## James Doyle

## Dear Sirs:

I am concerned that the proposed list of Best Management Practices for Aggregate Production Operations is grossly inadequate. Rather than repeat the recommendations made by Texans for Responsible Aggregate Mining (TRAM), I will focus on three additional points:

1. Require a comprehensive environmental impact review that addresses surface water, groundwater and dust contamination as well as light and noise. The evaluation should address the cumulative impact of the subject apo's addition to other sources in the area.

2. In RG-500, best management practices stipulate that the minimum quarry-base elevation be set 25 ft above a highest-estimated aquifer elevation at the site based on historical aquifer records. The BMP should be modified to stipulate that the estimate be based on records of the shallow aquifer underlying the proposed quarry site. The Edwards Aquifer Recharge Zone is environmentally sensitive, and in some areas, the shallow aquifer is the Upper Trinity Aquifer. Contaminants introduced in those areas pass from the Trinity Aquifer to the Edwards Aquifer via cross-fault flow. The Edwards and upper Trinity aquifers differ in recharge area and recharge sources; they don't necessarily move in concert. The BMP in RG-500 is illustrated only using data from the Edwards Aquifer and includes the statement, "The TCEQ will accept the water-table elevation measured in December 2007 either on-site or in the nearest off-site well as the elevation from which the 25 ft separation applies." As an example of the problem that creates, in the recently-approved WPAP for the Comal Vulcan Quarry that phrase was accepted as justification for a quarry depth for which data from the underlying Upper Trinity Aquifer clearly show the minimum required standoff has been repeatedly exceeded.

3. BMP should be added for the process of blasting to minimize nitrate contamination of groundwater in limestone aggregate quarries. Quarries are a source of nitrate pollution in groundwater resulting from the use of Ammonium Nitrate fuel oil (ANFO) mixtures (a). Loss of nitrate to groundwater is variable depending on details of the blasting operation (b). Specifically for the Edwards Aquifer, historical water-quality data from the Texas Water Development Board show that nitrate levels began rising in the 1950s coincident with the large-scale introduction of ANFO as a commercial explosive. In the Edwards, nitrate levels have generally reached a level harmful to some freshwater aquatic species. The highest observed levels are clustered near quarries indicating some owners of wells unfavorably situated near quarries may experience degraded water quality (c).

(a) ALBERTS, N., 2016, Tackling nitrate contamination of water in mines: Mining News Digest, August 11, Electronic document, available at https://www.mining.com/web/tackling-nitrate-contamination-ofwater-in-mines/

(b) BROCHU, S., 2010, Assessment of ANFO on the Environment, Technical Investigation 9-01: DRDC Valcartier TM 2009-195; Defence R&D Canada, Valcartier, Canada, 38 p.

(c) DOYLE, J. D., 2024, Quarries as a Source of Nitrate Pollution in Karst Aquifers: Case Study,

the Edwards Aquifer, Texas: Environmental & Engineering Geoscience, Vol. XXX, No. 4, November 2024, pp. 173–191.

Sincerely,

James Doyle