N-1, the Applicant states a copy of the recorded easement to cross a parcel owned by the Norseman of the Rockies is attached. The Division did not receive a copy of the easement in the amendment application. Please submit a copy of the recorded easement for Division review.

The Applicant's response in the adequacy response cover letter states, "See the attached Norseman easement."

The Division did not receive the copy of the Norseman of the Rockies easement. Please submit a copy of the easement agreement.

61. The Applicant's response is adequate.

6.4.15 Exhibit O - Owners of Record of Affected Land (Surface Area) and Owners of Substance to be Mined

62. The Applicant's response is adequate.

6.4.18 Exhibit R - Proof of Filing with County Clerk and Recorder

63. Please provide an affidavit or receipt indicating the date on which the revised application amendment information required to address this adequacy letter was placed with the Clear Creek County Clerk and Recorder for public review, pursuant to Subparagraph 1.6.2(1)(c).

6.4.19 Exhibit S - Permanent Man-made Structures

Where the mining operation will adversely affect the stability of any significant, valuable and permanent man-made structure located within two hundred (200) feet of the affected land, the Applicant may either:

- a. provide a notarized agreement between the Applicant and the person(s) having an interest in the structure, that the Applicant is to provide compensation for any damage to the structure; or
- b. where such an agreement cannot be reached, the Applicant shall provide an appropriate engineering evaluation that demonstrates that such structure shall not be damaged by activities occurring at the mining operation; or
- c. where such structure is a utility, the Applicant may supply a notarized letter, on utility letterhead, from the owner(s) of the utility that the mining and reclamation activities, as proposed, will have "no negative effect" on their utility.

64. The Applicant's response is adequate.

65. The Applicant's response is adequate.

66. The Applicant's response is adequate.

67. The Applicant's response is adequate.

68. The Applicant's response is adequate.

Please commit to submitting a technical revision to revise or remove the utility line buffer following obtaining approved structure agreements with Xcel Energy.

69. The Applicant's response is adequate.

70. Please revise Exhibit S and provide proof of attempting to obtain structure agreements for the following permanent man-made structures within 200 feet of the affected land:

The Division did not receive proof of attempting to obtain a structure agreement from Martha Boxberger. Please provide proof of attempting to obtain a structure agreement with Martha Boxberger.

Additionally, please provide the Division with a copy of the structure agreement sent to structure owners within 200 feet of the affected boundary for review.

6.5 Geotechnical Stability Exhibit

71. The Colorado Geological Survey (CGS) provided the Division with a copy of the CGS review letter dated August 17, 2018 to Clear Creek County for the Douglas Mountain Ranch rezoning to planned development and boundary line adjustment. A copy of the letter is attached. Please address the comments contained in the letter.

The Applicant's response in the adequacy response cover letter states, "See the attached response to the Colo. Geological Survey." The Division received a letter titled Douglas Mountain Ranch Project - Engineering Geology and Geologic Hazard Report from Greg Lewicki and Associates, PLLC (Lewicki) dated August 29, 2018 and Geologic Hazards and Geology Study Proposed Douglas Mountain Ranch and Preserve report from Kumar & Associates, Inc. (Kumar) dated February 26, 2003 (revised).

The Division disagrees with the statement in the Lewicki letter which states the landslide deposit will not be disturbed by the proposed excavation activities, as no portion of it will be excavated and the underlying ground will also not be disturbed, with excavation activities only taking place within the alluvial/glacial moraine deposit in the meadow. The eastern and southeastern portion of the application amendment mining area is located in the lower half, or toe area, of a large mapped landslide as identified in the CGS letter.

The Kumar report states on Page 2, "If the proposed development varies significantly from that described above or depicted in this report, we should be notified to reevaluate the recommendations provided in this report." The Kumar report was written for a planned residential development, not a mining operation proposing to excavate material to a depth of approximately 100 feet below the current ground elevation.

Please perform a new and updated geologic hazards study for the proposed mining operation, which evaluates the geological hazards associated with the removal of

material within and below the toe area of the mapped landslide for the proposed final elevation of the mining operation.

Additionally, the Lewicki letter states the (Kumar) study determined that the only area with a high potential for rockfalls was the eastern most flank of the properties where the improved access is proposed. The location of the access road in the Kumar report is similar to the proposed mine access road in the application amendment. The Lewicki letter states access like the one proposed (in the DRMS permit application) require mitigation against such rockfall and Douglas Mountain Ranch and Preserve will have to see that these mitigations are installed in order to ensure the stability and safety of access.

The Kumar report states on Page 7 a much higher level of mitigation, including the construction of a substantial rockfall gravity wall would likely be required to allow for the proposed commercial/residential development to account for the significantly lower level of acceptable risk with respect to people and property that is required for stationary businesses and residences. The location of the proposed commercial development in the Kumar report currently contains inhabited residences. Please perform a more detailed rockfall evaluation based on the final access road design to develop appropriate mitigation measures to protect the current residences and proposed access road from rockfall hazards.

72. The Applicant provided a slope stability analysis using GALENA software. Please provide a map indicating the locations of the critical cross-sections modeled by the Applicant.

The Applicant's response in the adequacy response cover letter states, "The slope stability is based on C-C'. See the revised GALENA analysis documents that are attached."

The Division did not receive a cross-section label C-C' in the revised GALENA documents. Please clarify if the Applicant was referencing to cross-section C-C' on Map C-3.

73. The Applicant provided a slope stability analysis and data tables using GALENA software. Please provide the Division with an electronic version of the data tables for verification of the stability analysis by the Division using Clover Technology's Galena v7.1 slope stability software.

The Applicant's response in the adequacy response cover letter states, "The data files have been emailed to the DRMS."

The Division has not received the revised GALENA data tables by email as of the date of this letter. Please submit the data files for verification of the stability analysis by the Division using Clover Technology's Galena v7.1 slope stability software.

Please be advised the Douglas Mountain Mine application amendment may be deemed inadequate, and the application amendment may be denied on April 30, 2019, unless the above mentioned adequacy review items are addressed to the satisfaction of the Division. If more time is needed to complete the reply, the Division can grant an extension to the decision date. This will be done upon receipt of a written waiver of the Applicant's right to a decision by April 30, 2019 and request for additional time. This must be received no later than the deadline date.

The Division requests the Applicant respond to the adequacy items in this letter by providing a response to the Division's questions in the adequacy response letter and with the revised text clearly indicated in the corresponding exhibit(s).

If you have any questions, please contact me at peter.hays@state.co.us or (303) 866-3567 Ext. 8124.

Sincerely,



Peter S. Hays
Environmental Protection Specialist

Ec: Michael Cunningham; Division of Reclamation, Mining & Safety
Chris Townsend; Empire Aggregate, Inc.