STATE OF COLORADO

Cunningham - DNR, Michael <michaela.cunningham@state.co.us>

Lost Creek Mine Permit Application, M-2018-051

1 message

Matthew Machado <MMachado@lyonsgaddis.com> Mon, Mar 25, 2019 at 4:26 PM
To: "michaela.cunningham@state.co.us" <michaela.cunningham@state.co.us>, "peter.hays@state.co.us" <peter.hays@state.co.us>
Cc: Kent Pflager <kpflager@mcqwd.org>, Jim Sittner <jasittner88@gmail.com>

Mike and Peter,

Please see the attached report from Jim Sittner discussing several threshold problems with the Black Mountain application. Mr. Sittner was retained by my client the Morgan County Quality Water District. As I discussed with Mike a couple of weeks ago, the issues raised are threshold issues we request the Division consider in its determination as to whether to publish Black Mountain's application. Feel free to contact me with any questions. Thank you.

Matt

Matt Machado

LYONS GADDIS
ATTORNEYS & COUNSELORS

Office: 720-726-3672

Mobile:720-290-0755

mmachado@lyonsgaddis.com | www.lyonsgaddis.com

From: Jim Sittner <jasittner88@gmail.com>
Sent: Monday, March 25, 2019 3:14 PM
To: Kent Pflager <kpflager@mcqwd.org>
Cc: Matthew Machado <MMachado@lyonsgaddis.com>
Subject: 2019-03-25, JAS to KP & MM - Lost Creek Mine Permit Application, M-2018-051

Kent and Matt,

Attached is my final report regarding the Lost Creek Mine Permit Application, M-2018-051.

Yours,

JAS-MED, LLC

Jim S.

2019-03-25, JAS to KP & MM - Lost Creek Mine Permit Application, M-2018-051.pdf
419K

JAS-MED, LLC
Mine Evaluation & Development
P.O. Box 1008, Monument, CO 80132
C: 303-995-7268 – E: jasittner88@gmail.com

March 25, 2019

Mr. Kent Pflager, General Manager
Morgan County Quality Water District
P.O. Box 1218
Fort Morgan, CO 80701

Matthew Machado, Esq.
Lyons Gaddis, PC
363 Centennial Pkwy, Suite 110
Louisville, CO 80027

Re: Lost Creek Mine Permit Application, M-2018-051

Dear Kent and Matt:

The purpose of this letter is to summarize my thoughts regarding the adequacy of the "Lost Creek Mine, Construction Materials Regular (112) Operation, Reclamation Permit Application, M-2018-051" dated February 18, 2019 (hereafter, the "Permit Application") as submitted by Black Mountain Sand, LLC (hereafter, "Black Mountain Sand" or the "Applicant"). The Permit Application appears to be deficient and should not be published by the Division on at least three grounds:

(a) the Applicant should be required to file an application for hard rock mining because Applicant is proposing to mine for industrial sand, not construction materials,

(b) the Application does not adequately describe certain aspects of its proposed mining and processing plan in sufficient detail to allow the Division of Reclamation, Mining and Safety ("DRMS") as well as other appropriate State agencies and interested parties to evaluate the Application and thus allow the Colorado Mined Land Reclamation Board to arrive at a fair determination, and

(c) the Applicant made assumptions and conclusions regarding the impact of the mining, processing and reclamation operations on the groundwater without considering the underlying alluvial aquifer known as the Hay Gulch alluvial aquifer, and did not consider the adverse impact that the proposed operation might reasonably

be expected to have on the groundwater quality produced from Morgan County Quality Water District's permitted wells which are located on the adjacent property and which are completed in the Hay Gulch aquifer.

Incorrect Application: The Applicant has submitted its Permit Application pursuant to Section 34-32.5-101, et seq., C.R.S. 1984, as amended of the Colorado Land Reclamation Act (hereafter, the "MLRA"). The Mineral Rules and Regulations promulgated pursuant to this section of the MLRA pertain specifically to the Mining, Extraction and Processing of "Construction Materials" (see Rule 1.1 (11), (15), (26), (27) and (39)). The Applicant, however, is very specific in its Permit Application as to the intended purpose of its Permit and the commodity it intends to extract. Black Mountain Sand states in Paragraph 5 on Page 1 of its "Reclamation Permit Application Form" that the primary commodity to be mined is "Industrial Sand" which it states has a "SIC Code of 1446" as opposed to sand and gravel used for construction purposes which has an SIC Code of 1442. Thus, the Applicant's intent is in direct conflict with the Legislative Declaration and the Mineral Rules and Regulations for Section 34-32.5-102 of the MLRA. As stated in Paragraph of Rule 1, Paragraph 1.11.1(2) "Unless such mining is incidental to the permitted activity, any Operator who intends to mine any commodity other than a "construction material" commodity, as defined in Section 34-32.5-103(3), C.R.S., shall apply for a conversion to a new permit under the provisions of Section 34-32-101, et seq., C.R.S; that is, the Mineral Rules and Regulations for **"Hard Rock, Metal, and Designated Mining Operations" [Emphasis Added].**

