



## COLORADO

Division of Reclamation,  
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215  
Denver, CO 80203

September 24, 2019

Aggregate Industries – WCR, Inc.  
Attn: Christine Felz  
1687 Cole Blvd, Suite 300  
Golden, CO 80401

**RE: Tucson South Resource, M-2004-044, Amendment Number 1 (AM01)  
Adequacy Review No. 3**

Dear Ms. Felz,

The Colorado Division of Reclamation, Mining, and Safety (“DRMS” or “Division”), received Aggregate Industries – WCR, Inc. (AI) response to the second adequacy review on September 18, 2019. The Division has reviewed the response letter and revised exhibits/information submitted. Below is a list of adequacy review issues that were identified in the Division’s first/second adequacy review letter followed by AI’s response to the adequacy review items. If an item has been resolved it has been removed from the list. If additional information or clarification for an item is needed, the Division provided a request in our response. Please address the following items:

**Rule 6.4.7, Exhibit G, Water Information**

15. Similar to the adequacy item for the mining plan section about wet-mining the South Area and dewatering operations. Please clarify if any dewatering will occur at the South Area? If dewatering is planned for this Phase, an evaluation of the impacts of this activity and possible mitigation measures will need to be addressed in this Exhibit.
  - c. **DRMS Response 2:** The groundwater model conducted in 2004 does not reflect the plan to dewater the South Mine Area and AI notes there are four wells that could be impacted by the proposed dewatering operation (revised page G-2). Also, revised page G-5 indicates dewatering of the South Mine Area will likely impact wells west of the South Mine Area. AI’s plan provides mitigation measures should the wells be negatively impacted. Given the proximity of these wells to the mining/dewatering operation and the shallow nature of the alluvial aquifer, it seems given that the adjacent wells will be negatively affected. Please assess and/or model the impact the dewatering operation will have on these wells and devise a plan to preemptively mitigate possible impacts to the use of these wells and/or provide a thorough demonstration the wells will not be impacted.
  - d. **AI Response:** AI acknowledges that the wells near the South Mine Area will likely be impacted by the dewatering operations. The preemptive plan to address the potential impact will include the installation of cisterns on each of the nearby wells. Figure G-1 presents the preliminary design developed by Tetra Tech and a local driller familiar with the wells in the area. AI will bear the cost of installing and operating the cisterns. If the wells are completely dewatered and it is not practical to replace the existing wells with deeper or more efficient wells, AI will deliver potable water to the cisterns for the duration of the impacts. As indicated above AI may improve the



existing wells to provide water to the cistern rather than continue to haul water for an extended period of time. In any event AI will provide potable water to the well owner.

- e. **DRMS Response (3):** Please provide documentation that the affected well owners have agreed to the proposed mitigation plan.

16. Page G-4, the Potential Mining Impacts section is confusing and hard to follow. Overall, the points made in this section are unclear. Please revise this section to clarify the statements made. The Division recommends addressing the impacts from dewatering and slurry wall installation (mounding and shadowing) by clearly indicating the possible impacts and their associated severity. If conclusions about the mining impacts are taken from the groundwater study please make this clear and cite specifically where within the report these conclusions are addressed.

- c. **AI Response:** Please see the revised Exhibit G Sections 2 (b), and Potential Mining Impacts.
- d. **DRMS Response:** Revised page G-5 indicates ground water will mound up to approximately six feet along the western and southern edges of the West Mine Area. According to recent monitoring data, water levels can range from eight to nine feet below the ground surface in this area. A rise of six feet after the installation of the slurry wall is significant given the current shallow depth of groundwater. Given this, the Division will require preemptive mitigation. Please provide designs and plans for an appropriate drainage system that will maintain the historic groundwater levels after the installation of the slurry wall. Please commit to installing the drainage system concurrently with slurry wall installation.
- e. **AI Response:** AI is committed to installing an underdrain system to minimize disturbances to the prevailing hydrologic balance of the ground water regime near the mine. Groundwater modeling indicated mounding up to approximately six feet will likely occur along the west and south west margins of the West Mine Area. A preliminary design is shown in plan view and cross sections on Figure G-2 through G-5. Please note that this design is preliminary and may change after the final determination of the location of the slurry wall.  
The drain system will consist of three sections, South Side Drain, West Drain South Reach and West Drain North Reach. Each drain has a “receiving” section and a “discharging” section. In the “receiving” sections the drain will be installed at approximately the pre-mining ground water level. As the mound builds it will flow into the drain pipe. In non-mounding areas the “discharging” sections the drain pipe will be at or approximately one foot above the pre-mining ground water levels. In the areas of the ground water mound the ground water will flow into the drain then flow down gradient through the drain pipe and discharge back to the ground water. The entire length of the drain pipe will be perforate. The slope of the drain pipe and seasonal high and low water levels are shown on the drain profiles. This design concept has been utilized at the Challenger Pit just north of the West Mine Area.  
One dimensional steady state ground water flow equations commonly used in construction dewatering were used to size the drainpipe. The calculations are presented in Appendix G-1. The analysis indicated a drain pipe diameter of six inches would be adequate.
- f. **DRMS Response (3):** Please commit to installing the drain concurrently with the installation of the slurry wall. Also please commit to submitting a technical revision to update the final design of the drain along with any modifications of the location of the slurry wall.

