



COLORADO

Division of Reclamation,  
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215  
Denver, CO 80203

October 31, 2014

Mr. Justin Andrews  
Holcim (US) Inc.  
3500 Highway 120  
Florence, CO 81226

**Re: Portland Limestone Quarry, Permit No. M-1977-344;  
Technical Revision (TR-10) Preliminary Adequacy Review**

Dear Mr. Andrews:

On October 20, 2014 the Division of Reclamation, Mining and Safety (Division) received a request for a Technical Revision (TR-10) addressing the following:

- *Proposal to remove sodium as groundwater quality parameter.*

The submittal was called complete for the purpose of filing on October 20, 2014. The decision date for TR-10 is November 19, 2014. Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, **it will be your responsibility to request an extension of the review period.** If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division will deny this technical revision.

The Division is not opposed to modifying parameters used to indicate potential impacts to groundwater from buried and/or landfilled cement kiln dust (CKD) at the Portland Limestone Quarry. However, the Division has the following concerns and questions related to the proposal submitted by Arcadis, dated August 4, 2014:

- 1) Increased depth to water vs. higher sodium concentration: Mr. Peters argues that the observed trend in the increased depth to groundwater means there is less Arkansas River water available in monitoring wells MW-7 and MW-13 for dilution. The Division concurs the lower water level may be a contributing factor, but as stipulated by Mr. Peters on the top of page 2, the correlation exhibited in MW-13 is not as strong. Therefore, it is reasonable to assume there are other contributing factors, that Mr. Peters concedes are "not clear". Further, there is no discussion provided indicating the observed

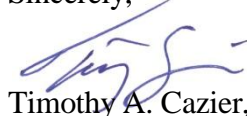


increased concentrations of sodium are not attributable to impacts from CKD. Please provide some discussion on this point.

- 2) Literature data: An argument is presented that the data presented in the roughly 350-page Report to Congress on Cement Kiln Dust is from plants similar to the Portland Limestone Quarry. A review of previous Technical Revisions to this permit (e.g., TR-01 & TR-06) indicate bio-solids from the nearby Fremont County Sanitation District wastewater treatment plant are mixed with CKD as part of the backfilling/landfilling disposal process. Sludge samples analyzed for TR-06 suggest the addition of the bio-solids alter the chemistry of that typical for CKD. Please provide some discussion related to the referenced Report to Congress as to whether or not bio-solids are included in the characterization of CKD at similar cement plants.
- 3) The use of the K:Na ratio: The Division is concerned about this approach. Currently, the observed potassium concentrations are relatively constant (the standard deviation being only 10% of the mean in MW-13), whereas the observed sodium concentrations are less consistent (the standard deviation being 16% of the mean in MW-13) as seen from the July 2014 groundwater monitoring report. Mr. Peters proposes a K:Na ratio of 0.5. The 2009-2010 K:Na ratio for reported values are roughly 0.05, an order of magnitude less. Furthermore, if Na concentrations continue to increase, while K concentrations remain essentially the same, the proposed ratio of 0.5 will be quite easy to achieve. Of greater concern is that both Na and K concentrations could increase over time, but as long as the concentration of Na is at least twice that the K, the proposed standard would be met. Significant increases in either Na or K and Na should be viewed as a concern from the Division's viewpoint. A greater discussion on the K/Na chemistry as it relates to CKD and a more compelling argument for the K:Na ratio needs to be provided to the Division before this approach can be considered.

If you have any questions or need further information, please contact me at (303)866-3567 x8169.

Sincerely,



Timothy A. Cazier, P.E.

Environmental Protection Specialist

cc: Tom Kaldenbach, DRMS  
Amy Eschberger, DRMS  
DRMS file