Insufficient Description of the Processing. The Applicant's description of its proposed processing method is inadequate in that it only describes how it plans to utilize wet screening, attrition scrubbing and "inert surfactants" to assist in separating the clayey material from the industrial sands while completely ignoring the more critical part of the process it likely will need in order to separate the weaker feldspathic sand grains out from the stronger quartz sand. This step is critical in order to meet the stringent frac-sand specifications set by the American Petroleum Institute's ("API") Recommended Practice 56 and ANSI/API 19C.

The primary source of material for the aeolian sand and loess deposits within the proposed project area are the Rocky Mountains which lie to the west and the alluvial deposits of gravel, sand and silt which were deposited as glaciers, rivers, streams and wind eroded and reworked the aforementioned rocks, alluvial sediment, underlying bedrock, and older alluvium deposits, most of which contain appreciable amounts of feldspar as well as quartz. The feldspathic content of alluvial sand along the South Platte River between Denver and Fort Morgan, Colorado range from 38 to 58 % (see Hayes, J., 1962, "Quartz and Feldspar Content in South Platte, Platte, and Missouri River Sands," Journal of Sedimentary Petrology, Vol. 32, No. 4, PP. 793-800). The feldspathic content of aeolian sand in the areas covered by the Lost Creek Groundwater Basin and the Hay Gulch sub-basin average around 41% with a low of 25%.

Unless the Applicant has found an area where the run-of-mine feldspathic content of the aeolian sand averages well below 20%, it is highly unlikely that the aforementioned processes described

in the Application will reduce the feldspars and other deleterious material down to less than 10 % by weight of the finished product which probably will be the maximum amount allowed in order to achieve a K Value of 5,000 psi for a 40x70 and/or a 70x140 product let alone the 95 to 98 % pure, quartz product which probably will be required in order to keep the maximum Crush Resistance Fines at or below 8.0% for the 40x70 mesh product and at or below 6% for the 70x140 mesh product.

The only other commercially available alternative to meet these specifications is Flotation. Each of the three flotation processes commonly used to separate feldspars from quartz utilize to some degree reagents that qualify as "Designated Chemicals," and which, if it is found that they will ultimately be required in the Applicant's process flow sheet, would make the proposed Lost Creek Mine a "Designated Mining Operation" which should be permitted under Rule 1.1 (13) and (14) of Section 34-32-102 of the Mineral Rules and Regulations pertaining to the extraction of **"Hard Rock, Metal, and Designated Mining Operations" [Emphasis Added].**

Inadequate Consideration of the Hay Gulch Aquifer and Existing Municipal Water Wells. Last, it would seem that the Applicant is either unaware or has ignored the fact that its proposed mining operation, processing plant, and waste pilings in in Sections 3,4, 9, 10 of T3N R61W lie directly over the Lost Creek Designated Ground Water Basin, specifically the Hay Gulch extension of the Lost Creek alluvial aquifer. The Hay Gulch aquifer is one of the main water reservoirs for the Morgan County Quality Water District, a municipal water supplier that serves approximately 3000 water taps in Morgan, Weld, Adams and Washington counties, including homes, dairies, feedlots and other businesses.

The Applicant states in its Permit Application that: (a) the affected lands overlay the Laramie-Fox Hills Aquifer, (b) Applicant drilled numerous geotechnical borings to various depths (the deepest being 80 feet below ground surface), apparently stopping each time upon encountering certain zones of fine-grain, high clayey material, and (c) since it did not encounter water in any of its borings, the Applicant states "It is not anticipated that the mining operations will encounter groundwater in the mining pits…." The Applicant ignored the fact that the Morgan County Quality Water District ("MCQWD") water well field, which is located in Sections 5 and 8, T. 3N, R61W, 6th PM, lies immediately next to and down gradient from the Applicant's proposed mining and processing area in Sections 4 and 9. The MCQWD's water wells have been completed down to the layer of grey shale which forms the base of the alluvial aquifer in the area and which forms the impermeable seal between Hay Gulch/Lost Creek aquifer and the underlying Laramie-Fox Hills Aquifer. These wells have been drilled to a total depth which ranges to between 115 and 150 feet. Therefore, it would appear that the Applicant's bores were drilled either too shallow to encounter the saturated zone of water in the Hay Gulch aquifer or they were drilled up-dip of the saturated zone along or outside the eastern edge of the Hay Gulch sub-basin.