#### **Rule 6.4.14, Exhibit N - Source of Legal Right to Enter**

32. Exhibit N contains a Special Warranty Deed documenting the City of Thornton owns Tract J, however it does not document the Applicant’s source of legal right to enter and conduct operations within this tract. Please provide documentation of the applicant’s legal right to enter Tract J in accordance with Rule 6.4.14.

- a. **AI Response:** Aggregate Industries is working with the City of Thornton to obtain the required documentation. We will forward the information upon receipt.
- b. **DRMS Response:** This item remains outstanding and will need to be addressed prior to the approval of AM01.
- c. **AI Response:** So noted. The Legal Right to Enter from the City of Thornton has been approved as to form. We will forward the executed document upon receipt.
- d. **DRMS Response (3):** This item remains outstanding and will need to be addressed prior to the approval of AM01.

#### **Rule 6.4.19, Exhibit S – Permanent Man-made Structures**

**DRMS Response (3):** DRMS reviewed the Slope Stability Analysis adequacy response by Tetra Tech dated September 16, 2019 for the Tucson South Resource 112c permit amendment application (AM-01). The Division accepts the proposed mining plan setbacks at the Tucson South Resource site with the exception of one discrepancy noted in the adequacy item below. If groundwater is intercepted shallower than expected and/or the soils differ from the expected profile, the Applicant must contact the DRMS immediately and reevaluate the stability analysis based on the updated information. Please note any transgression of the proposed setbacks and sloping will be considered a permit violation if the permit is approved and issued.

- 1. The Exhibit C-2 Map indicates actual offset from mining excavation limits to the Brighton Return Flow Ditch is 501 feet. This is not reflective of the proposed mining plan or the applicable geotechnical stability cross sections and figures. Please address this discrepancy.

#### **Mined Land Reclamation Board Conditions of Approval**

- 44. The Colorado Mined Land Reclamation Board (“Board”) conditionally approved the original permit application for the permit number M-2004-044 for the Tucson South Resource site with five conditions. Please review and address each of the five conditions of approval. Please specifically explain how these conditions are addressed with this Amendment application. If the Applicant believes a condition is no longer applicable please explain in detail the basis for that assumption.
  - a. **Condition No. 1** – If final specifications for construction of the slurry walls differ from the draft specifications, Aggregate Industries will provide DMG a copy of the final version for review, as a technical revision;
    - i. **AI Response:** The applicant will comply with the condition as stated.
    - ii. **DRMS Response:** This condition will remain in effect with the approval of AM01.
  - b. **Condition No. 2** – Aggregate Industries' mining operation will not intersect ground water in Phases 2,3,'and 3A until the DMG has reviewed and accepted the final slurry wall construction report, including quality assurance test results;
    - i. **AI Response:** The mining cells referenced above are now the East and West mining areas. The applicant will comply with the condition as required.
    - ii. **DRMS Response:** This condition will remain in effect with the approval of AM01.
  - c. **Condition No. 3** – Aggregate Industries will not expose ground water to the surface in Phases 1,2,3, or 3A until a copy of a document from the State Engineer's Office proving that it is legal to do so is provided to the DMG;
    - i. **AI Response:** The applicant is in compliance with the above condition. An approved Temporary Substitute Supply Plan was submitted to the Division to address this condition.
    - ii. **DRMS Response:** Based on the temporary substitute water supply plan submitted to the Division and the comment letter provided by the Colorado Division of Water Resources regarding AM01, the temporary substitute water supply plan (TSWSP) only covers the 2

acres of exposed groundwater of the pit located in Tract M. Per the DWR's December 12, 2018 comment letter, AI will need to obtain a new TSWSP and Well Permit to expose any additional water beyond the 2 acres. Given this, this condition has not been complied with and will remain in affect with the approval of AM01.