The Applicant does not state how many nor the location of the borings it utilized to draw its conclusions. It did, however, submit drilling logs for four boreholes which it stated as being

representative of its drilling program. Unfortunately, three out of the four borings which were submitted are located outside of the eastern boundary of the Hay Gulch sub-basin in areas where one should not expect to find any water. In any case, water-born pollutants contained in the mining waste backfill would migrate down dip and ultimately reach the saturated zones of the Hay Gulch aquifer.

Furthermore, the Applicant proposes to bring alluvial water from certain ranch wells that it owns which are located to the west of the project area. The locations of the proposed wells are not stated nor is the alluvial aquifer from which the wells draw water identified; however, an examination of the Weld County property ownership records and the Colorado Division of Water Resources data base will show that the Applicant does not own any water wells and rights within the Hay Gulch aquifer. It does, however, own significant land holdings, alluvial water rights and wells in Sections 8, 9, 10, 11, 14, 15, 16, 17, 19, 20, 21, and 23 in T3N, R62W. Unfortunately, the Applicant's land holdings and water rights are located within the Lost Creek Designated Groundwater Basin.

The possibility of water from the Lost Creek Basin being utilized within the boundaries of the Hay Gulch sub-basin is a matter of real concern to the MCQWD from a water quality standpoint. In some areas TDS concentrations in the Lost Creek aquifer are so high that the water is neither fit for domestic nor agricultural use, and it does not meet certain of the EPA's standards for potable water use. (See Watterson, N. and Topper, R., 2011, Report titled "Lost Creek Basin, Aquifer Recharge and Storage Study," Colorado Geologic Survey, PP. 45 – 54; and Cook, J and Reed, R., 2018, Letter Report titled "Groundwater Commission – Hay Gulch," NOCO Engineering.) These reports clearly document the difference in the water quality between these two aquifers and the potential danger associated with recharging the Hay Gulch aquifer (which is extremely clean and meets all standards for both Domestic and Agricultural use) with water of a lesser quality from an aquifer which contains high levels of various constituents such as Nitrate and Nitrites.

In addition, the Applicant's proposed use of water from the Lost Creek alluvial aquifer in its mining and processing will result in a discharge of pollutants to groundwater including the Hay Gulch aquifer, as the Applicant states that the waste from its process plant which it plans to use as back fill will contain at least 10% moisture. In my experience the moisture content might be closer to 15 % depending on how long it is left to drain before being used for back fill. Given an average of 2,909,876 tons per year of waste back fill, the amount of foreign water introduced into the Hay Gulch aquifer each year will average from 214 to 321 acre-feet of water per year; that is, from 14 to 21 % of MCQWD's annual water production from the Hay Gulch aquifer. Yet the Applicant indicates in the Compliance Table portion of its Permit Application that Sections 3.1.7(1) through 3.1.7(7)(b) do not apply by marking the "Compliance" column for these sections with a "N/A." Furthermore, the Applicant states in its 96-Word description of its plan for the "Groundwater - Specific Requirements" Section of it Permit Application that "The operation will be above the regional groundwater table, as determined by on-site boring logs, which did not show saturated conditions and did not encounter groundwater. As such, no

significant impact from the mining operation is expected to the groundwater" (see Paragraph 3.1.7 on Page 3 of Exhibit E - Reclamation Plan).

Likely, such a discharge to groundwater will require an NPDES permit from the CDPHE. The Hay Gulch aquifer was designated as a Specified Area pursuant to CPDHE Regulation 42 ((5 CCR 1002-42). which imposes strict water quality criteria for discharges to ground water in that Specified Area.

Conclusion. Based on this information it would seem to be in the best interests of all parties concerned if the aforementioned Permit Application, which was submitted pursuant to the Mineral Rules and Regulation of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials, would be rescinded by Applicant or rejected by the DRMS as being inadequate for the stated purpose of the Lost Creek Mine, and a new application be submitted pursuant to the Rules and Regulations of the Colorado Mined Reclamation Board for Hard Rock, Metal , and Designated Mining.

This assessment is based on my preliminary review of (a) the aforementioned Application and exhibits posted on the DRMS website, (b) the appropriate rules and regulations of the Colorado Division of Reclamation, Mining and Safety ("DRMS"), (c) information regarding the nature and extent of the Lost Creek Basin and the adjacent Hay Gulch aquifers and the District's municipal well field, and (d) my 49 years of experience related to the exploration, development, operations and reclamation of mining and processing operations.

Yours,
JAS-MED, LLC.

James A. Sittner

James A. Sittner