- iii. **AI Response:** An updated TSSP is attached.
- iv. **DRMS Response (3):** The Division acknowledges that AI has an approved Temporary Substitute Water Supply Plan that allows for 10 acres of exposed groundwater at the Tucson South Resource site. The Division considers this condition complied with at this time.
- d. **Condition No. 4** – Aggregate Industries will not affect land within 200 feet of the Brantner Ditch, Brighton Ditch, Kerr McGee oil and gas well pipelines and appurtenances or the Union Rural Electric overhead power line and poles until a notarized agreement between the applicant and the persons having an interest in the structure(s) that the applicant is to provide compensation for any damage to the structures) or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b) or (c); and
  - i. **AI Response:** The applicant is in compliance with the condition as stated. The application as amended demonstrates that mining and reclamation activity will not take place within 200' of the Brantner Ditch. The applicant has submitted agreements the Brighton Ditch Company, Union Rural Electric (United Power) and Kerr McGee (Great Western). Aggregate Industries will not affect land within 200' of the Brighton Ditch, Union Rural Electric (United Power) and Kerr McGee facilities until an agreement between Aggregate Industries and the parties is in place or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b) or (c). We will forward any executed agreements upon receipt.
  - ii. **DRMS Response:** The Division acknowledges AI will not affect land within 200 feet of the Brantner Ditch. AI will need to address the adequacy review issues identified in the enclosed Memorandum regarding the geotechnical stability analysis or provide completed structure damage agreements for the structures in question.
  - iii. **AI Response:** The adequacy review issues in the submitted memorandum are addressed below in this letter.
  - iv. **DRMS Response (3):** The Division acknowledges that AI has complied with this condition.
- e. **Condition No. 5** – Aggregate Industries shall not affect land south of and within 200 feet of the Todd Creek Farms water supply pipeline and shall not further affect land within 200 feet of the north side of the pipeline, in the Phase 2A area, except for reclamation work, until a notarized agreement between Aggregate Industries and Todd Creek farms stating that Aggregate Industries is to provide compensation to Todd Creek Farms for any damage to the pipeline, or Aggregate Industries otherwise complies with the requirements of Rule 6.4.19(b)(c).
  - i. **AI Response:** The Applicant is in compliance with the condition as stated. The applicant has centered into an agreement with Todd Creek Metropolitan District (formerly Todd Creek Farms). A copy of the agreement is attached.
  - ii. **DRMS Response:** Based on the easement deed and agreement submitted by the applicant, it does not appear a commitment was made by the Operator to compensate Todd Creek Metropolitan District for damages to their structures. AI will need to address the adequacy review issues identified in the enclosed Memorandum regarding the geotechnical stability analysis or provide a complete structure damage agreements for the structure in question.
  - iii. **AI Response:** The agreement with the Todd Creek Metropolitan District allowed for encroachment up to twenty feet from the water line. As shown in the stability analysis (attached), we elected to offset the limit of mining excavation 45 feet from the Todd

Creek easement boundary. The analysis demonstrates that the factor of safety with this offset exceeds the DRMS requirements.

- iv. **DRMS Response (3):** The Division acknowledges that AI has complied with this condition.

This concludes the Division's third adequacy review of the AM01 application and revised materials. The Division is required to issue a decision on the application by September 30, 2019. The adequacy issue listed above must be addressed to the Division's satisfaction prior to the decision date. If you need additional time to address these issues you must request an extension of the decision date. Please be aware that the Division will deny the application if outstanding adequacy issues remain when the decision date arrives or inadequate time is provided for the Division to review the response to the adequacy items. Also, in accordance with Rule 1.4.1(9) the review period may not exceed three hundred and sixty five (365) days from the date the application was filed (November 29, 2019). If at the end of the 365 day period, the application has outstanding adequacy issues, the Division may set the matter for a Board hearing.

If you have any questions feel free to contact me at (303) 866-3567, extension 8120.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jared Ebert", with a stylized flourish at the end.

Jared Ebert  
Environmental Protection Specialist III

EC: Barb Brunk, Resource Conservation Partners, LLC., [barbb@dgmlc.com](mailto:barbb@dgmlc.com)